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ST. MARYLEBONE PUBLIC BATHS AND WASHHOUSES COMPETITION.

THE Commissioners of Public Baths and Washhouses of St. Marylebone have, with the assistance of Mr. Chas. Barry, F.R.I.B.A., the assessor, selected three designs for the rebuilding of their baths and washhouses in the Marylebone-road, and these have been on view at the existing baths. The designs, placed in order of merit, are, as we mentioned last week, for the first premium of £100, the plans by Mr. John Johnson, of Queen Victoria-street, "No. 24"; for the second premium of £60, the plans of Mr. A. Saxon Snell, Southampton-buildings, "No. 25"; for the third premium, of £40, the plans of Messrs. Arthur Ardron and Henry Cheers, Victoria-street, S.W., "No. 23." The site is a very irregular one, without any square angle, and considerable ingenuity was required in arranging the baths, approaches, and administrative building. The old "Pompeian" first-class men's swimming-bath fronting Seymour-place had to be retained, though alternative schemes for altering its position at the option of the competitor were invited. Rights of light and air of adjoining owners had to be observed, and the Marylebone-road frontage could be brought out to within 50ft. of the roadway. The authors were required to add a gallery at each end to the existing men's first-class swimming-bath, for the accommodation of spectators at swimming entertainments, by removing the end walls above the pilasters, and utilising the space behind them. In one of these, 30 lockers for undressing were to be provided, and the space arranged as a club-room. Also, to rearrange the waiting-room, pay-office at entrance, &c., and to provide the following. A men's second-class swimming-bath, not less than 66ft. by 21ft. (water dimensions), was to be provided for 60 dressing-boxes, with overflow, tiled boxes, subways, attendants' rooms, outlet and inlet pipes; a men's third-class swimming-bath, not less than 66ft. by 21ft., with about 60 boxes, tiled footway and boxes, &c.; a ladies' swimming-bath, with water dimensions 60ft. by 25ft., for 35 dressing-boxes; 24 men's first-class and 55 second-class private baths, besides two vapour-baths; 10 ladies' first-class and 19 second-class—in all 110 private baths were required, in addition to a public laundry for 80 washing-boxes, 80 drying-horses, a large ironing-room, house-laundry, and residence for superintendent and matron, &c. The engineering requirements were numerous, and required considerable practical knowledge of the economical working of these establishments. Thus a tank to contain 60,000 gallons of water, and a large boiler-house to hold four large steel high-pressure boilers, each 30ft. long by 7ft. 6in. diameter, a horizontal steam-engine, circulating pipes for heating, and fireproof construction were to be provided, and the instructions have been very skilfully prepared by Mr. O. L. Marchant, the clerk to the commissioners. The very irregular boundaries have exercised the ingenuity of the competitors. The selected first two designs show their authors have studied the external arrangement of the main baths in arranging the walls at right angles, and have thrown the inequalities into the light and air areas. For baths, the question of entrances is always a vital one, if economical working is to be kept in view, and it is better that all the classes of bathers should have one spacious entrance with a pay-box in a prominent position, than that there should be two or three separate entrances and pay-boxes, and the same rule ought to be observed as to corridors, and waiting-rooms and stairs.

The first premiated design, by Mr. John Johnson, is an unquestionably good plan, and we think the commissioners—with the skilled advice of Mr. Marchant, their superintendent, and the professional opinion of their assessor—have justly awarded the first place to No. 24. There are points of detail in the plan and construction which do not quite satisfy us, such as the lighting of the front block and the corridor at side of Pompeian bath; but, taking the general principle of the plan, the main entrances, the utilisation of the space, the good arrangement of the passage for bunkers, the author has been very successful, and has produced an economical scheme. The front block, facing Marylebone-road, has a central entrance for all three classes of bathers, with one pay-box in the centre between the two main doorways. On the left side is a ladies' waiting-hall, adjoining their first-class private baths, and a direct access to their swimming-bath, 63ft. by 24ft; on the right-hand side, corresponding, is the second-class men's waiting-room and entrance to their private baths. A central staircase opposite box-office gives access to second and third-class swimming-baths in the basement in front, and in a line with the stairs is a grand centre corridor to the Pompeian first-class men's swimming-bath, 100ft. by 25ft. in the present position. The men's second and third-class plunge-baths are 80ft. long, and are partly under the front building. The superintendent's entrance is on the right-hand side. On the first-floor plan 24 men's first-class private baths are placed, half over the washhouse; the side wall being carried by iron columns, a constructional expedient which seems to have been unavoidable. Ladies' second-class private-baths for 20 are arranged parallel to the Pompeian bath on the top floor, overhanging the area for light, and rather darkening the corridor below. The front part of building is devoted to the commissioners' and superintendent's rooms, a better position than that under the roof, and more convenient. The skylights shown in the plans are more correctly floor and borrowed lights, and look scarcely sufficient for the amount of light necessary. The elevation to the main road is a florid Italian façade, with an arched centre and domical roof. The estimated cost is £37,500. The drawings are very carefully executed, and the details of the engineering fairly well considered. In this connection we may call attention to the insufficient provision of means for introducing or replacing boilers observed in one or two of the plans. Four large steel high-pressure boilers 30ft. long and 7ft. 6in. diameter require means to be provided should occasion be necessary for their removal, without requiring any great opening to be made in the walls. According to some of the authors, they would have to be placed in position before the basement walls were fully built up.

The design placed second, by Mr. A. Saxon Snell, is also an able plan, and displays much practical acquaintance with buildings of this character; the plans, sections, and details have been very thoughtfully prepared and clearly drawn. The author retains, but lengthens and improves, the present men's first-class (Pompeian) bath, the men's second and third-class swimming-baths are placed at the Marylebone-road end in the basement, but at right angles to the existing ones; the first is 67ft. by 24ft. 6in., and the latter 65ft. by 24ft. 6in. water dimensions; the dressing-boxes are on three sides, and a bridge and diving-board at one end is shown to each. The ladies' swimming-bath, 60ft. by 24ft., is placed transversely across the widest part of site occupied now by the men's first and second-class and ladies' private baths, and next to this, adjoining the Pompeian bath, is the boiler-house. The ladies' swimming-bath has a gallery with top-light lantern roof, and is well placed between the administrative and public washhouse blocks, these being carried up three stories. There is much ability shown in the plan in the economical utilisation of space; but the author has devoted a wide central and prominent entrance in the Marylebone-road front for the commissioners and superintendent, and the first-class women and men bathers, and has cramped his second and third-class men's entrances at the extreme ends of the front. This division of entrances, besides entailing extra pay-boxes, spoils an otherwise clever plan. The central prominent position is given up to a commissioner, who will seldom visit the establishment, and the centre hall is taken up by the superintendent's stairs, so that the first-class bathers will have to pass right and left by the board-room and superintendent's office to their respective box offices and staircases to the baths. If the central position had been entirely given up to the bathers of all classes, and a side narrower entrance provided for the officials, less room would have been wasted and direct entrance insured. The board-room and superintendent's room are lighted through large openings in the front wall of offices, and their own windows being set back they would be somewhat dark. The upper floor is cleverly managed, the staircases in front lead to women's first and second-class private baths, and to the men's, leaving two open areas, which give light through lanterns to the washhouse and ladies' plunge-bath. The public laundry and ironing-room are well placed and ventilated, with convenient access from the rear entrance at side of Pompeian bath, and the lantern over public laundry has a Blackman's fan. The waiting-rooms to the private baths are convenient, and the area generally has been economically utilised. The basement plan shows the drainage and subways. The elevation is of red brick, relieved by stone or terracotta dressings and bands; it has rusticated quoins, and the central portion of offices is carried up higher than the wings. The treatment is a Free Renaissance. The estimate is £42 000.

The third plan (No. 23) is less economical than either of the other two. The entrances are less direct; that to the men's 1st class swimming-bath is by a long inclined corridor, the oblique lines of boundaries are followed in the building, and the washhouse and ironing-room form a large central top-lighted area of the buildings. On the first floor the men's first-class private baths, 92ft. by 25ft. 6in., are located on the western side, and the women's in front at the eastern end, their second-class baths being placed at the end of Pompeian bath opposite Seymour-place. We notice on the men's third-class swimming-bath only three gangways are shown, and the position of the boilers in the basement is rather awkward of access. The main front to the road is an elaborate treatment in the Renaissance style of red brick and stone, with two ornamental gables, and the estimate is £31,000. We have had no time to look at the other twenty-three designs, a few of which are creditable; others fail in the laundry arrangements, by placing it in the upper floors, or in the matter of entrances and details.

ORGANISED DESIGN.

COPYING and competition work have accomplished a great deal for architecture in the past, when its mission was not so wide nor so various. It was well that a period of patient copying imbued men of the last generation with ideas of old work, kept them for a time in guiding-strings, showed them what the Athenians and the Romans and the Mediævalists had done for art, and gave the world such pioneers as the Brothers Adam, Josiah Wedgwood, and Augustus Welby Pugin. We should never have done so much as we have, had the early years of the century been spent in attacking new ideas and construction, and in trying our hands at new problems of design. The era represented by the art of 1840 was indeed one we all look back to without any pride; both architecture and its subsidiary branches were at a low ebb. Those of us who have lived long enough to recall our works of that period cannot do so with any enthusiasm. We are glad to say little about either our Ecclesiastical or our Domestic work; we feel rather ashamed to open our old dusty portfolios and bring to the light of the present day our designs and drawings of executed or unexecuted work. Would they were all in the latter category! But bad as they are, they represent the general taste of the age. There is, indeed, one great work of that era we look back on in wonder, sometimes in admiration, and this is the work largely of a man who lived in that very age—we mean Pugin. In the Houses of Parliament, as Mr. J. D. Crace said the other day, we may walk through and wonder that the woodwork, carving, stained glass, metal-work, tiles, and furniture were actually done in the few years following the date we have named. Yes; and they were all done in the midst of the general ignorance of artistic principles and feeling, and mainly by one man imbued with the true inspiration of genius. We owe indeed a vast deal to his teaching and to his many-sided sympathies. The lesser arts of furniture, metal-work and wood-work, burst afresh through the web which neglect and apathy had woven around them, and have ever since rekindled the enthusiasm of our craftsmen. He at least was one of the first great moderns to teach us that art was not confined to the hierarchy of what are known as "fine," but is an all-powerful influence filtering through every industry, and leavening the whole mass of human thought and emotion. And we see it in every manufacture in the workshop and studio, in the exhibitions of our home crafts, as well as in our buildings. The same fundamental principles, the two great rules summarised by Pugin in "The True Principles," have so rooted themselves amongst our artists and workers, that they seem now almost like intuitions, which must always have been present to every one in every age of art. They were, undoubtedly; but it was reserved for Pugin to restate them when they were entirely forgotten. In his own words, they were, first, "That there should be no features about a building which are not necessary for convenience, construction, or propriety"; secondly, "That all ornament should consist of enrichment of the essential construction of the building." These maxims are so self-evident to every modern architect now, that there is hardly any necessity for their restatement. Every architect worthy of the name observes them. In Pugin's days, the rule was to design a building more or less like a temple or a palace, and tack on to it porticoes, pediments, domes, gables, and buttresses, as the case may be. For, as he observes, "ornaments are actually constructed, instead of forming the decoration of construction, to which, in good taste, they should be always subservient." In these days it is scarcely necessary to remind the artist of these essential rules. In 1840 they were unknown, if not absolutely ignored.

If we carefully consider the meaning of these rules, we gain an idea of what architecture was when the great Gothic Revivalist lived. First we learn that buildings and their features were then separate things, and that any relation between the actual construction and its ornamentation or architecture did not exist, or was scarcely realised by the designer; it was, in a word, building with the addition of a dress of Classic or Gothic details. This superficial idea of architecture no longer exists, but has given place to the more rational view that a work of architecture is an organic product—a piece of artistic construction evolved from the actual requirements. We recognise now laws connecting architectural design with constructive motive, as if, indeed, we could not conceive a design for a building or a piece of furniture without such motive. For a long time architects entertained no other idea of architecture than that it was mere building ornamented, and it was only the leading men of the time who could see beyond this superficial view, and who moulded their building to its conditions. How many were the features which were not necessary for convenience and construction? Buttresses, pinnacles (when there were no thrusts), porticoes, peristyles, domes, vestibules, and a variety of other architectural properties belonging to cathedral churches and to Greek and Roman temples, were placed under contribution. But this doctrine, unhappily, has still its supporters: we see frantic efforts made to put a dress on building rather than to design from *within* outwards. Our method of design is still frequently to make elevations and adapt the plan to them. This inverse order is evident in a much less degree than formerly, and only amongst men who have favoured that division of the profession as set forth by certain accredited teachers. As a consequence of all this, we see a vast change in regard to "style," which is not the foremost element it once was. The style of a building takes a lesser place than it formerly did. Such adjectival phrases as were then common—"The building is in the 'Doric' or 'Ionic' Greek or Roman style," or designed in the "Palladian or Italo-Vitruvian manner"—are not now heard with the same frequency. Material and accommodation and plan are more generally mentioned. Style was then the motive, now it is the resulting expression only of motive and material. And then it is also more general and less distinctive. We all remember when the Classic styles were distinguished by particular phasal distinctions, such as the Hellenic, or Doric, or Palladian, representing the country or the particular school; now the term is used to denote rather the general mode of expression and ornament, without indicating any decided character. Thus, also, the term "Gothic" is come to be used as meaning rather the mode of treating material and features according to Gothic principles, than as a literal description of any particular style. In short, principle, rather than the period, is intended. This development of style is, therefore, in the direction of preserving and retaining the general principle or system in its broad character, and giving up the "accidental" and "local" peculiarities.

The second great principle, "That all ornament should consist of enrichment of the essential construction of the building," has equally entered into the very foundation of all our best art, though there are still a few professors who have taught the doctrine that we must construct first, and then apply the ornament. As in the former maxim, the two things cannot be regarded as separate; but ornament as the outcome of the construction. Once upon a time our grates and fenders, our carpets, our brass and metal-work, and furniture were all designed on the idea that we must apply some historic style of ornament to those objects, no matter what the construction was. Pugin's great principle, now so universally recognised by all our leading artists, is yet in need of being kept in memory by our manufacturers and craftsmen. If we look at some of our modern furniture, we shall see the influence of mere "style" is still predominant. We have makers of chairs, tables, cabinets who follow a popular style that happens to be in vogue at the time, and we see the framing of some of them entirely dictated by a particular period or personal style, such as that of "Chippendale," and the ornament anything but appropriate to the construction. As Pugin said in his day, "Ornament is too often constructed, instead of forming the decoration of construction, to which in good taste it should be always subservient." The lesson needs repeating in these days when the continual splitting up into special trades have promoted the separation of construction from ornament—of those who manufacture and those who design. What is called "taste"—a term not very clear, and, it appears, a very wide one—still governs our manufactures and our furniture as it did fifty years ago. Architects who rightly make their art apply to everything that pertains to buildings, furniture, and decoration are responsible for maintaining and in vigorously asserting that "good taste" is only the application of true principles to the most common objects, or the exercise of common sense guided by art in buildings, furniture, and all accessories. Notwithstanding our undoubted progress in these matters, the tendency to fall into "grooves" has to be resisted by a steady adherence to that brotherhood of the Arts which the great Gothic Revivalist so strenuously inculcated by his work, writings, and life. Happily we have disciples of his equally strong in the faith of the all-embracing mission of true art like the late Mr. John D. Sedding, who showed that nothing was too small or too insignificant to engage the architect's attention, or to enlist his sympathy.

PROTECTION AND PRODUCTION.*

LIKE the Jews of old, most of us work with two hands: in one we bear a sword, and fight for the works of our forefathers; in the other we bear a trowel, and build up as best we may the works that are to express our age to future generations. The temper of protection which this society preaches is one that recognises the genius of the place. We desire that buildings and movable works of art should be carefully and reverently preserved *in situ*. We believe that all fine production is organic, and its real life inseparable from its surroundings. Accordingly this society intercedes for the life of ancient art, shows how it may be prolonged by proper care and use, denies that it can be restored when it has been killed, and both in town and country urges the value of the past upon the present. But the times have been very difficult, and emergencies have arisen under such hasty pressure, that the protection we advocate has often been practically impossible, and so we have to be grateful for the protection afforded by museums to movable works of art. These seem to be the two forms of protection that have become established. The one (in England) has been initiated, and is maintained by the voluntary effort of those who value the spirit of art. The other has been initiated rather by the collector, and is maintained by the State. But why do we take all this trouble to protect ancient art at all? Why do we set such store by our collections of the scattered fragments of antiquity? Are we not in danger of being buried beneath the accumulated stores of bygone material? Indeed, I can understand that humorous recoil from protection which Nathaniel Hawthorne expressed when—after spending some hours in the British Museum—he wished "That the whole past might be swept away, and each generation compelled to bury and destroy whatever it had produced before being permitted to leave the stage. When we quit a house (he says), we are expected to make it clean for the next occupant · why ought we not to leave a clean world for the next generation?" Is there not even to us something attractive in the idea of a clean world, and starting afresh, and doing things because they were positive human requirements, and not clever refinements to meet shifting fancies, or learned exercises in the dead language of a buried style? And yet, when we have smiled over the fantasy of a clean world and a fresh start, we still remain subscribers to the S.P.A.B., and still believe in protection with all its perplexities and difficulties of conduct and adjustment. But why? I think these are the main reasons why it has been, and is now, so necessary to protect ancient art. Because in this century science and commerce have fashioned and demanded man's handiwork in such experimental haste, that human requirement has been deprived of its sobriety. Men have been distraught with their sudden command over time and space, bewildered with a reckless expansion of commerce, preoccupied with enterprises in defiance of natural obstacles, blinded with antiquarian research. So it has come to pass that old works wrought in a different and artistic temper have been destroyed as useless aberrations, or have been restored by means of scientific knowledge. In either case, protection has been the first thing needful. Again, because ancient art is one of the records of the soul of man. It comes down to us through all the shifts and confusions of the centuries with silent messages of spiritual beauty. Like creation, it has neither speech nor language, but its voice has gone out into all lands, and it reveals to us profound glimpses of a pervading inspiration. We, who perceive this, regard the destruction of work of art as a kind of murder, and their subsequent restoration as folly; for we believe that fine work expresses and fulfils the character and imagination of its own generation—and we know that the character and imagination of our own generation can neither be expressed nor fulfilled by scientific, eclectic copies of artistic, traditional achievements. Moreover, we know fine work has within it an inherent power of re-creation. It inspires. It is not merely for historical reasons, for connoisseurship, and for probable value that we protect ancient art, or that the State collects in our museums; but for inspiration. These works and specimens, we say, bear the stamp of permanent beauty. They are counsels of perfection. They have power within them to re-create, and the spirit that once inspired still emanates from them. Protection has been the first thing needful, and such, I believe, are the main reasons for the cause this society advocates. But when we have made our plea, and, through good fortune, a work of art has been protected and maintained *in situ*, or, failing this, its fragments preserved from utter destruction in a museum, I think we turn from past to present, and consider that the end both of protector and collector must be that art should again inspire man's handiwork, and again shape our surroundings. Thus we turn from protection to production, and ask ourselves how it came to pass that such works were produced, how such artists were trained, and, further, how we ourselves are profiting by our knowledge and appreciation of their achievement? To give adequate replies to such questions would require both space and resource far beyond my scope; but it seems to me that from one fine period of art we may gain a suggestion that applies to all. For example, we are all agreed in protecting and collecting the arts that grew and flourished in Italy from the 13th to the 16th centuries. This society has made protests on their behalf. The State has spent thousands in buying up the fragments that remain; and we know a great deal as to the customs and conditions that helped to produce this work we value so much. Well, speaking briefly and generally, it seems that the possibility of producing such works was sustained by means of a wise and constant public demand. A wise demand, and thus the best men in their respective crafts were encouraged. A constant demand, and thus such men and their assistants were kept in work. A public demand, and thus they were called on to give expression to national developments, rather than to the varying fancies of individual connoisseurs. Art was constantly wanted in daily public life. Patronage was wise, for those in power, whether in Church or State, employed the best men, and were ready to abide by the unexpected result. In short, production depended upon an organic custom of employment: a custom that extended to small as well as to great things. Well, how were the workers produced who did such fine things? And what were the methods of study that resulted so fortunately? Clearly methods which were so fruitful in results must share the permanent value of their achievement. The answer is simple: fine workers in the arts and crafts were produced by means of being apprenticed to fine producers; this was their training. The students grew up amid the restrictions, and the advantages, of real work. They absorbed, through practice, traditional methods and experience; they learnt, through practice, the limitations and requirements of work done for, or in, a given place. Thus trained, a born artist succeeded to the surplus work of his master, equipped for the task, and not too fine a gentleman for the job; while an average craftsman was honourably employed in giving help to masters of inexhaustible invention. How are we profiting by our knowledge of the event? It seems strange, but we have decided that artists should be trained in quite another way. Organic custom is no more to be depended on; but scientific system is to avail. Students are to be instructed in large numbers by certificated teachers; production is to be taught by way of abstract exercise, not of living practice; and eventually, when students are sufficiently advanced in their exercises, they may obtain medals and prizes, and may then depart to shift for themselves as best they can, thus making way for more students, more medals, more shifting, and so on. The scientific, political, and official educator likes schemes, schedules, classifications, certificated results, and we are apt to be overawed by this imposing machinery of means; yet, what is the result? We know the result of the old method of production. The work of this society is a standing protest on behalf of their achievement. The State attests its appreciation in our museums. What is the result of our system? The result is that a crowd of students are produced—a supply without relation to a demand—who find out through bitter experience that, in spite of their school success in scheduled exercises, there is no real work awaiting them outside, and that the only public occupation for artists which the State encourages is that of a certificated teacher. I do not think the S.P.A.B. of the future will deal swashing blows in protection of the results of our system, nor do I think that the museum authorities of the future will attest their appreciation by searching England for the relics of such production. Of course not, I shall now be told by the scientific educator; nobody pretends that a State system can produce artists, but it can give equal chances to all clever boys, and it can help the cleverest to emerge by means of examinations, certificates, medals, and prizes. This is the collective idea as applied to art. Is it, really? Does experience teach us to believe in the collective teaching of any art or craft? Is it not a matter of individual affinity? To come across a real live man, engaged upon a real live piece of work, is worth a wilderness of certificated masters; while, as to design, it cannot be taught or learnt apart from practice any more than you can learn to swim on a chair. The collective application of individual achievement—this is the collective idea as applied to art. By which you mean patronage, the statesman will reply, and patronage is without the scope of our Acts. Grants in aid may be mentioned, but it is quite idle to urge State patronage of the arts. We allude, of course, to the work of living artists. As soon as you are all dead, the State authorities who are responsible in these matters will be most happy to encourage such real talent as there may have been among you. Thus are we shown, as usual, to be unpractical persons. Indeed, the artist who writes or speaks on the subject of art does so in fear and trembling; for, traditionally, he is a silent man, "unwise by very reason of his diligence"—so says the Son of Sirach; "Deluded, in the thought that his craft skill gives him insight into all sorts of high matter"—so says Plato; "A trifler, incapable of higher things"—so says Plutarch. And our system is a high matter which confounds the knowledge of the deluded and trifling artist, for he knows that the beautiful works which have escaped from the wreck and restoration of the past were the work of living artists applied to the beautifying of daily life; and yet the same State system that protects and collects, that values and buys these fragments, shuts its eyes upon daily life, and tells us that it can only recognise the work of dead artists as applied to the filling of museums. Truly this is a strange connection between the works we protect and the works we desire to see produced. And it demands our close attention, for now, curiously enough, we see the opinions of this society—namely, that works of art should be retained and maintained *in situ*—are being adopted by the statesman, though not perhaps entirely for our reasons. France has got its ancient buildings swept and garnished, scheduled as historic monuments, and placed under the central sway of an official department. Italy has been awakened to the fact that foreigners come there to see its ancient art, and that the country is being spoiled of its wealth owing to the carelessness of custodians, the enterprise of dealers in antiquities, and the demand of foreign museums. Accordingly, works of art in churches, sacristies, and other buildings are for the future declared to be national monuments, and a State prison awaits the salesman. While at the present moment here in England this State protection of ancient buildings is being propounded as part of the solution of a great social problem. We are now well aware of what we may expect from the State system of science and art so far as it affects production. I do not think the spectacle of our daily public life bears favourable witness to the policy of the past 40 years, and we shall surely do well to pause and to consider before a scientific State system of protection of ancient buildings is inaugurated in this country, whether our experience reasonably leads us to hope that the life of ancient art can possibly be prolonged by the official care of a State department, by unsectarian committees, by scientific custodians, and by policemen. Not in this fashion shall we rightly protect or truly reverence the work of our forefathers; not in this way shall we ever achieve the ideal raised by William Morris, of an art produced "by the people, for the people, a joy to the maker and the user," nor attain our desire that art should again inspire man's handiwork, and again shape our surroundings.

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* By HEYWOOD SUMNER. A paper read before the Society for the Protection of Ancient Buildings.

THE THRUSTS ON WALLS AND ARCHES.*

By G. A. T. Middleton.

CHAPTER IV.—RETAINING WALLS SUBJECT TO EARTH PRESSURES.

IN dealing with retaining walls, the main difficulty is to ascertain the pressure which is bearing against them, tending to cause them to overturn; and there are two main cases to be considered—those of earth and those of water pressures. By earth pressure is meant the thrust due to *dry* earth, as if it be wet or waterlogged through lack of proper drainage at back of and weep-holes through the wall, the thrust approximates to that from water. This warning is the more necessary, as water-pressures, as will be presently shown, are considerably greater than earth pressures, and therefore a wall designed to be amply safe when retaining earth may well overturn when that earth becomes charged with water for which no means of escape has been provided.

Different classes of earths have very different effects upon a retaining wall, this depending upon the *natural slope*, or *angle of repose*, which will be assumed by a heap of this earth when resting upon the ground. The following table, taken from the "R.E. Aide-Mémoire," gives the angle of repose of most earths met with in practical work; but where it should happen not to apply, the value can be very readily found by a simple experiment.

Class of Earth.	Angle of Repose.	Ratio of Base of Slope to Height.
Fine dry sand	37° to 31°	1·3 to 1, to 1·6 to 1
Sand, wet	26°	2 to 1
„ very wet	32°	1·6 to 1
Vegetable earth, dry	29°	1·8 to 1
„ „ moist	45° to 49°	1 to 1, to ·87 to 1
„ „ very wet	17°	3·27 to 1
„ „ punned	66° to 74°	·45 to 1, to ·28 to 1
Clay, dry	29°	1·8 to 1
„ damp, well drained	45°	1 to 1
„ wet	16°	3·5 to 1
Gravel, clean	48°	·9 to 1
„ with sand	26°	2 to 1
Loose shingle	39°	1·2 to 1
Peat	14° to 45°	4 to 1, to 1 to 1

It will thus be seen that all particles of earth lying within the angle of repose are naturally held in equilibrium, and are in repose, needing no retaining wall to support them. Particles lying directly beyond this slope, moreover, tend to roll down it, but with a motion and force greatly impeded by friction; while, assuming the back of retaining wall to be vertical, the particles next to the wall tend to fall vertically downwards. Between these two extremes there are all degrees. In any event, however, it may be conceded that the pressure against the back of the retaining wall is that due to the prism of earth above the angle of repose, and that this is resisted partly by the friction of the earth below, and partly by the retaining wall.

Of course, it is possible for the surface of the retained earth to be either horizontal or inclined at any angle within the angle of reposed—or even to be declined, though this last case is rare, and scarcely ever calculated for. In the case of a horizontal or surcharged surface, however, there are widely different opinions held by various authorities as to the direction in which the resultant pressure of the active prism of earth will be exerted against the wall. Poncelet holds that it is always horizontal, Rankine that it is always parallel to the actual surface of the earth, and Scheffler that it is always parallel to the natural slope. Poncelet's direction gives the greatest moment of overturning, Rankine's is mathematically true for perfectly dry earth, while Scheffler's has been found in practice, though giving the least moment of overturning, to be reliable. Rankine's, however, is the theory most generally adhered to—in England, at any rate.

Returning now to the consideration of the value of the thrust, and taking the case shown in Fig. 13 as a generally typical one, the wall being rectangular, the earth surcharged to the plane D E, which is within the natural slope, the angle of repose being A B C, it is seen that it is the prism of earth E D B A which is active to cause thrust against the wall. The earth within this prism has, as has been already shown, exceedingly various tendencies to press outwards against the back of the wall D B, and it is a usual and sufficiently correct custom to bisect the angle D B A by the line B F, and to consider the triangular prism of earth D B F as being homogeneous, and to be acting as a wedge against the two plane surfaces D B and B F, which are devoid of friction, offering only dead resistance.

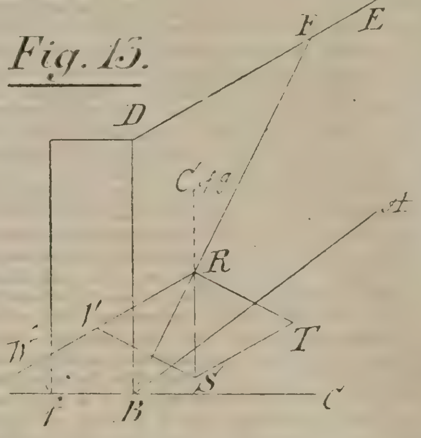
Fig. 13.

The weight of, say, 1ft. run of this prism D B F of the earth under consideration is now ascertained from the following table:—

WEIGHT PER CUBIC YARD OF DIFFERENT SOILS.

	cwt.		cwt.
Dry peat	7½	Common gravel	27
Wet peat	15	Wet sand	28
Top soil	20	Gravelly clay	30
Dry sand	22	Rough water gravel	34
Common earth	24	Grey chalk	36
Sandy loam	24	Sandstone	37
Marl	26	Shale	39
Clay	27	Limestone	40

This weight is collected at the centre of gravity of the triangle D B F, and acts vertically downwards until it impinges at R upon the line B F. At this point it is set vertically downwards, as R S, to a scale of weights, and is resolved out according to the parallelogram of forces into its two component forces, R V acting parallel to the surface of the ground, and R T acting perpendicularly to the line B F. R V is the measure to scale of the force tending to overturn the wall, acting in a direction parallel to the surface of the earth, and impinging upon the back of the wall at a distance from its base equal to one-third of its height, as is shown by the construction. The moment tending to overturn the wall about the point *f* is, therefore, R V × W *f*, the distance W *f* being measured by dropping a line from *f* perpendicularly to the line R V continued.

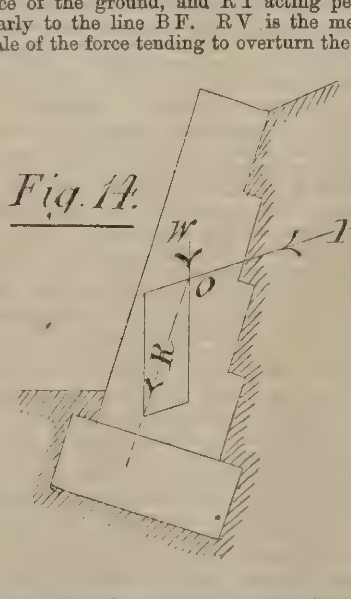
Fig. 14.

This tendency to rotate, of course, has to be met by the tendency to rotate in the opposite direction, as measured by the moment of the weight of the wall, also taken about *f*.

Had Poncelet's theory been adopted, the line R V would have been drawn horizontally; while according to Scheffler's, it would have been laid down parallel to B A, the natural slope. This would not only have altered the length of R V, but also that of the line W *f* drawn perpendicularly to it from *f*, and so have materially modified the result.

So far as the weight of the wall is concerned, this is usually easily ascertained; but it should be borne in mind that if the back be either battered or built in off-sets, all earth lying vertically above the base of the wall acts to assist the wall. Its weight should be added to that of the wall, and concentrated at the c.g. of wall and of this earth combined. At the same time, the back of the wall, against which there is earth pressure (R V, as found above), must be considered to be a vertical line drawn upwards vertically from the back of the base of the wall.

As to the shape which the section of the wall should assume, this is largely a matter of convenience. The rectangular, vertical form is possibly the most common in most work; but its value can be greatly increased by sloping it backwards, so that a vertical line through its c.g. falls further within the base. External buttresses are often used, and, if not too far apart, are valuable additions as widening the base, overturning having then to take place round their outer edge instead of round that of the wall. Where circumstances do not permit of their introduction, internal counterforts are often used instead; but they can hardly be considered to be so valuable, acting in tension instead of compression. Battered faces, internal or external, are economical in masonry or concrete, but difficult to bond well in brickwork if the other face be kept vertical. A stepped back with vertical face has much to recommend it; but possibly the best form for brickwork is that shown in Fig. 14. In this, the the pressure P, as already found, and the weight of wall W meet at O, where a parallelogram of forces is formed, the resultant R of which passes within the centre third of base. The concrete is set at right angles to the direction of R, and the face of wall at right angles to concrete and parallel to R, the back being stepped, but kept parallel to the face.

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FAILURE OF CAST-IRON COLUMNS.

IF there is one situation in which, under certain conditions, the architect and the engineer feels himself thoroughly justified in employing cast iron, it will be universally conceded that it is in the form of the column or pillar. It matters little or nothing, so far as the principle is concerned, whether the section be that of the hollow cylinder or of the solid cruciform, or of the H, or of any other shape, which might suit the particular circumstances of the case. It is exceedingly rare that any instances have occurred in which cast-iron has been known to fail when subjected to the proper and fair amount of stress, both in character and amount, while acting as a vertical support to a vertical load. When, therefore, the failure of the material takes place under all these conditions favourable to the stability and durability of the column, especially when as in the example we intend describing, the failure is on a scale of considerable magnitude, it not only becomes endowed with a large amount of interest, but it carries with it a lesson which is worth the attention and consideration of all those—as the majority of our readers are—who are engaged in works of construction. It was on one of the Austrian railways near Eibenschitz, in Moravia, on the viaduct over the river Iglawa, that the cast-iron columns supporting the superstructure proved defective. The viaduct itself consists of six spans of 200ft. each, of lattice girders continuous over the intermediate piers. Each pier is built up of four cast-iron columns, having a maximum height of 90ft. braced longitudinally, diagonally, and transversely by channel irons, the whole being strongly bolted together. The columns are cylindrical, having a diameter of 1ft. 7in. and a thickness of 1½in., and are cast in lengths of 16ft. 5in., with internal flanges to take the connecting bolts. A rake or batter of 1 in 10 was given to the piers, the separate columns of which were securely bolted down to the foundations of masonry and concrete by holding-down bolts 14ft. in length and 2½in.

in diameter. Over the piers the ends of the girders were supported upon a short bearing beam, which was pivoted upon the pin of a roller bed-plate resting over the wrought-iron cap which united the columns of the pier.

It is not necessary to carry the investigation very far, before arriving at a conclusion, which if not completely decisive, will afford, at any rate, very valid reasons for the pillars evincing the unmistakable signs of weakness which characterised their behaviour not very long after they were erected. In the first place, the length of each separate column is of a dimension sufficiently great to allow of a very considerable amount of vibratory action. This oscillation, or tendency to lateral deformation, would occur notwithstanding the efficiency, or as it might be, deficiency, of the cross-bracing between the individual columns constituting the entire pier. It must also be kept in view, in considering the subject, that for the whole of this height of 90ft. the interior of the pillars was filled with concrete, and we have this important distinction to bear in mind. It is, that while the material of the columns, that is, the cast iron, by reason of each column being cast in separate lengths of about 16ft. would yield a little to any swaying or rocking movement, such as no doubt takes place in a pier of the height of 90ft., the concrete inside would not. This difference between the behaviour of the cast iron forming the hollow column and the material inside it which may be considered in the light of a core inside a casting, unquestionably led to the incipient splitting, or the development of the longitudinal cracks or fissures which were observed in the defective columns. At first these vertical or longitudinal cracks were barely perceptible; but as the operative cause which originally gave rise to them continued to act, excited by the *vis viva* of every passing train, they speedily became so apparent that the safety of the whole structure was seriously imperilled. It is very probable in analysing the whole circumstances of this very peculiar, if not altogether novel, constructive defect, that the different rates of expansion and contraction of the cast-iron column itself and the concrete in the interior may have had something to do with the fissures in the ironwork. Both causes were at work, threatening first the stability of each separate column, and ultimately as an unavoidable sequence that of the whole pier. These defects in the cast-iron columns became so serious that all the piers were removed and replaced by substitutes of wrought iron—a change for which we are not aware there has hitherto been any precedent. F. C.

STATISTICS OF THEATRE FIRES.

AT the end of 1893, Herr August Foelsch, the eminent German engineer, died at Hamburg, where he had retired after a most active life on the Empress Elizabeth Railroad (Austria), Lyon-Avignon (France), and other important railways.

The name of this engineer is closely associated with the question of theatre fires and theatre legislature, for many years ago he commenced a close study of the subject, gathering from all quarters of the globe particulars of every theatre fire, noting down the cause and effect. In 1870 he published his first list, which contained accounts of 130 theatre fires, which list he laid before a meeting of the Vienna Architectural Society. In 1878 his list had increased to particulars of 500 theatre fires, while, in 1883, it had been augmented by another hundred. In this manner Herr Foelsch collected data for the guidance and information of his fellow-beings till the day of his death.

The value of the lessons taught by reliable accounts of what has occurred in all countries, at all times, and under all conditions, must be clear to the architect, as well as to the fire expert; for these examples of causes of danger point out what to end and what to amend in the future arrangements and protection of this important class of building. It is, therefore, a matter of congratulation that these valuable statistics have fallen into the hands of an English architect, Mr. Edwin O. Sachs, who has been appointed by the executors of the late Herr Foelsch to continue the work already so ably commenced. This step has been taken under the advice of the superintendent of Hamburg buildings and other important public authorities, and the materials already collected have been forwarded to London for Mr. Sachs to publish and add to, bringing up to date, and continuing.

Herr Foelsch was practically the father of Continental theatre legislation, assisted, it is understood, as far as the essentially practical points were concerned, by the late chief officers of the London and Berlin Fire Brigades, Sir Eyre M. Shaw and Herr Stude.

To give some idea of the nature of the statistics collected by this engineer, we find that up to 1883 twenty per cent. of theatre fires commenced in the day time, 11½ per cent. during the presence of the public, 22 per cent. within two hours after the public had left, and 40 per cent. occurred during the night time. These figures were gathered from authentic and full particulars obtained from accounts of 370 fires. Of course small fires in theatres are not taken into account, as they are difficult to find out; they would swell the list to many thousands.

The first fire that Herr Foelsch mentions in his list is one that occurred B.C. 14, in the amphitheatre of Statilius Taurus; the second noted is the burning of the woodwork of the Circus Maximus, A.D. 21, both at Rome; and so on till we get to the present decade, where about 180 fires are chronicled from between the years 1871-1881. Since 1881 it is roughly estimated that some 300 theatre fires of importance have taken place. Some of the worst are as follows; Brooklyn, 1876, about 280 deaths; Nice, 1881, about 175 deaths; Vienna, 1881, about 450 deaths; Paris, 1887, about 115 deaths; Exeter, 1887, about 85 deaths.

Mr. Sachs, as an architect, will doubtless give force to all points of this important question which are of special interest to architects; he has had exceptional opportunities of obtaining experience on the subject, for, when studying abroad, he attached himself to the head-quarters' staff of the Berlin Royal Police Fire Brigade, and afterwards as supernumerary commissioner in the Vienna Metropolitan Fire Brigade, in both of which cities his duties included the official inspection of theatres. It is, therefore, as a fire expert, as well as an architect, that the work of Herr Foelsch will be continued by Mr. Sachs, and it is understood that he already possesses enough valuable material to give details of quite 1,100 catastrophes. His appointment to continue the work is one favoured by the architects and engineers concerned, as well as the fire officers abroad, who there play a much more important part in their countries' legislatures than firemen do in this country.

The headings under which the statistics will be continued refer to the details of the origin and to the presence of fire watches, permanent or otherwise, the means of communication with the nearest fire station and the distance therefrom, the available force to assist at the fire and the ambulance facilities.

Londoners and architects may consider themselves fortunate that a fellow-countryman has been selected to continue the collection of this valuable information.

TESTING TIMBER.

THE U.S. Government's investigations of American timber being made under Mr. B. Fernow, of the Forestry division, will be of value to builders and architects in the States. These investigations have been made to determine the physical, mechanical, chemical, and other properties of American timbers, and especially the inter-relation existing between these properties. The idea is to combine the results and establish the science of "timber physics." The results ascertained regarding certain timbers, like the "long-leaf yellow pine," which is abundant in the Southern States, are of value. Mr. Kellar, of the Engineers' Club of Philadelphia, describes the methods and apparatus used in determining these data. The tests are carried out at the St. Louis Test Laboratory under Prof. Johnson. The logs vary from 12 to 18ft. in length, and are sawn and stencilled so that their exact position on the tree can be found. Some of these sticks are tested at once, others are seasoned. The tests are (*a*) for cross-breaking of large and small beams; (*b*) tension; (*c*) compression, endwise, and across grain; (*d*) shearing; (*e*) tests on full-size columns. The machines used are of two kinds, one of 100,000lb. for testing large beams, and a smaller one for testing small beams, 4in. by 4in. by 6ft. The cross-breaking tests are plotted to a curve, using the deflections as abscissæ and the loads as ordinates. From the curve the modulus of elasticity was taken as $E = \frac{W}{D} \cdot \frac{l^3}{4 b h^3}$ where W = load in pounds, D = deflection in inches, and l, b, h the length, breadth, and height, the value of $\frac{W}{D}$ being taken as the tangent of the angle made by the original direction of the curve with the axis of the abscissæ. For tensile tests the breaking section is 2½in. by ⅜in.; the endwise compression tests are made on specimens 4in. square and 8in. long. The shearing tests are made on specimens 2in. square and 8in. long. Rectangular holes are mortised 1in. from the ends, the holes being at right angles. For testing full-size columns, the machine has a capacity of 1,000,000lb., and will take a column 14in. square and 30ft. long. Other tests are made for specific gravity and percentage moisture. The long-leaf pine has leaves 9in. to 12in. long, three in a bundle; it has long cones, 6in. or 9in. long, and its wood is the heaviest of the Southern pines, weighing 48lb. per cubic foot. The grain is even, of reddish yellow colour, full of pitch, and with little sap. It is valuable for all constructive purposes, and is the strongest timber in the States. A table of the mechanical properties of this pine is given in a communication in the *Proceedings* of the Engineer Club for March, which contain several particulars of interest, and from which we have quoted.

THE LONDON AND NORTH-WESTERN RAILWAY COMPANY.

GREAT improvements have just been made at the Willesden Junction and Euston Stations for the London and North-Western Railway Co., largely facilitating passenger and vehicular traffic. At the former station the alterations and additions comprise new railway-bridge for Broad-street trains, together with platforms, waiting and refreshment rooms, booking-halls, &c.; approach incline from Harlesden-road low-level platform; iron footbridge for passenger traffic, and additional bay to Harrow-road bridge. About 1,000 tons of iron and steel have been used in these works.

At Euston, a steel bridge 150ft. by 26ft. has been erected, together with approach roadway on massive brick viaducts, for the purpose of taking the milk and parcels traffic. This work necessitated the raising of the roof bodily the whole length of the bridge, and also some very heavy shoring under the existing buildings while inserting girders, which could only be carried out under difficulty, owing to the immense weight to be supported. New offices, platforms, and the general reconstruction of a large portion of the station have been effected.

The whole of this work has been carried out without hitch or inconvenience to the traffic, at a cost of about £60,000, by the contractors, Messrs. Kirk and Randall, of Woolwich, who have completed the work at Euston in the extraordinarily short space of twenty weeks.

THE SOCIETY OF ARCHITECTS AND EXAMINATION FOR MEMBERSHIP.

THE following report of the council of the Society of Architects on the question of examination for membership appears in the current number of the *Journal* of the society:—

On June 26, 1894, the council adopted the following report of the committee on the examination of members:—

"The subject of the desirability or otherwise of an examination of candidates for membership was referred to the council at the Annual General Meeting, held in October, 1893, and since then it has been under careful consideration. A committee was appointed, and drew up a series of questions, which were approved by the council, and submitted to the members of the society. The replies received have been considered, and the opinion of the members appearing to be practically unanimous, the council have decided as follows:—

"1. That after Oct. 31, 1896, election to membership will only be open to candidates who have passed the society's examination, with the following exceptions: (*a*) Candidates who are not less than 35 years of age, and have been directly engaged professionally in architectural pursuits as principals for at least seven years. (*b*) Candidates who are not less than 35 years of age, and have been directly engaged professionally in architectural pursuits as assistants for at least ten years.

"Candidates applying for membership under (*a*) and (*b*) will be required, as heretofore, to submit drawings and other proofs of their professional abilities.

"2. That the scheme of examination shall be formulated and published before June 30, 1895.

"3. That a register of students between the ages of 17 and 23 years be opened on Nov. 1, 1894. Registered students shall be pupils or assistants in architects' offices, and be nominated by a member of the society, subject to the approval of the council.

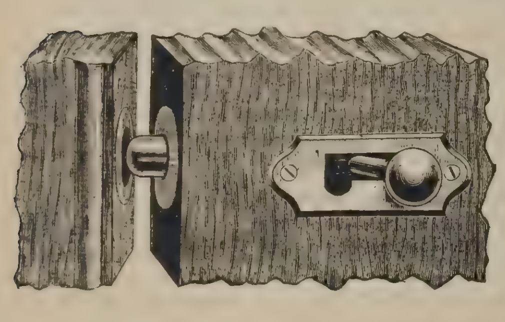
"4. Registered students shall be entitled to the following privileges: Free admission to lectures to be delivered under the direction of the council in London and the Provinces; a ticket giving admission to the society's ordinary meetings, and the use of the society's library for reference; and a copy of each issue of the *Journal.*

"5. That each registered student shall be required to pay 5s. per annum on Nov. 1 in each year, and shall cease to be a registered student on Oct. 31 next after attaining the age of 23 years."

The above report will be laid before the members at the Annual General Meeting in October next, of which due notice will be given.

THE PARAGON BOLT.

THIS new bolt, recently introduced by the Paragon Bolt Syndicate, Limited, of 14, Sherborne-lane, E.C., is sufficiently explained in the sketch, which shows a portion of a door with bolt and socket as fixed. The advantages claimed for the Paragon bolt are great strength, being non-dependent for security on screws; neatness, smooth-shooting, and working not affected by dropping of door. There are no springs to get out of order, and upper bolt of door can be fixed within easy reach. The bolt has already been very favourably received by ironmongers and builders, and numbers have been supplied to several of the railway companies.



A FROTH JUG.

MESSRS. WRIGHT SUTCLIFFE AND SON, of Halifax, have introduced a handy "froth jug" for pouring frothy or fermented liquors. By means of this invention a great saving of labour and annoyance, particularly at a busy time, is effected—no shaking of the jug or blowing the froth away being required, and therefore no wasting of the liquor, as the beer or stout can be poured direct into the glass without a moment's delay.

Already, in a very short time, there have been over 600 of these jugs sold in Halifax. The jug is bound to become popular in all places of entertainment.

COMPETITIONS.

Belfast.—In this competition for a building to cost £20,000, for the Mater Infirmorum Hospital, Belfast, an open preliminary competition was advertised, with a final competition of four or five selected competitors with a small honorarium to each. The assessor, Mr. J. Drew, F.R.I.B.A., has reported, deprecating the waste of time and want of candour that would be involved in inviting several architects to compete again, with a foregone conclusion as to the result. The designs sent in are conclusive as to the main point of a hospital—good general planning. The result of a second competition would be only to place the design now first in the first place again. He recommends the payment of an honorarium to each of the unsuccessful placed competitors. The anonymity of this competition was very successfully preserved, the designs having been sent to the assessor unmarked, undistinguished, and dealt with by himself personally, without the least interference by the promoters, and Mr. Drew's selection has been frankly approved by the R.C. Bishop of Down and Connor as follows: (1) Mr. W. J. Fennell, Belfast; (2) Mr. W. G. W. Ferguson, Belfast; (3) Mr. Godfrew W. Ferguson, Belfast, and Mr. A. J. Gordon, London; (4) Mr. A. T. Jackson, Belfast.

Lancaster.—At a meeting on June 22nd, the designs for the proposed market extension and new hotel in Common Garden-street were considered. Mr. Austin, the assessor appointed by the corporation, reported that the design submitted under the motto "Hostelry" was the best, and that the design submitted under the motto "Onward" was the second in order of merit. It was resolved that the first premium of £75 be awarded to the author of the design sent in under the motto "Hostelry," and that the second premium of £25 be awarded to the author of the design sent in under the motto "Onward." The envelopes containing the names of the competitors were then opened by the chairman, when it was found that the name and address of the competitor under the motto "Hostelry" was Mr. Luke Barlow, of Manchester, and the name and address of the competitor under the motto "Onward" was Mr. Robert Walker, of Windermere. It was also resolved that Mr. Austin's account for acting as assessor on the plans, amounting to £10 10s., be passed for payment.

Monmouth.—At the monthly meeting of the town council, held on Monday, the report of Messrs. Bramwell and Harris, civil engineers, London, on the 18 competitive schemes sent in for drainage and disposal of sewage in the borough was read, and a prize of 30 guineas was awarded to Mr. W. H. Radford, Nottingham, for the best, and a prize of 20 guineas to Messrs. John Parkin and Son, Westminster, for the second best scheme.

Proposed Lunatic Asylum at Bexley.—At Tuesday's meeting of the London County Council the Asylums Committee reported that the purchase of the portion of Baldwyn's estate, Bexley, Kent, as a site for a new asylum was completed on April 10. They now proposed to provide the asylum, to obtain by public advertisement plans and estimates for the erection of an asylum for 2,000 patients, and to duly submit, for the approval of the Council, the design selected. They accordingly recommended that they should be authorised to incur a preliminary expenditure of £2,000. Mr. M'Dougall moved, and Mr. Beachcroft seconded, an amendment that it should be an instruction to the Asylums Committee that the cost (exclusive of site and furnishing) must not exceed £350,000, and that they should engage an architect to be paid by salary, and the necessary assistants, to prepare the plans and supervise the erection of the proposed asylum. During a long discussion, Dr. Cooper expressed his regret that the committee should have gone in the face of medical opinion in asking the Council to erect an asylum for 2,000 patients. It was impossible to treat the disease properly, from a medical point of view, where lunatics were congregated together in such large numbers. This amendment was on a division carried by a majority of 22 votes the numbers being 57 for and 35 against. The amendment, therefore, became the substantive motion, and Mr. Martineau moved to leave out all the words after the word "architect" and insert words asking the committee to consider the advisability of engaging an architect to prepare plans and supervise the erection of the asylum for a fee of £10,000. After considerable discussion this amendment was negatived. Mr. Pearce moved, and Mr. Leon seconded, an amendment reducing the cost of the asylum from £350,000 to £300,000, and, without debate, this was agreed to on a show of hands.

CHIPS.

An anonymous donor has given £2,800 for the erection of a statue of Robert Schumann at Leipsic.

The Select Committee on House of Commons Accommodation decided, on Wednesday, after hearing the evidence of Mr. John Taylor, senior surveyor to H.M. Office of Works, not to recommend any enlargement of the Legislative Chamber itself. They will now proceed to consider the question of the accommodation provided in the precincts of the House.

The London County Council have come to an agreement with the promoters of the London, Walthamstow, and Epping Forest Railway Bill, upon the question of running workmen's trains. The chairman of the Select Committee therefore moved on Tuesday for the recommittal of this Bill, which had been abandoned by the promoters.

The Manchester city council had under consideration on Wednesday a report from the Ship Canal committee, recommending the appointment of a responsible director of the whole undertaking, provided the entire services of Mr. Bythell could be secured at a salary of £3,000 a year. The report was adopted after a discussion.

The West Highland Railway, the first sod of which was cut four years ago, is now completed, and will be opened on Thursday in next week. The line, which is an extension of the North British system, begins at Craigendoran, about 15 miles from Glasgow, and ends at Fort William, with a branch to Banavie. It is 110 miles in length. Though some parts of the line attain an altitude of nearly 1,400ft. above the sea-level, Mr. Forman, the engineer-in-chief, who planned the route, has so dealt with the various gradients that the rise and fall are scarcely perceptible. Messrs. Lucas and Aird were the contractors.

An appeal is being made by the rector of Ledbury for £2,000, to complete the restoration of his beautiful church, one of the finest in Herefordshire.

The proposed length of the maritime canal between the Bay of Biscay and the Mediterranean varies from 220 to 320 miles, and the cost from 1,000 to 1,500 million francs. Some competitors at the exhibition of plans, however, propose that vessels should be transported by railway, or by rolling docks propelled by electricity. The promotors have invited the Government to appoint a commission to report on the plans.

The London County Council discussed and adopted on Tuesday the recommendation of a committee that eight separate Bills be prepared and introduced next session for the acquisition by the Council of the undertakings of the eight Metropolitan Water Companies.

The greater part of Monday's meeting of the Glasgow town council was taken up with discussing the salaries and wages question. A sub-committee recommended that in the master of works' office the salaries of the staff of twelve should be increased by £190, the assistant master of works receiving an advance from £300 to £350. It was also recommended that in the city engineer's office the salaries of the eight assistants should be raised by £180. After a long discussion, these propositions were adopted.

The opposition to the exhibition at the public museum in Preston of Michael Angelo's colossal replica of David has been successful, and on Tuesday large crowds assembled to watch the process of taking the statue to pieces.

The British Consul at Madeira reports that the railway from Funchal to the Mount, which has been in course of construction for some time, has been partly opened for traffic, and it is expected that the whole length will be opened during this year. It is the first railway ever constructed in Madeira, and is on the same principle as the Righi Railway. The total length of the line is 24,000 mètres, the gradient being 25 per cent.

Powers have been acquired for the construction of a new railway bridge over the Hudson River, New York, the main span of which will be more than 2,000ft. long. The bridge is to carry six railway tracks. The foundations of the structure are to be carried down to a depth of 210ft. below high water, which is far beyond the reach of the pneumatic process, and much deeper than any "Indian" well foundation yet sunk.

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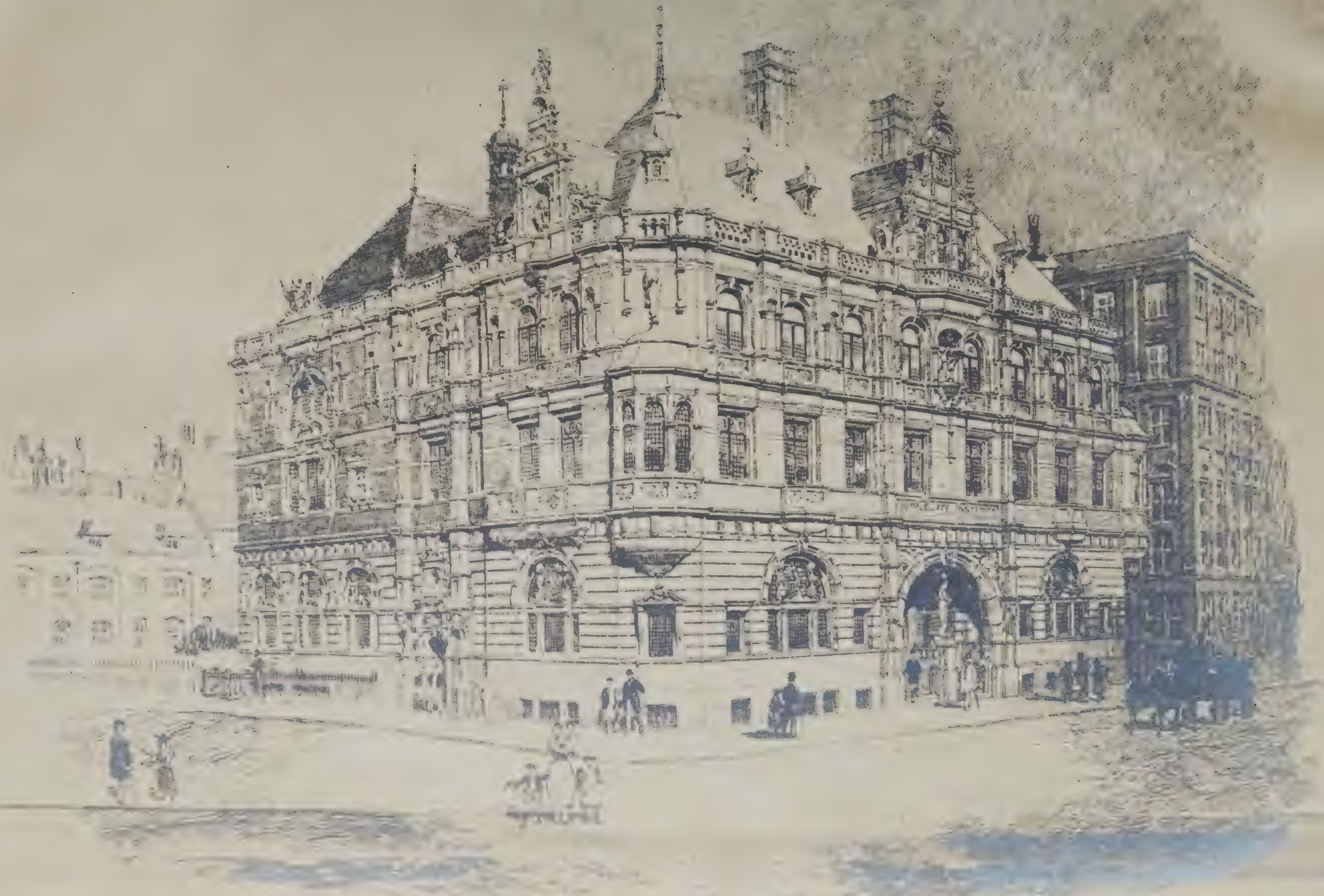
SYDNEY R. J. SMITH, F.R.I.B.A. ARCHT.



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Our Illustrations.

CRIPPLEGATE INSTITUTE, GOLDEN-LANE, E.C.

The memorial-stone of this building was laid by the Duke of York on Tuesday last, July 3. The building is being erected from designs by Mr. Sidney R. J. Smith, F.R.I.B.A., 14, York-buildings, Adelphi, W.C. Plans in competition from many well-known architects were sent in, and both Mr. Smith's two designs were placed first by Mr. MacVicar Anderson, then President of the Royal Institute of British Architects. The plans have been approved by the Charity Commissioners, and also the London County Council. The scheme is for a building containing library, concert-hall and adjuncts, and technical classrooms. The library is placed on the ground floor, easy of access, and contains reading-room 36ft. by 26ft., newsroom 36ft. by 26ft., and a circulating library to hold 50,000 volumes; and there are also large ward offices on this floor. The first floor is devoted to concert-hall (a large room, 76ft. by 40ft., to accommodate about 450 persons), and also cloak-rooms, committee-room, and a handsome refreshment-room 30ft. by 23ft. On the second floor are the technical classrooms, &c., four in number, and also a caretaker's house, while in the basement are staff-rooms, boiler-house, strong-room, stores, &c. The foundation-stone is a fine block of Portland stone, with a granite tablet and gold letters, bearing the following inscription:—

CRIPPLEGATE INSTITUTE.
This stone was laid by
H.R.H the Duke of York, K.G.,
on the 3rd July, 1894.
H. J. Felton, Chairman.
Sidney R. J. Smith, F.R.I.B.A., Architect.

The building is to be externally of red bricks and Portland stone.

CHRIST'S HOSPITAL NEW BOARDING SCHOOLS, HORSHAM.

Following up the series of plates already given in our last two numbers in illustration of these designs, we continue our selection of reproductions taken from the original drawings submitted in this important and extremely interesting competition. Mr. T. G. Jackson, A.R.A., removed his plans after the award had been made, so that our descriptive notes published three weeks ago cannot be supplemented by any illustrations. As might be, of course, depended upon, there was much in his design which may be described as admirable; but it lost the advantage obtained by good perspective views, as none were exhibited in illustration of his scheme, and indeed his general elevations were hardly shown to the best advantage, while the block plan, the only sheet representing the undertaking as a whole, looked confusing and difficult to readily understand. The inevitable impression left, therefore, on the mind, unfortunately, is that Mr. Jackson hardly did himself justice on this occasion. Our four plates accompanying these remarks to-day are devoted to the further elucidation of the chosen design by Messrs. Webb and Bell, and in illustration of the dining-halls from the schemes of Messrs. Paley, Austin, and Paley, and Mr. T. E. Collcutt. The chapel in the selected plan, though pleasing and suitably treated, is not, in our opinion, the strongest feature in the general composition, and in comparison with Mr. Jackson's beautiful and dignified chapel, it must rank as decidedly inferior in idea, though allowance may be made in deference to the limitations of cost. The seating of the preparatory pupils in the aisle, though ingenious, isolates the younger children in an unhappy way from a view of the manual acts of the service at the altar; in fact, the arcade piers will entirely cut off from most of these little boys all view of the sanctuary. Children learn more by the eyes very often than by the ears, and object lessons with them are of prime consequence, engaging their attention and insuring good conduct far better when they are prominently located during service. To stow small children away in this fashion is perpetrating a permanent mistake. The chancel is mean and inadequate, showing little appreciation of a worthy service of the altar. The covered way leading from the cloisters to the dining-hall is divided by the old gateway seen in the view, and intended to be rebuilt as one of the main entrances to the quad. The same feature occurs in our second plate, which shows the library building, for which we have nothing but praise. Mr. Collcutt's dining-hall speaks for itself and calls for little comment here. It looks, perhaps, too much like a town hall or corn exchange, and is needlessly massive in constructional features. The tracery of the windows with the secondary arched rib is not very pretty, and repeats a form already made enough of in the roofing arches. Mr. Austin's dining-hall with its Fratery pulpitum, looks more hospitable anyhow, and in spite of the rigidly typical Perpendicular fenestration adopted, the interior appears more domestic-like and suitable. The gallery in the roof may serve perhaps a useful purpose, but if so, it would be conducive to "larks," and as an architectural feature it seems decidedly open to question other than as a quaint conceit on the part of the designer. The plans displayed under the view of Mr. Collcutt's hall show the arrangement of his block of boys' houses and masters' residences with their circular dormitories. A square treatment for these wards was shown as an alternative, but in other respects the plans remained the same. The cleverness of these buildings is conspicuous, but the defects following upon the isolation of the lavatories and consequent necessity of intercommunication in the corridors and landing spaces are manifest, insuring, as such an arrangement must, all kinds of pranks and exploits among the boys, with endless trials of anything like effective discipline.

WATERHEAD BATHS, OLDHAM.

This building, which was opened in May last, is situate at the corner of Cedar-street and Mortar-street. The superintendent's house, placed at the angle of the two streets, contains sitting-room, kitchen, and scullery on ground floor, three bedrooms, and has a cellar. In the centre of the block is a ticket-office, well lighted by a large bay window. This room contains fitments for storage of towels, &c. On each side of the room are the male and female entrance corridors, fitted with swing doors having upper panels glazed, and separated from ticket office by glazed screens with pay window and registering turnstiles to each, a gate being provided to turnstiles for use of officials, &c. The cross corridor behind leads on one side to 12 male slipper baths, and on the other to 6 female slipper baths, there being a separate waiting-room for each sex. The whole of the slipper baths are porcelain, glazed inside and out, and having no wood framing round. Five of the slipper baths will be used as first-class baths, having showers and other advantages over the remainder. The supply of hot and cold water is regulated by means of valves worked by a detachable handle by an attendant in the corridors. From the cross corridor the plunge bath is reached, the dimensions of this room being 74ft. by 46ft., with a water area of 60ft. by 26ft., the depth being 6ft. 6in. at one end and 3ft. 6in. at the other. The bottom is tiled with black and white tiles, formed in panels, the sides being faced with white glazed bricks. A diving platform is provided at the deep end of bath. Round the gangways are ranged 42 dressing boxes, there also being the necessary footbath, shower, w.c.'s, urinals, &c. Six Stott Thorp pendants, with ornamental wrought-iron scrolls, are provided. The entrances to this bath are so arranged that it can be used by either sex without interfering with private bath corridors. At the rear of the premises are the laundry and boiler house, the former being fitted up with all modern requisites, consisting of patent steam-power washing machine, also rinsing tank, with wringer having rollers of vulcanised indiarubber, wringing and mangling machine; drying chamber containing 6 drying horses, four washing troughs all fed with steam, hot and cold supply, the whole of machinery being worked by steam-power by means of a vertical steam-engine and shafting driven with belting. A two-flued boiler, 15ft. by 6ft. 6in., made by the Oldham Boiler Works Company, supplies steam for the whole of the system throughout. The floors to the whole of baths and corridors are of steel joists, and finished with granite-faced concrete, being plentifully supplied with channels and grids to convey away surplus water. The baths and corridors have dadoes of white glazed bricks, with ornamental bands at top. The whole of the premises are efficiently heated by steam. The continuous lantern lights both over plunge and private baths are made to open from end to end for ventilation by means of cranked levers, &c., worked by attendant from the floor. The whole of the building work has been carried out by Mr. William Lees, the sub-contractors being:—Excavating, concreting, and brickwork, Messrs. S. and J. Smethurst; masonry, Mr. J. Bebbington; steel joists, &c., Mr. Edward Wood, Manchester; wrought ironwork, Mr. J. Kershaw; slating, Mr. Joseph Jackson; plumbing, glazing, and painting, Messrs. Harker Brothers; and plastering, Mr. David Rothwell. The whole has been executed according to the plans and under the supervision of Mr. Charles T. Taylor, A.R.I.B.A., architect, 10, Clegg-street, Oldham, whose design was placed first by assessor in open competition.

DETAILS OF AN IRON GRILLE FROM BELGIUM.

These details of wrought ironwork, which we illustrate on another page, are good examples of modern metal work, well designed for the use intended of them, and coupled with a certain degree of character. They were designed for a Belgian House, of which Mr. P. Hankar is the architect, and our illustration is taken from the pages of our contemporary, *L'Emulation*.

CHIPS.

In the case of William Pailthorpe, of Belgrave, Leicestershire, and Leicester, builder, the discharge from bankruptcy has been suspended for two years ending April 19, 1895.

At the last meeting of the Libraries Committee of Glasgow Town Council, it was intimated that a legacy of between £3,000 and £4,000 had been left to the Mitchell Library by the late Mr. Edward Lewis Campbell, of Hillhead.

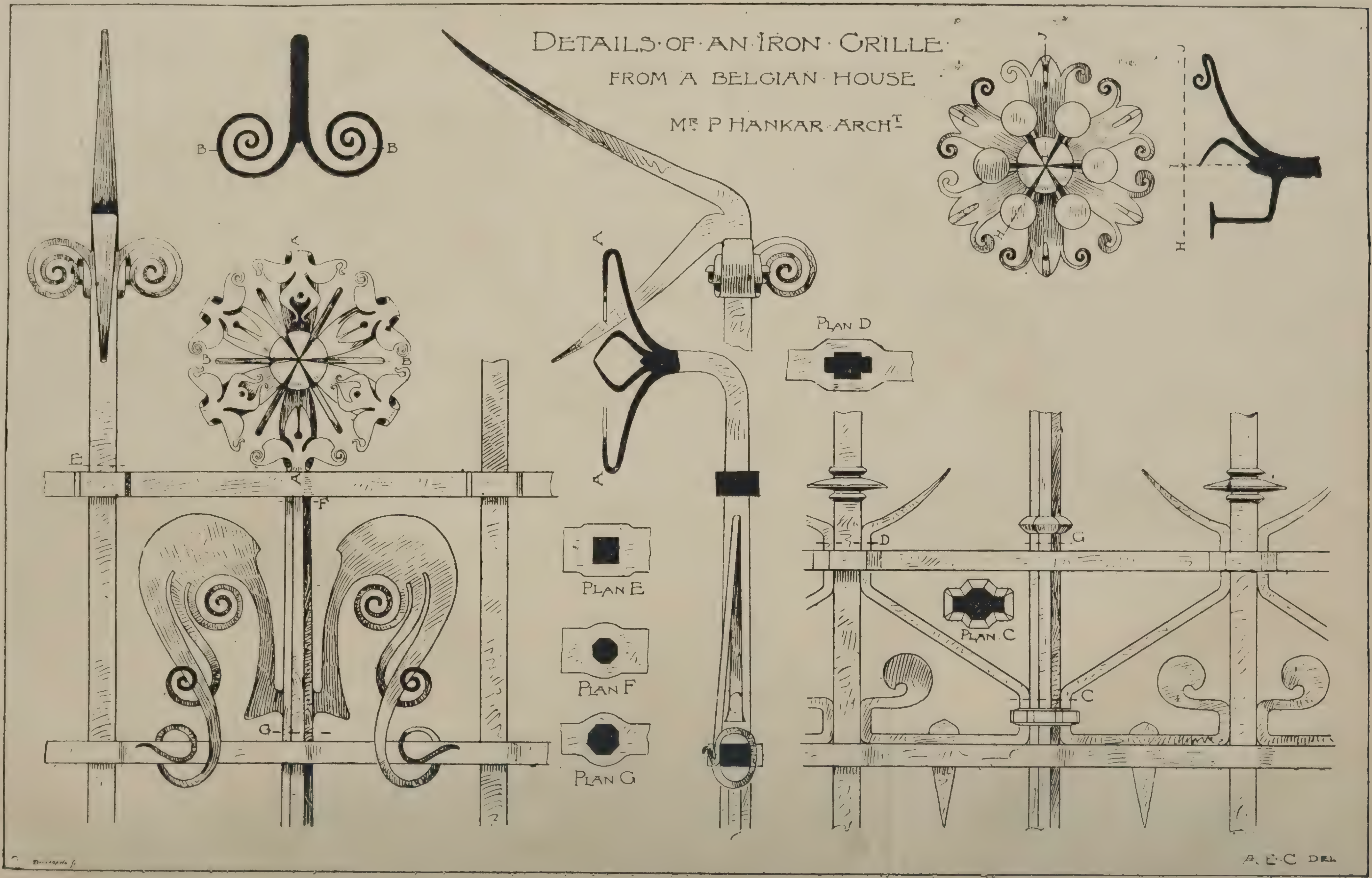
The members of the Cardiff Naturalists' Society had their annual field-day on Wednesday week, when a visit was paid to the Golden Valley, Herefordshire, under the guidance of the president, Mr. Edwin Seward, F.R.I.B.A. The places visited included Hay, Clifford Castle, Peterchurch, Vowchurch, and Abbey Dore Church.

A Primitive Methodist chapel is about to be built at Ewloe, near Hawarden, from plans by Mr. J. D. Mould, of King-street, Manchester.

A villiage club-room, library, and reading-room are about to be built at Milton, Warwickshire, at the sole cost of a local owner of charcoal works. Mr. R. Dain, of Burslem, is the architect.

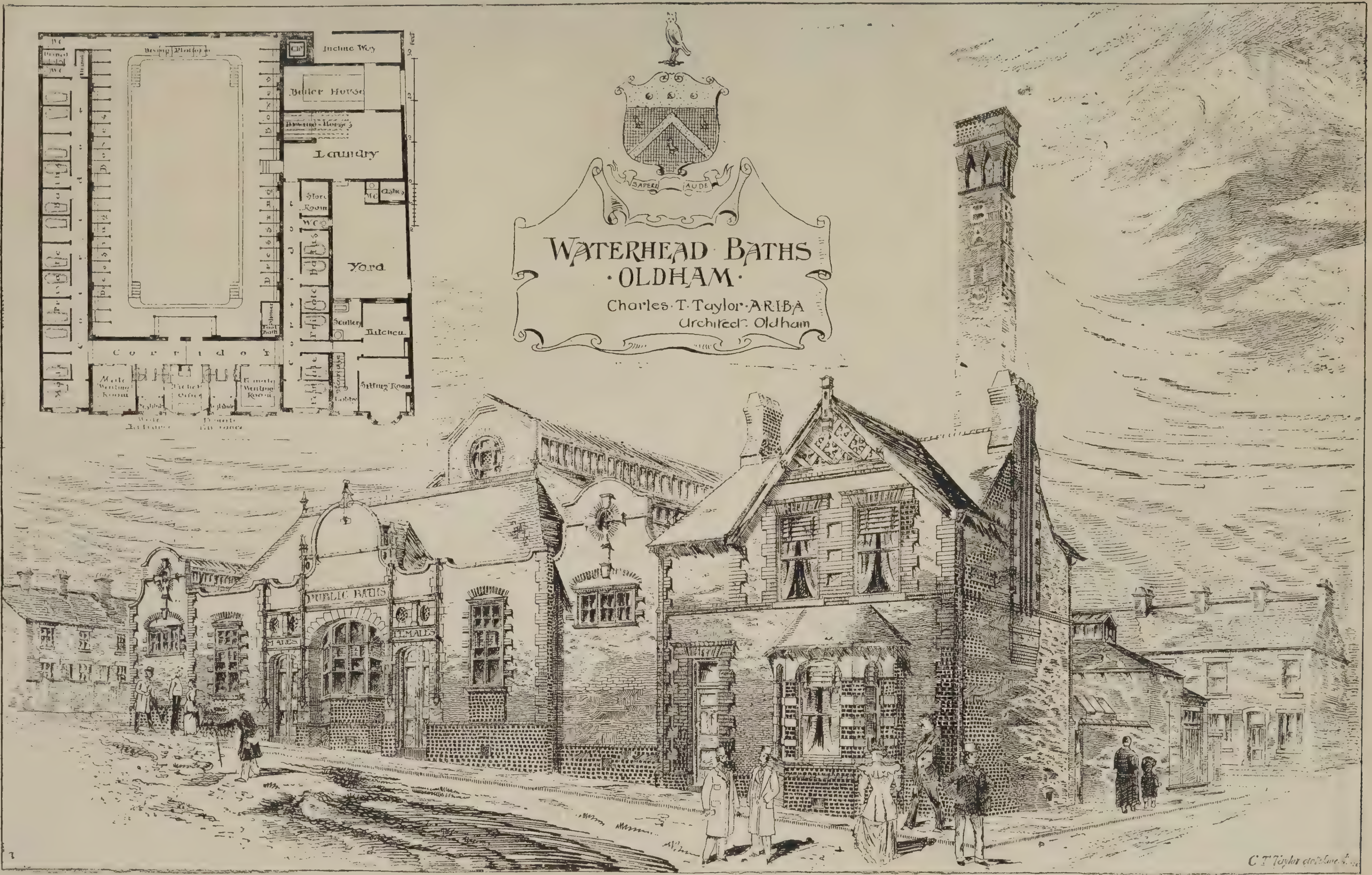
Some time ago the Markets Committee of the Leeds Corporation decided to remove the present Fish Market from Kirkgate to the Hay and Straw Market in York-street. They advertised for tenders for carrying out the work, and seven were received. The committee have accepted that from Messrs. Cross and Carter, of Bowman-lane, at about £3,000. The materials of the present building will be used for inside work in the construction of the new market, but there will be an entirely new roof, the old roof having been sold.

St. Werburgh's Church, Derby, which has been reconstructed from the designs of Sir Arthur Blomfield, A.R.A., at a cost of nearly £14,000, was consecrated on Thursday in last week by the Bishop of Southwell. The foundation-stone of the building was laid by the Duke of Devonshire in April, 1892.



DETAILS·OF·AN·IRON·GRILLE·
FROM A BELGIAN·HOUSE
Mr P HANKAR·ARCHT

A·E·C DEL


WATERHEAD · BATHS
· OLDHAM ·
Charles · T · Taylor · A.R.I.B.A
Architect · Oldham
SAPERE AUDE
Diving Platform
Incline Way
Chy
Boiler House
Drying Horses
Laundry
Store Room
W.C.
Ashes
Yard
Scullery
Kitchen
Staircase
Lobby
Sitting Room
Private Baths
Dressing Boxes
Dressing Boxes
Shower
Foot Bath
Corridor
Corridor
Corridor
Male Waiting Room
Ticket Office
Vestibule
Vestibule
Female Waiting Room
Male Entrance
Female Entrance
Urinal
W.C.
30 Feet
20
10
0
10
PUBLIC BATHS
MALES
FEMALES
C T Taylor

WAYSIDE NOTES.

I CANNOT account for the singular want of judgment displayed by those who have the charge of the thoroughfares of London on days like last Saturday, when Royalty is abroad on errands of usefulness. Here in the Strand, just before the procession passed, the streets were, quite unnecessarily, strewed with shell and gravel. The thoroughfares were quite clean, and the gravel was not in the least wanted. By three o'clock it had been trampled into a powder that was a nuisance, but not a water-cart put in an appearance, and people were literally white with dust, and freshly-painted shop-fronts were simply ruined. I suppose it is no one's business to exercise a little nous on occasions of this kind; but it is not very creditable to vestry government, for all that. In the City itself things were much better ordered. Whatever may be said about the Corporation, I always maintain that there is not a district in London scavenged and kept in order like that of which it has the government.

At a recent meeting of the Restoration Committee for the Church of St. Bartholomew the Great, it was announced that £1,300 had been raised out of the £3,500 required to complete the restoration of the Lady Chapel. The Committee, anxious to place all the old work beyond the possibility of destruction, decided to remove the whole of the modern dilapidated and ruinous buildings from the ancient structure at once, to place a roof on the old walls, which would be put into sound condition, both externally and internally, but to leave the finishing of the interior until such time as funds may come in. By this decision the whole of the work will be preserved. The cost of this scheme will be £1,600, leaving £1,900 still to be raised. The decision is a sensible one, and in keeping with the wisdom and care with which the whole restoration of this unique and precious monument has been conducted.

Preston appears to be nearly as virtuous a town as Glasgow. The opposition to the exhibition of the colossal replica of Michael Angelo's "David" at the Public Museum, Preston, has been successful, and on Monday morning large crowds assembled to watch the process of taking it to pieces. The action of the Free Library Committee is said to have excited considerable comment, and thousands have been attracted to the spot. Doctors and clergymen have discussed the statue from the commencement, whether with approbation or condemnation I do not know, nor can I imagine what can have prompted the rancour which has been evoked by this replica of one of the masterpieces of the great Florentine.

Mr. R. Harris Reeves, of the firm of R. H. Reeves and Co., Civil Engineers, Putney, has published an answer to the recent report on sewer air investigations by Mr. J. Parry Laws, F.I.C., published by the main drainage committee of the L.C.C., which you lately noticed. Mr. Laws, in his report, observed that sewer air was very free from microbes, and that the germs of disease could not spread by sewer air, although he admits that sewer air "may contain some poisonous chemical substances which may produce a profound effect upon the general vitality." Mr. Reeves protests against the conclusions of the report as being one-sided, and observes that if it is true that the germs of disease cannot emanate from our sewers, then the teachings of the Sanitary Institute are misleading, the experiments and writings of Dr. Parkes, Professor Corfield, Sir Douglas Galton, and others are incorrect, and other lectures and congresses simple waste of time. He proceeds to give an outline of sanitary tests and experiments made by himself and others in five sections of sewers in the London area. Mr. Reeves's conclusions appear logical. He gives many lists of sewer ventilation, and the results of testing the ventilation of main sewers, all of which show that the germs of disease are favoured by poisonous gases, though no organisms may be found in the sewer air itself.

It is quite time the London County Council thought of building a tall fixed bridge much lower down the river than the affair which the City Corporation has just finished, and for which its ornaments of rank and station are made baronets and knights, while a C.B. is flung to the engineer who did the work, and the architect who made it presentable gets nothing. East London wants work, and British engineering is equal to the task any day of outdoing the Brooklyn Bridge. Why not supersede the Thames Ferry at Woolwich by a really great bridge? The yearly-increasing traffic between North and South Woolwich and the adjacent districts would amply warrant such an undertaking.

The Society of Architects' examination scheme, the details of which, as recommended by the Council, you publish this week, is a well-considered and wise one. I venture to predict that it will speedily double the society's membership. The scheme will be submitted to the members for approval in October. If adopted, the plan of the examination will be promulgated twelve months from that date, and it becomes compulsorily a year later—or two years in all from now. The provisions for the registration of students of the society are sensible. Students will pay five shillings yearly, and will be entitled to most of its benefits. They will gradually prepare for its examinations during their articles, and in due time obtain entrance to full membership. Thus—in default of Registration—we shall at last get some guarantee for the public of the fitness of the men it employs as architects.

The scheme has several features which differ for the better from those of the Institute Examination. There are one or two which may need modification. All interested in the welfare of the profession should study and discuss them. And every architect *is* interested, because now that a rational plan of examination is going to be made compulsory, and that a sufficient margin of time is given in which architects of present standing can become members of the society, it behoves all who are as yet unattached to join, and to see that after another two years the door shall be shut on all but those fit and trained for the profession by its studentship and ultimate membership by examination.

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The parish church of Monzie, near Crieff, which has recently undergone extensive alteration and renovation, was reopened on Friday.

The contractors have commenced the construction of a new iron bridge over the river Dee at Maryculter, to connect the counties of Aberdeen and Kincardine. There is no bridge over the river between the Bridge of Dee and that of Park, a distance of nine miles. The site of the new connecting link is opposite Milltimber railway station, half-way between the two existing bridges, and connecting the cross road from Stonehaven with that to Skene and Echt. The cost will be £5,400.

In Queensland, according to the returns from the Emigrants' Information Office, there is no material improvement in the building trade at Brisbane; but the erection of the new bridge over the Brisbane river is giving employment to iron-workers, navvies, pile-drivers, masons and labourers, of whom, however, there are plenty on the spot. In the north there is no demand for emigrants without capital; but as land is now very cheap, a man with a capital of £600 would find a good opening.

Probate duty has been paid on £121,823, as the value of the personal estate of Mr. George Burt, late of Purbeck House, Swanage, formerly Sheriff of London, who died on the 18th April last, aged 77 years. Mr. Burt devises the Purbeck House estate to the use of his daughters or the survivor of them whilst unmarried. Subject to this trust, the Purbeck House estate is to be in trust for the testator's son, John Mowlem Burt, for his life, with remainder to his son Edwin John and his first and other sons successively. The contents of Purbeck House are to devolve as heirlooms. Mr. Burt leaves all other his Swanage estate in trust to be managed and developed as a building estate for twenty-one years, at the expiration of which period the estate is to be sold.

Services were held on Sunday at St. Luke's Church, Barton Hill, Bristol, in celebration of the completion of the new chancel and vestry. Some wooden imitation arches, with wooden pillars, have been removed; a stone arch has been made in the east wall, and the boundary of the church has been thrown back to include the space occupied by the former vestry. The memorial stained-glass windows have been removed into the new chancel, and a new vestry has been formed, inclosed by a carved screen. The organ has been removed from the choir to the south-east corner of the church, and choir stalls have been provided. A new communion table, made in Jerusalem of olive wood from the Holy Land, has been placed in the chancel. The architect was Mr. E. W. Barnes, of Guildhall-chambers, Bristol. The contractors for the main portion of the work were Messrs. King and Son, of Bitton.

OBITUARY.

Mr. William Field, formerly a well-known railway contractor in partnership with the late Thomas Brassey, died at his residence, Stretton Priory, Shrewsbury, on Wednesday week, aged 82 years. Mr. Field was brought up to the medical profession, and practised at Rugeley, and was house surgeon at the North Stafford Infirmary for several years. In the course of his attendance upon the men constructing the Trent Valley Railway, he was brought into contact with the late Thomas Brassey, and subsequently became his brother-in-law (Mr. Brassey and Mr. Field marrying two sisters), and was largely engaged with him in the construction of most important works. He was associated with Mr. Brassey in the construction of the Shrewsbury and Hereford, Shrewsbury and Crewe, Severn Valley, Wellington and Market Drayton, Leominster and Kington, Craven Arms and Knighton, Tenbury and Bewdley, Wenlock Railway, and Wenlock and Craven Arms, besides others in the North Stafford district. Mr. Field founded, and was for many years the colonel of, the 1st Shropshire Artillery Volunteers, upon which he spent large sums of money.

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CHIPS.

The memorial statue to Barry Sullivan was unveiled at Glasnevin cemetery, Dublin, on Thursday in last week. The statue is the work of Sir Thomas Farrell, P.R.H.A.

The Guiseley local board have decided to make application to the Local Government Board for sanction to borrow £10,000 for the purpose of purchasing the works and plant of the Guiseley Waterworks Company. The amount includes £1,500 for a new reservoir, and nearly £500 for the renewal of pipes.

The Dean of St. David's (the Ven. James Allen), who is about to resign his deanery, has for years devoted the greater part of his stipend as dean to the restoration of his cathedral.

After a two-days' inquiry before a committee of the House of Commons, the promoters of the East Denbighshire Railway Syndicate have succeeded in throwing out the Great Western Railway Bill for constructing a railway from Rhos to Wrexham, the Great Western Company having previously been instrumental in throwing out the East Denbighshire Bill in the House of Lords.

The Quarry Commissioners have returned from their inspection of slate quarries in the north of France. Several samples of slates and photographs of rocky strata have been secured, and valuable information also obtained as to the methods of Continental slate-working. The commissioners will now resume their sittings at Blaenau, Ffestiniog, Merionethshire.

The foundation-stone of the new Congregational church at West Hampstead, the site for which immediately adjoins the new buildings of Hackney College, Finchley-road, was laid on Saturday. The church will provide accommodation for 1,100 worshippers, and is being erected from the designs of Messrs. Spalding and Cross by Mr. T. H. Kingerlee, of Oxford. The cost of the church, including the site, will be about £11,000.

On the afternoon of Monday week, the 16th inst., there will be unveiled, in the parish church of Hampstead, the first memorial to the poet John Keats upon English ground. It consists of a bust of the poet, executed in marble by Miss Anne Whitney, of Boston, Massachusetts.

The Duchess of Sutherland paid a visit to Plaistow on Saturday, for the purpose of laying the foundation-stone of the nave and aisles of the new parish church of St. Mary, the chancel of which has already been completed. When finished the nave and aisles will seat about 900 persons, and will have cost £11,000.

On Saturday the memorial-stones were laid of a new Conservative Club, situate off Memorial-road, Walkden. The new building is to cost about £2,000.

Mr. John Whittaker, builder and contractor, St. Helens, died somewhat suddenly at his residence, Oak Cottage, St. Helens Junction, on Monday, at the age of 70 years. Mr. Whittaker was able to attend to his business engagements up to Saturday last. His early life was spent in Manchester, but for the last 40 years he had resided and carried on business in St. Helens. Among the many buildings in that town erected by the deceased gentleman are the corporation baths in Boundary-road, and the water-softening works of the corporation at Thatto Heath.

The name of Mr. Peter Green, builder and contractor, of Silver Hill, Hyde, has been placed on the Commission of the Peace for Cheshire.

Building Intelligence.

Burslem.—The swimming-pool, the first completed section of the new public baths for Burslem, was opened last week. The front buildings and other departments have yet to be added. The bath is the largest in the Potteries; it is situated near the loop-line railway station, in Moorland-road. The building contract was taken by Mr. William Cooke, of Burslem, for £7,800, but the total cost of the baths, when completed, will be £9,500. They will be constructed from plans by Mr. F. Bettany, borough surveyor. The water area of the large bath is 75ft. by 33ft., and the depth gradually increases from 3ft. 6in. to 6ft.; but for entertainments the depth can be increased by 1ft. The bottom of the bath is paved with white glazed bricks, relieved with coloured bands, and the sides are of white glazed tiles, also relieved by coloured tiles. A gallery runs round the bath, and will accommodate about 500 spectators. There are 50 dressing-boxes. The interior walls are red pressed bricks, with buff bands and patterns. The principals of the roof are of iron. The lighting is from the top, the glass extending over the whole of the building.

Cheltenham.—The new wing of Cheltenham Ladies' College was opened last week. It extends along Montpelier-street to the Old Theatre. As carried out, the buildings consist of a new house for the lady principal, standing to some extent on the site of the old one, and including an entrance hall and large inner hall, with main staircase communicating with various parts of the college on the upper floor. Beyond the house, on the ground floor, is the Cambridge room, 36ft. by 30ft., and the library, 70ft. by 25ft. Both the rooms have galleries constructed over the corridor, accessible by winding stairs of iron. Above them are the Oxford room, 39ft. by 36ft., with a high open roof and tall windows, and the museum, 70ft. by 33ft. 6in., constructed with walls uninterrupted by windows, and a roof with semicircular steel girders, filled in with ornamental ironwork, all the upper part being glazed. Beyond this block, again, is a second entrance with staircase, cellars, cloak-rooms, lavatories, and a curator's room opening into the museum by a large window. This end of the building joins the Old Theatre. The whole block virtually consists of a long parallelogram over 200ft. long, with an average depth of 43ft. The whole of the buildings are heated by hot-water pipes and radiators. The style adopted is that of the earlier college buildings, but for the most part simple in character. Externally, the buildings are of Cleeve Hill stone, with a pea-grit plinth, and Red Farleigh dressings. Inside, the walls are lined with buff or red brick, lines of other colours being sparingly used. An important feature is the large amount of decorative ironwork to the museum roof, the main stairs, and the galleries of the library and Cambridge room. This was executed under the architect's supervision by Messrs. Letheren and Sons. The windows towards the street are mostly filled with stained glass, that in the lady principal's house being by Messrs. Pearce, of Birmingham; the Cambridge room and library windows by Messrs. Heaton, Butler, and Bayne, with medallions of great authors and symbols suggested by their writings. Cartoons for the Oxford room are being prepared by Mr. W. B. Richmond, A.R.A. The carving throughout is by Mr. Martyn, the statues being either from his workshop or Messrs. Boulton's. The warming is by Messrs. Marshall, and the steel roof of the Museum by Messrs. Measures. The architects are Messrs. H. A. Prothero, M.A., Balliol College, Oxon, and Mr. J. H. Phillott, M.A., Christ Church College, Oxon; and the contractors are Messrs. A. C. and S. Billings, the outlay being £15,000.

Lasswade, N.B.—After undergoing extensive alterations, involving the entire reconstruction of the interior of the building, the United Presbyterian Church at Lasswade was reopened on June 28th. A belfry and entrance porch have been added to the church. Internally, the structure is now re-seated, decorated, and a new pulpit and a couple of memorial windows of stained glass, executed by Messrs. Ballantine and Gardiner, of Edinburgh, have been added. One window contains in one light representations of "Moses Delivering the Law," and "Moses with the Brazen Serpent"; while in the other are representations of "Christ's Sermon on the Mount," and "Christ Restoring the Blind." The tracery is devoted to "The Burning Bush." The other window contains representations of John the Baptist preaching and baptising, "Christ with Martha and Mary," and "The women showing to Peter the Garment made by Dorcas," these being surmounted by the symbol of "The Seven Golden Candlesticks." The improvements and gifts cost some £1,200. The architects were Messrs. Hardy and Wight, Edinburgh.

Linlithgow.—A commencement is being made with the restoration of the fine parish church of St. Michael, adjoining the palace at Linlithgow. Almost £3,000 has been raised, and Mr. John Honeyman, A.R.S.A., of Glasgow, has been consulted as the architect. Until recently, the interior has been partitioned off, disfigured by unsuitable galleries, marred by whitewash, and had been allowed to assume an aspect of neglect and decay. The modern partition between nave and chancel has been removed, and the galleries, erected about 1812, when the chancel was fitted up as the parish church, have been cleared away. The inside floor, which had been raised a foot above its original level, burying thereby the bases of the piers, and obliterating the step between it and the chancel, has been lowered, and among other work which will be undertaken will be the rebuilding of the chancel arch, the formation of a heating chamber on the site of the old vestry, the renewing and altering of the heating apparatus, and the re-seating of the church.

Misson.—The parish church of Misson, dedicated to St. John the Baptist, was, on Tuesday week, reopened by the Bishop of Southwark, after restoration rendered necessary by partial destruction by lightning a year ago. For the restored portions of the structure the architect was Mr. J. Hodgson Fowler, of Durham, and the builders were Messrs. Bowman and Sons, of Stamford. New roofs have been added to the nave and north aisle, and that of the south aisle thoroughly made good, two new floors placed in the tower, the walls re-pointed, the chancel-floor raised, the old seats renewed, and new ones supplied where required. The cost has been £1,350.

Seacombe.—The new west front, which has been added to the R.C. Church of Our Lady and St. Joseph, Seacombe, was recently opened. The church, which was built by Mr. John Shaw, of Birkenhead, from the designs of Mr. Edmund Kirby, of Liverpool, was opened on July 28, 1889, but was left incomplete at that time, the west end being temporarily closed by a brick wall. The work of completing the edifice was commenced in July, 1893, and the additions, as in the case of the original building, are from the designs of Mr. Kirby, carried out by Mr. Shaw. The additions consist of the west front to nave, with north-west porch, and baptistery on south-west, and a side chapel on the south-east. In the west front is a deeply-moulded arch surrounding a wheel window, the tracery moulded both externally and internally. Below this window, and above the great doorway, are six lancet windows. In the doorway are two doors of oak opening outward, divided by a stone mullion. The spandrels are carved with vine-leaves and grapes, and the mould over the arch is surmounted by carved crockets and finial. The north porch has a traceried window, and the baptistery has two simply traceried windows. The side chapel rises above the aisle roof, with window in gables and two lancet windows in sides. The church is now structurally complete.

Smithfield, E.C.—At the last meeting of the Committee for the restoration of St. Bartholomew the Great, it was announced that £1,300 had been raised of the £3,500 required to complete the restoration of the Lady-chapel. The great importance of placing the whole of the old work beyond the possibility of destruction weighed so much with the Committe that they decided to remove the whole of the modern dilapidated and ruinous building from the entire structure at once, to place a roof on the old walls, which would be put into a sound condition, both externally and internally, but to leave the finishing of the interior until sufficient funds are provided. By this decision the whole of the work will be preserved. The cost of this scheme will be £1,600. Mr. Aston Webb has been the architect for the whole of the restoration.

Streatham, S.W.—The British Home for Incurables has been transferred from the old buildings on Clapham-rise, the lease of which had expired, to new premises in Crown-lane, Streatham Common, which were formally opened by the Prince and Princess of Wales on Tuesday. The new buildings have been erected from plans by the late Mr. Arthur Cawston, A.R.I.B.A., whose death by a revolver accident we reported three weeks since. The site is $4\frac{1}{2}$ acres in extent, and slopes away from Crown-lane, so that it was necessary to set the building well back from the road. The different levels are connected by a series of gradual slopes. The building is divided into two blocks, the western block being stepped back 50ft. farther from the road than the eastern block. The corridor in each block runs at the rear of the patients' living rooms, and has windows on its northern side. The corridor that connects the two blocks, however, is brought to the south and opens on the terrace. In all living rooms and wards the windows have been brought to within 18in. of the floor, to enable bedridden patients to enjoy the views of the grounds and roadway. The ground floor is entirely devoted to the kitchens and general service. On the main floor are the patients' rooms, all light and varied, the main staircase adjoining the connecting corridor, as well as the main entrance and committee-room. These latter form a small entrance wing projecting southwards towards the road. Adjoining this entrance wing the private chapel—a special gift—is still in course of construction. Near the entrance wing a space has been left for an entertainment hall, which will be so planned as to be entirely shut off from the main building when hired by residents for concerts. The arrangement of the first floor is practically the same as that of the ground floor, and will be devoted to female patients. Entrance will be provided from this floor to galleries in both chapel and entertainment hall, so that the patients can be wheeled directly to both. The upper floor is devoted to the use of the female staff, and includes a large recreation room for the nurses. The corridors are all fireproof, on the Fawcett system. All the door and window fittings have been supplied by Messrs. James Hill and Co., 100a, Queen Victoria-street, E.C., who also presented the opening key of solid silver gilt with enamelled monogram used by the Princess at the ceremonial.

Windsor.—Holy Trinity parish church was reopened last week, after restoration, in celebration of the jubilee of its erection. One of the chief improvements is in the flooring, the nave and transepts having been repaved with pitch-pine wood blocks, with a red and blue tiled border, in lieu of the old stone paving. The nave interior has been decorated in colour. The west end of the church has a new organ-screen in seven panels. The centre panel bears a large figure of St. George, representing England. On one side are three panels filled with figures of the 1st and 2nd Life Guards and the Blues, and on the other side the three panels contain figures of the Grenadier, the Coldstream, and the Scots Guards. All the figures are those of officers. In the rear, on the pilasters, are figures of St. Andrew and St. Patrick. The spandrels of the arch are filled in with damask pattern, and shields of dolphins and lions rampant. The Guards' Memorial Chapel has had the inscription renovated. The chancel has also been decorated and renovated. The decorations were designed by Messrs. Wyborn and Lee, and have been carried out by Mr. E. Bampfylde. The figures of the soldiers and the saints were executed by Messrs. Campbell and Smith, London.

Wolverhampton.—The commemoration-stone of the new Grand Theatre, which is in course of erection in Lichfield-street, Woverhampton, was laid on Friday. The front elevation, which will be of stone and brick, will be 123ft. long, and the depth of the building, which will face Berry-street in the rear, will be 122ft. The dimensions of the interior of the theatre are:—Auditorium, 70ft. wide; pit, from curtain line to back wall, 58ft.; depth of stage from curtain line, 41ft. 6in.; and width of ditto, 65ft. 6in.; proscenium opening, 35ft.; height from pit floor to centre of ceiling of auditorium, 39ft.; height from stage floor to gridiron, 55ft. Provision will be made for five classes of patrons. On the ground floor will be the pit seats and pit stalls. The dress-circle will be on the first tier of the amphitheatre, and the gallery on the second floor. The stage will be divided from the auditorium by a fireproof curtain. The structure is being erected by Mr. H. Gough, Woverhampton, from designs by Messrs. C. J. Phipps and Son, architects, London.

The Thoresby Society of Leeds visited, on Saturday, Ripon Minster and Markenfield Hall.

Correspondence.

THE TOWER BRIDGE.

To the Editor of the Building News.

Sir,—It may not be out of place now that the public mind is engrossed with the new Tower Bridge to criticise from an architectural standpoint the latest addition to architectural and engineering science.

Looking at the structure as a whole, it cannot, I think, be called an architectural success. The general impression on one's mind is that the architect and the engineer have been struggling for the supremacy, and the former seems to have come off second best.

The architect appears to have clothed the steel skeletons of the towers themselves with architectural skin and flesh, leaving the skeleton arms of the mid-river ones shaking hands with their smaller brethren on shore in all their bald and naked ugliness, giving one the impression that he had exhausted his resources when having to deal with these members.

It may, I think, be fairly asked, Are these members necessary? Surely if the high-level foot-bridges, with their 200ft. span, could be constructed as a lattice girder, and clothed with an ornamental parapet, the side spans of 270ft. could have been similarly treated, and thus have given a more substantial appearance to this portion, and obviated the main chains, which architecturally are an eyesore, and spoil the whole composition.

The two mid-river towers have some good Tudor detail, but the corbelling of the angle turrets from the circular to the octagonal portion is very poor. The upright lines of the angles, viewed from a distance, have an element of weakness which would have been absent had these lines been battering, as in Sir Horace Jones's original design.

The wall surface seems to be frittered away by a multitude of tiny windows, and lacks dignity, repose, and depth, and surely a castellated parapet without the high-pointed roofs would have been more in keeping with the adjoining Tower of London.

It is to be regretted that in so great an engineering work the architect should have lagged so far behind. Here was a splendid opportunity for architecture to assert itself, but the opportunity has been lost, and the engineer remains master of the situation.—I am, &c.,

Ellis Marsland, Hon. Sec.
Society of Architects, St. James's Hall,
Piccadilly, W.

Sir,—It appears to me that architects and engineers are frequently ignored at the public opening of important buildings. It is not long since the opening of the Imperial Institute, when it was observed that very little notice was taken of the able man who designed that splendid structure.

Last Saturday the eminent engineer who designed the Tower Bridge received the small honour of C.B., while the gentleman who has been chairman of the committee for three or four months, when the bridge was nearly finished, has been knighted; one was the son of an eminent architect, and himself a leader of his profession, while the other is said to be a member of a race which generally pushes forward, the German Jew.

It is an open secret that Mr. G. D. Stevenson prepared the drawings for Sir Horace Jones, and on the death of the latter he was engaged by the Corporation to prepare the details, but not one daily paper, so far as I know, mentioned his name.—I am, &c.,

Honour to whom Honour is Due.

RE ALL SAINTS' CHURCH, NORFOLK-SQUARE, PADDINGTON.

Sir,—In the Wayside Notes of your issue of the 29th ult. reference is made to certain works in progress at the above church, recently destroyed by fire, which work is being carried out by Mr. William Whiteley, of Westbourne-grove and Queen's-road. As you have evidently been seriously misinformed about the matter, I trust you will kindly allow me, in my capacity of building manager to Mr. Whiteley, to endeavour to remove certain misapprehensions of those correspondents referred to by you.

In the first place, no order has yet been issued for *rebuilding* the church, instructions up to the present time being the "pulling down and removal of *débris* only."

In the second place, the work is under the directions of an architect of prominence, representing the churchwardens.

Should Mr. Whiteley be instructed to "rebuild" the church, he will doubtless further prove his claim to the title of builder, which he has demonstrated in so unmistakable a manner during the past twenty years.

In conclusion, allow me to say that Mr. Whiteley employs the most skilled labour in all branches of the building trade, at highest London prices, and retains the services of thoroughly qualified architects and surveyors to represent him where required.—I am, &c.,

T. W. Willson, Building Manager.

SEWAGE DISPOSAL.

Sir,—I presume that the letter of "C. F. M." in your last issue was written in order to emphasize the condemnatory remarks of M. Pasteur about sewage farms. Permit me to point out that I was the first to publicly endorse these remarks in a paper read by me before the Chester meetings of the Incorporated Association of Municipal Engineers, on May 14th, on "The Eaton and Eccleston Sewage Precipitation Works," which was fully reported in several of your contemporaries.

M. Pasteur's remarks are directed against farming with *raw* sewage. It has been proved that sewage contains the germs of nearly all those terrible diseases which even now, with all our sanitary wisdom, keep the doctors busy and the hospitals crowded. To irrigate crops with raw sewage, to feed cattle with those crops, and then to allow the sewage-fed cattle to serve as human food (or, what is worse still, to allow sewage-grown farm produce to serve as human food)—such downright suicidal methods of sewage disposal should be prohibited by the State. When a few more men such as Pasteur will speak out openly, people will pause and reflect, and the present sewage farm mania will subside.

I have been for a number of years past an advocate of *sterilisation* as a *sine quâ non* of sewage treatment.—I am, &c.,

Albert Wollheim, Assoc.M.Inst.C.E.
Leadenhall House, London, E.C., July 2.

* * *

Mr. Ralph Nevill, F.S.A., of 89, Chancery-lane, has been appointed architect for the new church of All Saints, Norfolk-square, that is to replace that recently destroyed by fire.

On 5th May, the Burns Statue at Adelaide, S.A., was publicly unveiled. It is of Angaston marble, and is erected on a pedestal of Monato granite. The site is the eastern end of the reserve, opposite Government House domain. The statue stands 13ft. 6in. with the pedestal, and the figure is life-size, and the garb in which Mr. Maxwell, the sculptor, has chosen to represent the poet is the coat with brass buttons, buckskins, and top boots.

The committee of the University Hall settlement in Gordon-square have been for some time engaged in the consideration of a new building scheme, as the premises in Marchmont-street used for lectures have grown too small for the social work carried on there. Mr. Passmore Edwards has generously come forward with a promise to give the necessary building for the new hall, on condition that a suitable site is otherwise provided.

The foundation-stone of a Masonic hall was laid in Mint-street, Lincoln, last week. The building will provide on the ground-floor level a banqueting room, with a kitchen, lavatories, &c. On the first floor is an office for the transaction of provincial business, while the front is taken up by a lodge-room and ante-rooms. The elevation is in a quiet type of Georgian, in local red bricks, with Ancaster stone dressings. The building, which will cost about £1,400, is being erected by Messrs. H. S. and W. Close, from the designs of Messrs. W. Mortimer and Son, of Lincoln.

On Thursday in last week, the Archbishop of York opened the new church of St. Peter, Norton, Malton. The whole building, as provided for in the plans of Mr. C. Hodgson Fowler, of Durham, is not yet completed, there being yet to add a western tower. The church, as built, consists of chancel, south chapel, and nave, and provides sitting accommodation for 430 persons, which is in excess of that afforded by the old parish church. When completed, the church will have fixed sittings for 700 adults. Under special faculty, the fine organ presented to the parish church has been removed therefrom, and placed in the new organ chamber in the north side of the church. The total cost has been £8,000.

Intercommunication.

QUESTIONS.

[11175.]—**Stonehenge.**—Will some of your readers give their opinions on the date of this group of stones, as books and antiquarians differ on the point?—Sarum.

[11176.]—**Payment for Quantities.**—In the event of a contractor refusing to pay for quantities, the fees for which have been included in the usual way in the amount of his contract, and which are payable to the quantity surveyor on receipt of first certificate, has the surveyor any legal remedy against the contractor? I may say that the surveyor was engaged to take out the quantities by the architect on behalf of the proprietor, and the contractor has had several certificates.—Subscriber.

REPLIES.

[11170.]—**Fireproof Cement.**—Has "Z." ever tried Stourbridge clay mixed as mortar, and used in a similar way, as it will resist very great heat?—H. L.

[11173.]—**Ink on Drawings.**—1. Has "Student" tried a wet sponge to remove the ink?—almost any erasure would show. 2. Use ox-gall, which can be obtained in pots from any artists' colourman. 3. A slight entasis would much improve the appearance of a furnace chimney shaft. 4. Tall slight buildings would rock; but not fairly substantial ones.—H. L.

[11174.]—**Textbooks on "Materials."**—Most of the best books are given in the lists mentioned. "W. H. O." would obtain nearly all the necessary information from Rivington's "Building Construction," and the book by Major Seddon.—H. L.

CHIPS.

In pursuance of their policy of improving their Cornwall system, the Great Western Railway directors are about to carry out alterations and additions at Scorrier Station, and also the reconstruction in stone and iron of the viaduct over the River Hayle, near St. Erth.

The very small collection of Egyptian antiquities in the Museum and Art Gallery at Birmingham has been enriched by the presentation of two mummies and two mummy cartonnages, painted and partially gilt. The mummies were discovered by Mr. de Morgan, of the Gizeh Museum, near Cairo. One of the mummies is contained in a large cedar-wood coffin, and is that of a woman, who was mummified during the 26th dynasty, about 750 B.C. The coffin is covered with a coating of plaster, and inscribed with figures, sepulchral deities, and hieroglyphs in yellow, on a black ground. The other mummy, of the Græco-Roman period, about 300 A.D., is an example of diagonal wrapping, decorated with gilt and terracotta studs. This is the figure of a man. The two cartonnages, both brilliantly painted, one of them with the face covered with gold leaf, are of the same period.

New board schools are being erected at Bodmin from designs by Mr. W. J. Jenkins. Messrs. Brown, Son, and Grose are the contractors.

The Leeds city council decided on Wednesday to apply to the Local Government Board for sanction to borrow £18,000 for providing four infectious diseases hospitals at Manston.

Mr. R. Walton, an inspector from the Local Government Board, held a public inquiry on Friday at St. Annes-on-the-Sea, with reference to an application made by the local board for powers to borrow £2,090 for the provision of public offices, £1,296 for the erection of public slaughter-houses, and £3,794 for works of sewerage. Mr. G. Pickup, the architect for the proposed local board offices, exhibited and explained the plans.

The memorial stone of a new Church institute and Sunday-school for Yeadon was laid on Saturday. The new building, from the designs of Messrs. T. H. and F. Healey, architects, of Bradford, will comprise a gymnasium, young men's room, four classrooms, and assembly hall, accommodating nearly 400 persons. The site was formerly occupied by a Wesleyan chapel (built in 1766), in which John Wesley once preached.

Mr. Charles Carter, surveyor, of Marlow, died at Louvaine, Belgium, on the 28th ult, aged 66 years, surviving his wife, who was three years his junior, by little more than three weeks.

Earl Stanhope, Lord Lieutenant of Kent, laid the foundation-stone of the new church of All Souls', Cheriton, near Shorncliffe, on Tuesday week. The edifice is being built at a cost of £4,000, under a bequest of the late Mrs. Catherine Thompson.

A replica of an old Celtic cross at Kilklispeen, in co. Kilkenny, has just been erected at Staines over the remains of the late wife of the Rev. J. H. Armstrong, who for the last twenty-one years has been the vicar of the parish. The cross, a four-holed one, with a circle round the intersections, is a monolith of blue Pennant stone, resting upon a die of the same material. The face of the cross is carved in geometrically-arranged strap ornament. The memorial is by Messrs. Harry Hems and Sons, of Exeter.

Legal.

WIDENING OLD STREETS.

It frequently happens that in building new premises the frontage line of the old houses is put back, and so the pathway is widened, and the whole street is improved for business purposes. This has happened to some extent in the High-street, Kensington, where the vestry, for the purpose of widening the footway, gave notice to the owner of a public-house of their intention to take, by compulsory purchase, a portion of his premises—namely, a stone porch, step, and cellar-flap, all of which projected beyond the line of the house itself, and were practically an obstruction to the thoroughfare. This they did under the powers of Michael Angelo Taylor's Act (57 Geo. III., c. 29), whereupon the owner objected, and required that the vestry should take the whole house or nothing. In order to raise the question the owner applied to a Divisional Court for an interim injunction to restrain the vestry from going on with their proceedings to get the compensation payable for the part they wanted assessed by a jury in the ordinary way. In this action of "Gordon and others v. Vestry of St. Mary Abbott's, Kensington" (*Times*, June 26), the point at issue was whether the defendants could not take the portion they needed to remove this obstruction to the footway without taking the whole house.

As a matter of fact it could not be denied that the porch and step and cellar-flap were beyond and independent of the house itself. They had, indeed, been built some years ago, and were at that time in a line with the adjoining house; but owing to this having been set back in rebuilding, they were now practically an obstruction. It was argued for the owner that to take these away would seriously alter the whole character of the house, and it was urged on a point of law that the vestry could not deal in this way with what was alleged to be an integral portion of one building. On the other hand, as the judges pointed out, this question of value could be met by compensation, which the jury would award. They further held that as land could be divided—a front garden, for instance, could be cut off—so could an outbuilding or a portion of a house, the removal of which did not really destroy the identity of the house itself as a separate structure. In truth that was a question of fact for a jury to decide, when trying also the claim for compensation. So upon all grounds the Divisional Court refused the interim injunction asked, and left the matter to be fought out between the parties in the ordinary way in such cases, which will be before a jury upon the question of compensation.

Fred. Wetherfield, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

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The trustees of the Public Picture Gallery Fund at Birmingham have just purchased, for presentation to the Museum and Art Gallery of that city, the original study, by Frederick Walker, of his widely-known picture "The Old Gate." This study, which is 48in. by 36in. was sold in 1875 in the Walker collection. This unfinished picture closely follows the lines of the completed work, but the figures, with the exception of two, are differently posed.

Mr. Stuart-Wortley's Committee, to which the London County Council Bill relating to Streets and Buildings has been re-committed, have this week been engaged in considering the question of the access of light and air to model dwellings and other houses inhabited by the poorer classes. Medical evidence has been given as to the necessity of regulations on this matter, and as to the action that had been taken in the past, in declaring as insanitary buildings that were deficient in this respect.

The North-Eastern Railway Company have in hand extensive improvements at their station in Leeds, and also on their line thence to a point some distance beyond Marsh-lane station. An important part of these works has been the demolition of Marsh-lane tunnel, which was about a mile long. That necessitated the removal of a number of buildings on the surface, as provision had to be made at this point (as along the rest of the track) for the widening of the railway by five new lines without a stoppage of the traffic. The work has been carried out by the contractors, Messrs. Whitaker, of Horsforth.

LEGAL INTELLIGENCE.

O'Brien v. Metcalfe.—The award of Mr. Philip E. Pilditch, the arbitrator in the case of "O'Brien v. Metcalfe," relative to the dilapidations accrued at Ashton House, Stevenage, in which the surveyors engaged on either side were Messrs. Walton and Lee and Mr. Charles E. Sayer, has just been published, the amount of award being £547 7s.

Arbitration as to Leith Dock Works.—Owing to the death of the managing partner, Mr. David Kinnear, Messrs. Kinnear, Moodie, and Co., the contractors for the Leith new dock works, ceased operations, after the work had been in progress for some months, and the contract was eventually secured by Mr. John Best, Edinburgh. Since that time Sir Alexander Rendall, advising engineer to the Dock Commission, and arbiter between the parties, has had under consideration the amount of work done, and has now issued his award, which is that the trustees of Messrs. Kinnear, Moodie, and Co. should receive the sum of £8,000 from the Commissioners for the harbour and docks for the work done and the plant laid down on the ground. Messrs. Kinnear, Moodie, and Co. lose several thousand pounds; but according to the conditions stipulated in the contract, the Dock Commission claimed the right to take over, without payment, the completed work and plant in the event of the contract being broken.

A Party-Wall Case.—Waynforth v. Nepforth.—This case was tried before Mr. Justice Wills in the Queen's Bench Division. It appeared that the owners of the London Music-hall in Shoreditch, having given notice and obtained an award under the Building Act, delayed to protect the plaintiff's stock, and the action was brought for compensation. Mr. A. J. Bullis and Mr. J. Clever, surveyors, gave evidence for the plaintiff; and Mr. H. Lovegrove, district surveyor, was called to prove that he had written complaining of the way in which the work had been executed as affecting the adjoining premises. Mr. E. Niblett, the architect of the music-hall, and Mr. Bruton were called for the defence. The jury decided that the award had not been carried out, and gave damages £70, with costs.

Building Act Case.—Lovegrove v. Kirk and Randall.—This case was in some respects similar to a case settled last year between the same plaintiff and defendants. The defendants erected an irregular building in the Goods Yard, Appold-street, Finsbury, for Messrs. Ingham and Co., the well-known brickmakers, and refused to give notice to Mr. Henry Lovegrove, the district surveyor, on the grounds that the building was exempt under section 6 of the Building Act, 1855. Mr. Shearman appeared as counsel, and called several officials of the London and North-Western Railway to prove that the structure was used for the purposes of the railway. The district surveyor conducted his own case. Mr. H. J. Bushby, the magistrate, after careful consideration of the various points, decided that the builders should have given notice, and imposed a penalty of 40s., with costs. The railway company asked for a case.

Libel Action against a Clerk of Works.—Hirst v. Smith.—This was an action brought by Mr. William Hirst, a contractor, carrying on business as the "Brunswick Rock Asphalte Paving Company," against Mr. J. T. Smith, for damages for libel contained in a report sent by him to the vestry of St. George the Martyr, Southwark. Upon the action being called on before Mr. Justice Mathew, on Saturday, Mr. Dickens, Q.C., upon behalf of the plaintiff, said he had undertaken large contracts for municipal bodies, and therefore it was of great importance that his character should be upheld. Mr. Smith was appointed clerk of the works, and as such made a report to the vestry which the plaintiff thought reflected on him, and suggested that he had scamped work upon which he was engaged for the vestry.—Mr. Robson, Q.C., upon behalf of the defendant, had undertaken to withdraw all imputations. All aspersions against the plaintiff were to be withdrawn, and there was not the slightest suggestion against him as to any of the work he did. Mr. Robson, Q.C., upon behalf of the defendant, said that no imputation of bad work or bad faith was intended upon Mr. Hirst. Mr. Smith wished most clearly to state that he did not use any imputation of bad work or bad faith.

Proceedings under Michael Angelo Taylor's Act. — Gordon and Others v. Kensington Vestry.—In the Queen's Bench Division of the High Court, last week, before Mr. Justice Cave and Mr. Justice Collins, this case was heard. The plaintiffs are the owners of the Town Hall Tavern, adjoining the Metropolitan Railway station, in High-street, Kensington, and the vestry, in order to widen the footway, require to take the portico of the house. The plaintiffs claim that the vestry should take the whole of the house, and have brought an action for an injunction to restrain the vestry from proceeding under various notices to take only a portion of the house. The question at issure was whether, under sections 80 and 82 of Michael Angelo Taylor's Act, 1817, the vestry could compulsorily take a portion of the premises without acquiring the whole. Their Lordships held that there was a question of fact, as to whether the taking away of the portico would make it necessary to alter the rest of the house structurally; and of this issue they could not dispose. But they could not grant an interim injunction in anticipation of the trial of the case. If, however, pending the hearing of the action the vestry proceeded to assess the compensation to be awarded to plaintiffs, they would do so at their peril. The motion was therefore refused.

Re Thomas Tucker.—The debtor, against whom a receiving order was recently made, states that from 1879 to 1888 he held various appointments, one as agent in England for an American elevator company, and another as manager of an hotel at Bournemouth; that for two years from 1886 he was employed by a theatrical manager in the construction of an hotel on the Victoria Embankment, and the debtor states this was the origin of his description as an architect, as he was not articled to the profession, but obtained such experience as he has from private study. Since October, 1893, he states he has assisted his wife in a business carried on by her. The liabilities are returned at £14,573, and the assets, consisting of cash, at £2. In the receiving order the debtor was described as of De Vere-gardens, architect and surveyor.

Brick v. Concrete Foundations.—John Stonnell, a builder, of Finchley, was summoned at Highgate Police-court last week for erecting a building in Huntingdon-road, Finchley, the footings of which were not resting upon a substructure of concrete, or some good hard substitute. The case for the prosecution was that plans for a building were submitted showing concrete foundations, but they were not otherwise in accordance with the by-laws, and they were not passed; but the defendant went on with the building—a dwelling-house; but instead of putting concrete footings, there were two rows of bricks. One of the outside basement walls was only 4½in. thick, when it should have been 9in. The soil was very bad in Finchley, being of very wet clay. Houses were now being underpinned because they had been built without proper footings. For the defence, Mr. George Blyton, F.S.I., of Finchley, said the cost of the bricks was much greater than concrete, and bricks were better. The wall of 4½in. was as thick as many in Finchley which were passed by the board.—Mr. Smythe, the Finchley surveyor, said 4½in. walls were not passed.—Mr. Williams (one of the magistrates) asked Mr. Blyton if he would not call 4½in. basement walls jerry building.—Mr. Blyton: Yes.—The Bench fined the defendant £5 and 5 guineas cost if the work was done in a month, but if the work was not done in a reasonable time, they would consider whether they should also inflict the continuing daily penalty of £2.

Is the Lord of a Manor the "Owner" of Land? — Re Christchurch Inclosure Act. — Meyrick v. the Attorney-General.—This case, on which Mr. Justice Stirling has now given judgment, raised an important question relating to the liability of Sir George Meyrick, the lord of the manor of Christchurch, to contribute to the paving expenses of a road constructed by the corporation of Bournemouth in respect of such portion of that road as adjoined a turf common originally forming part of the waste of the manor. The short point was whether the lord, in whom the soil of the common was vested, subject to certain public rights conferred by statute, was the "owner" of the land within the meaning of section 150 of the Public Health Act, 1875. The arguments in the case were concluded on the 6th inst., when his lordship reserved his judgment. Mr. Justice Stirling, in giving his considered judgment, first referred to section 13 of the Christchurch Inclosure Act, 1802 (42 Geo. III. c. 43), and to the inclosure awards made under this Act in 1806, and pointed out that it had been established by the decisions of the Court of Appeal and of the House of Lords that the soil of such a turf common was beneficially invested in the lord of the manor subject to the trusts imposed by the Acts in favour of the cottagers. It was also established by the decision of the Court of Appeal that the trusts in favour of the cottagers created by the Act were charitable trusts. The result, therefore, was that the soil of the turf common was vested in the lord of the manor, subject, as regards the surface, to certain charitable trusts. The Bournemouth Improvement Commissioners, now the corporation, in 1890 gave notices to the owners of lands bordering on the Ashley-road and North-road, requiring them to sewer, level, pave, metal, flag, and channel those roads. The roads adjoin the turf common, and the present lord of the manors was served with one of these notices. He did not do the work specified in the notice, and such work was done by the Commissioners at an expense of £188 0s. 7d. The question on the present summons is whether he is liable to the Corporation of Bournemouth for that payment. His Lordship then referred to section 4 of the Public Health Act, 1875, which defines "owner" as the person for the time being receiving the rack-rent of lands or premises, whether on his own account or as agent or trustee for any other person, or who would so receive the same if such lands or premises were let at a rack-rent. On behalf of the lord of the manors it was contended that he was not "owner" of the common within the meaning of the Public Health Act, 1875, inasmuch as the provisions of the Enclosure Act prevented the common from being let at a rack-rent. These provisions unquestionably interfered with the beneficial ownership of the lord to a material extent. He thought that the case of "Bowditch v. the Wakefield Local Board of Health" was a conclusive authority to show that a man was not the less the "owner" of premises because, by the provisions of the deed under which he held them, they could not, so long as he held them, be let at a rack-rent. The claim of the Bournemouth Corporation ought, therefore, to be allowed.

STAINED GLASS.

Lichfield Cathedral.—Some years ago the late Dean Bickersteth initiated the scheme of filling up the windows of the Chapter-house of Lichfield Cathedral with stained glass, in honour of departed worthies connected with the cathedral body, which should at the same time illustrate the principal incidents in the life of the patron saint, St. Chad. The first of these gives portraits of St. Chad and King Wulphere, with scenes of the consecration of St. Chad, and the Saint baptising the two sons of King Wulphere. The second contains figures of St. Oswald and St. Aidan, with representations of St. Aidan preaching to the Anglo-Saxons, and King Oswald interpreting; and St. Aidan at Lindisfarne, with his school of boys, St. Chad amongst them. Now the third of the series of memorials has been provided, and it is in memory of the late Dean Bickersteth himself. The widow contains figures of Theodore, Archbishop of Canterbury, who preferred St. Chad to Lichfield, and of Owina, the friend and companion of Chad. Beneath these figures two incidents in the life of St. Chad are depicted. The window has been designed by Mr. C. E. Kempe, of London.

CHIPS.

The Right Hon. James Bryce, M.P., will preside at the annual meeting of subscribers to the British School at Athens, which will be held at 22, Albemarle-street, on Wednesday next, at 6 p.m.

The new Board Schools, Poppleton, York, are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The sale at Christie's, on Saturday, of the Adrian Hope collection realised £49,880, which is from 10 to 20 per cent. less than had been estimated. As has been mentioned elsewhere, two canvases by Berk Leyden and Jan Steen respectively, were acquired for the National Gallery, and a wild boar hunt in a woody landscape was bought for the Glasgow Corporation Gallery, the price being 1,660 guineas.

Mr. Newlyn, of Brixton-hill, having refused to pay the water-rate, because he was charged for a bath which he said he did not use, the Lambeth Water Works Company cut off the entire supply from the house. The dispute came before the magistrate at the South-Western police-court, and on Tuesday Mr. Rose decided that the company were wrong in cutting off the entire supply, and imposed a penalty of £12.

About a hundred and twenty men are at work on the site of ancient Troy uncovering the walls of what the late Dr. Schliemann's termed the sixth or Lydian city. There are indications of a gateway. A square well built of dressed stone has been found, and cleared to a depth of twelve yards. Various remains have been discovered.

The memorial stone of the first school to be erected by the Moss Side school board was laid on Saturday. Accommodation will be provided for 1,224 scholars, and the cost of the buildings will be £14,000.

The Dean of Bristol fixed, on Wednesday, the cup-stone of the restored central tower of Bristol Cathedral. Under Mr. J. L. Pearson's direction, the exterior face of the tower has been restored, and it has now been brought as near as possible to its original design and condition. Every stone which was defective has been replaced, the mullions in the upper stage of the tower have been entirely renewed and made of greater depth, so as to strengthen the inner portion; the pinnacles and parapet are for the most part new, though where possible some of the original work has been incorporated, the new portion having been carried out exactly on the lines of those taken down many years ago.

Our Office Table.

Although the walls of the National Gallery are obviously overcrowded with canvases, additions to the pictures continue to be made. The "Agony in the Garden," by Andrea Mantegna (1431-1506), recently purchased from the Earl of Northbrook, has been numbered 1417, and was hung on Monday, on the east wall of Room VIII., with the other works of the Paduan school. It is the fifth example of Mantegna's brush in the gallery, and measures 24in. in height by 32½in. in width. The colour is dark, but harmonises, and the draperies are, as usual, carefully treated. The scene is a landscape of immense laminated sandstone rocks, seen in warm twilight. In the mid-distance are the towers and walls of a fortified city, apparently intended for Jerusalem. On a pile of rocks the Saviour kneels, in the attitude of prayer; He is clad in voluminous brown robes, and His chestnut hair is arranged in large curls and is enriched by a nimbus. On the left, perched on a cloud, are five full-length angoletti, holding before the eyes of the Man of Sorrows, the cross, spear, sponge, nails, and other emblems of the Passion. The face of a cliff divides Christ from the three chosen Disciples, who lie on a ledge of rock wrapt in deep slumber, while behind the principal figure to the right a straggling procession of Roman soldiers is headed by Judas. A vulture sitting on a bare bough, and four or five hares disporting themselves on the roadside, a few palms and fig-trees, give variety to the scene. The picture is signed on the face of the rock below the Saviour, "Opus Andrea Mantegna." The sleeping figures in the foreground are strikingly like the simpler treatment of the same subject by Mantegna's brother-in-law, Giovanni Bellini, No. 726, on the south wall of the adjoining long apartment, Room VII.; there, however, the general treatment is simpler, and a single angel appears to the Lord, holding the emblematic cup. Several other pictures will shortly be hung in the Gallery, including two more from the Northbrook collection, one Early Flemish, the other by Messina, and three in the British School; while at the Adrian Hope sale on Saturday, the Directors and Trustees bought two Dutch works. One is a "View in Haarlem," by Gerrit Berkheyden, signed and dated 1674. This landscape, which measures 20½in. by 26in., and shows the church and numerous figures, cost 450 guineas, and is the first example of this master's work. The other is a "Scene on a Terrace, with Figures," by Jan Steen, 1626-79, and will be a third specimen of his work.

According to the financial statement submitted to the London School Board at their last meeting, the expenditure on repairs to buildings and furniture during the current year is estimated at £75,000. Last year it amounted to £90,499. About £20,000 of that amount, however, was abnormal expenditure for extra repairs. These repairs, which have been going on, more or less, during the past four years, have been rendered necessary by the imperfect nature of the original building work in many of the old schools, and more especially by the grave irregularities which have come to light in connection with their drainage and sanitary arrangements. Since the institution of a sanitary surveyors' department by the present board, the drainage and sanitary systems of a large number of old schools have been thoroughly overhauled and remodelled. The approximate cost of this work is at least £150,000. It is probable, however, that most of these extra repairs have now been carried out, and, consequently, a smaller provision only on this account need be made in the present estimate. A further reason for anticipating a smaller expenditure from maintenance account on repairs of this character is to be found in the fact that, where the cost of such work exceeds £250, the Education department now sanction its payment from loan account. It is, therefore, estimated that the total expenditure for repairs during the current financial year will not amount to more than £75,000.

The city council of Newcastle-on-Tyne adopted, at their meeting on Wednesday, a report from the town improvement committee, with regard to the best system of tramway haulage for the city. The committee came to the conclusion that the horse system of haulage is no longer able to meet the wants of the town, and that of the two other systems which have shown themselves practically successful—viz., electric and cable haulage, the cable system is better in every way, and most suited to Newcastle. Connected with the subject was a long report from the city engineer, Mr. Laws, who estimated that the cost of construction would be £10,000 per mile, the mileage worked (single) being 24 miles, and the length of route, 12 miles. He reckoned the probable earnings per car mile at 8·25d., and the probable expenses per car mile 4·5d., the average fare per passenger being 1¼d., and the average length of journey 1¼ miles. These figures are based on the working of the Edinburgh lines, and the probable number of passengers is estimated from the average of six large towns, including Newcastle. The council will therefore adopt the cable traction system of tramways as the best for Newcastle, and have instructed the committee to obtain, consider, and submit offers for the working of such a system in Newcastle, and estimates of the cost of construction.

There are, according to the *Philadelphia Press*, signs of movement in the tower of the Philadelphia City Building, and work has been suspended on the upper portion, so recently described and illustrated by us, until the substructure can be strengthened. According to Mr. Powell, the newly-appointed architect of the building, who seems to have been the first to discover the movement, and point out the true cause, the foundation and first story of the tower were well built, of perhaps sufficient thickness, with brickwork in cement. Above the first story, for some unexplained reason, the walls, although about 6ft. thick, were built, for several stories, with lime mortar, with a facing of marble ashlar, 12in. thick. Above the fifth story, a proper system of sound structure was reverted to, and thenceforth the brickwork was laid in cement. As the weight on the masonry increased, the natural result took place. The walls of the first story and basement, being laid in cement, kept their place, Mr. Powell having found no trace of settlement subsequent to the hardening of the cement. Where the brickwork was laid in lime, however, there has, of course, been no hardening. The mortar in the interior of the walls is still soft, and the compression of the joints, added to the shrinkage from evaporation, has not only caused serious settlement, but, by bringing the pressure on the thin, but almost incompressible, marble ashlar, has crushed and almost split this to an alarming extent. Mr. Powell has arranged to fill up some of the arches in the lower part of the tower, and in other ways distribute and equalise the weights, and to reinforce the masonry in lime with proper brickwork in cement; and it is much to be hoped that his efforts to stop further mischief will be successful. Considerable repairs on the lower portions of this tower had to be carried out nearly ten years ago, owing to carelessness of very similar character on the part of workmen or architect. At that time a considerable portion of carved and polished stonework had to be replaced because it had been cracked and crushed through the unequal settlement between the brick filling and the facing, the joints of the latter not having been laid slack enough to allow for the greater compressibility of the brickwork filling.

M. Richtenberger, in an article in the *Revue Bleue*, points out that the sum which is voted by the French Legislature for the Fine Arts is ridiculously small. Germany spends for Fine Arts more than £20,000, and England £32,000 a year; while France, for the galleries of the Luxembourg, Versailles, Saint Germain, and the Louvre, with its six departments, appropriates only £6,500 a year. Various attempts have been made, during the last ten years, to have the appropriation increased, but in vain, and there is no hope at present of getting any more from the State.

The Church of the Saviour, built at Borki, between Kursk and Kharkoff, in commemoration of the preservation of the Russian Imperial family in the terrible railway "accident" of November, 1888, has been consecrated in the presence of the Czar. The memorial consists of two structures, the one an oratory chapel built into the side of the railway embankment just where the dining-saloon car containing the Czar and his family was pitched by the accident, and the other a church in the Muscovite style of the 17th century, holding about 700 persons, built a short distance from the embankment out on the open steppe. The church is now surrounded by a park of about eighteen acres, in which have been planted 70,000 trees. The entire work has cost about £25,000, collected by public subscription. The church takes the form of a high cupola surrounded by six conical towers, the façades being in yellow bricks, with ornamentation, in which the double-headed eagle plays a conspicuous part. An iron staircase leads down from the railway on either side of the chapel. Professor Makofsky has spent two years and a half in decorating both the church and chapel.

The United States Government uses the following white preparation for painting lighthouses, and it effectually prevents moisture from striking through:—Take of fresh Rosendale cement 3 parts, and of clean, fine sand 1 part; mix with fresh water thoroughly. This gives a grey or granite colour, dark or light, according to the colour of the cement. If brick colour is desired, add enough Venetian red to the mixture to produce the colour. If a very light colour is desired, lime may be used with the cement and sand. Care must be taken to have all the ingredients well mixed together. In applying the wash, the wall must be wetted with clean fresh water, then follow immediately with the cement wash. This prevents the bricks from absorbing the water from the wash too rapidly, and gives time for the cement to set. The wash must be well stirred during the application. The mixture is to be made as thick as can be applied conveniently with a whitewash brush. It is admirably suited for brickwork and fences, but it cannot be used to advantage over paint or whitewash.

Mr. D. Charles Jones, the resident engineer at Wrexham in charge of the new line of railway now in course of construction between Wrexham and Ellesmere, died on Friday, after a short illness, from acute pneumonia. The deceased, who was only thirty years of age, had been with Mr. Alderman George Owen, the engineer to the Cambrian Railways, since he left school.

The scheme for the improvement of the Waverley Station at Edinburgh, on the North British Railway system, not only embraces new tunnels westwards and the widening of the line to Corstorphine, but the widening of the line eastwards to Abbeyhill, so as to improve the entrance at this end of the station. This contract has been let to Messrs. Watt and Wilson, Petershill, Glasgow. It involves a new double line from the Waverley Station eastward of the North Bridge, to the Calton rock immediately to the north of the west mouth of the existing tunnel, thence to the east mouth of the existing tunnel, a covered way along the slope, and a viaduct to Abbeyhill Junction. The cost of the works will be between £50,000 and £55,000.

At the last meeting of the Conway town council, a discussion arose on a letter received from the Society for the Preservation of Ancient Buildings, relative to the masonry of the castle, which, internally, was regarded as being dangerous. The borough surveyor contended that there was no place more dangerous now than it was 50 years ago. It was agreed that the estate committee should go over the castle with the borough surveyor, and advise what was requisite.

The Cheshire County Council discussed the other day the necessity for additional lunatic asylum accommodation, and also decided to enlarge Upton Asylum, Chester, so as to accommodate 416 additional patients. Plans for this purpose, prepared by Messrs Grayson and Ould, of Liverpool, were adopted, the estimated cost being £76,200, of which sum £62,400 is apportioned to the new buildings. Plans, prepared by the county surveyor, Mr. Stanhope Bull, were also adopted for new farm buildings at Upton Asylum at a cost of £2,650.

At Douglas, Isle of Man, on Friday, Messrs. Cain and Clarke, builders, were prosecuted by the Douglas Town Commissioners for having permitted a recently-erected house in Douglas to be inhabited without previously obtaining from an officer of the commissioners a certificate that the house was fit for habitation. The offence was admitted, and a fine of £1 and costs was imposed. The same defendants were, at the instance of the commissioners, also fined £1 for having deviated from the deposited plans in the erection of a house. This offence was also admitted.

The consecration of the newly-restored portion of the parish church of Newcastle, St. Illtyd's, Bridgend, took place on Thursday in last week. The restoration consists in the rebuilding of the chancel, which has been considerably enlarged, and the addition of a north chancel aisle to form an organ chamber and vestry. This work, which cost about £2,400, has been carried out by Messrs. Edward Rees and Son, Pencoed, from plans prepared by Mr. E. M. Bruce-Vaughan, of Cardiff. Special features in the new chancel are a stone reredos, and a stained-glass window dedicated to the memory of the late Dean Blosse.

MEETINGS FOR THE ENSUING WEEK.

Tuesday.—The Society of Architects. "The Architecture of the Rhine Valley," by G. A. T. Middleton, A.R.I.B.A. St. James's Hall, Piccadilly. 8 p.m.

The Society of Architects.

Founded 1884. Incorporated 1893.

The NINTH ORDINARY MEETING of the Society of Architects for the Session 1893-94 will be held at St. James's Hall, Piccadilly, W., on TUESDAY, JULY 10th, at Eight o'clock, p.m., when a Paper will be read on "THE ARCHITECTURE OF THE RHINE VALLEY," by Mr. G. A. T. MIDDLETON, A.R.I.B.A, illustrated with lime-light views.

ELLIS MARSLAND, Hon. Sec.
A. MONTEFIORE, Secretary.

CHIPS.

The late Mr. John Scott, of Hunslet, has left £10,000 for the building of almshouses in Leeds.

Some stained-glass windows have been placed in St. Mary's Church, Victoria-avenue, Wanganui. Messrs. Atkinson Brothers, Oxford-street, Newcastle-on-Tyne, were the artists.

Messrs. William Potts and Sons have obtained the order to make and erect the four-dialed illuminated turret clock for the Leeds new post-office. The clock is now in hand.

An organ built by Mr. Grindrod, of Rochdale, has been placed in St. Joseph's Roman Catholic Church at Heywood, Lancs.

A stained-glass window has been placed in Farsley parish church, in memory of the late Mr. John Wormald Appleyard, sculptor, who died in January last, aged 62 years. The window, which represents "The Crucifixion," was designed by, and executed during the lifetime of, the deceased.

The foundation-stone of St. Anselm's Church, Woodriding, near Pinner, was laid on Thursday in last week by the Earl of Strafford.

The Bishop of Rochester consecrated on Thursday in last week the Canon Hales' Memorial Church, erected in the Kew-road, Richmond. A special feature in the church is the seating arrangements by chairs movable only on hinges and intended to be permanent. The chancel yet remains to be built.

We understand that Messrs. Wm. Potts and Sons have been intrusted with the order to make and erect the four-dialled illuminated turret clock for the Leeds new Post-office. The clock is now in hand, and will be fixed as soon as the building is ready for the same.

The partnership heretofore subsisting between Henry Louis Florence and H. A. Satchell, architects and surveyors, of Verulam Buildings, Gray's Inn, W.C., under the style of Florence and Satchell, has been dissolved. Dissolution of partnership is also announced as between A. E. Dempster and R. Heaton, architects and surveyors, Birmingham, under the style of Dempster and Heaton.

The Openshaw public free library and municipal buildings are to be opened with some ceremony to-morrow (Saturday). The legatees of Sir Joseph Whitworth have intimated their intention to present a bronze medallion of the late baronet to be placed in the library.

The committee of the Home for Destitute Crippled Children at Newcastle have completed the purchase from the Gosforth Park Estate Company of two acres of land, on which they hope, at an early date, to commence erecting a new building. The purchase money is £1,300; but this is, of course, only the beginning of the outlay.

Six memorial-stones of a new Wesleyan Methodist Chapel, in process of erection at Woodside, Horsforth, were laid on Saturday. The new building, of which Messrs. Fairbank and Wall, of Bradford and Otley, are the architects, will be a simple treatment of Gothic in style, and have tower and spire. The chapel is to be 33ft. by 50ft., exclusive of transepts and choir. It will seat 315 people. There will be two vestries, an organ chamber, and a gallery to seat 90. The heating is to be by hot water on the low-pressure principle, while ventilation is to be obtained by means of air-pump ventilators. The cost is estimated at £1,850.

At the meeting on Tuesday of the Gloucestershire County Council the death of the county architect, Mr. James Medland, was reported, and it was agreed to appoint in his place his son, Mr. Henry Medland, who had recently acted for him. A long discussion arose on a proposal to accept the tender—the lowest sent in—of Mr. W. A. Forse, at £6,899, for the erection of a new meeting-room for the County Council, and the conversion of the present room into offices for the staff, which are much needed, the present offices being wholly inadequate for storing the documents and carrying on the business. On a division, the resolution to accept the tender was carried by 32 to 22.

Trade News.

WAGES MOVEMENTS.

Halifax.—The Halifax carpenters and joiners came out on strike on Saturday for an advance of wages from 7d. to 7½d. per hour, and certain alterations in the working rules. Six months' notice of the desired concessions was given last December, and this terminated on Saturday, when about 200 men ceased work. The masters have offered a farthing extra, which has been refused.

Jedburgh.—The wages of the journeymen masons in Jedburgh have been raised from 8d. to 8½d. per hour. One of the master builders is offering as high as 9d. per hour. The building trade here has been very brisk for several months past, and is likely to be so for some time to come.

Perth.—The slaters in this city struck on Monday for ½d. per hour increase.

The ceremony of laying a foundation-stone in connection with the Winson Green new Congregational Church took place on Saturday. The church, which will accommodate 700 persons, is being erected by voluntary labour, under the superintendence of Mr. T. E. Bicknell, of Smethwick, and the architect is Mr. George Ingall.

The death is announced from Paris of M. Jean Carries, the eminent sculptor and porcelain decorator. He was born at Lyons in 1856, and was a self-taught artist. In 1881 he began exhibiting busts which gave evidence of much power. At one time he suddenly disappeared for a period of two years, which he devoted to experiments in pottery; but he has died before being able fully to carry out his ideas.

A Local Government inquiry into the joint sewerage scheme for Bridgend, Tendu, and Aberkenfig was held at the Town-hall, Bridgend, on Wednesday week, by General Phipps Carey, the Bridgend local board seeking leave to borrow £9,000, and the Bridgend and Cowbridge rural sanitary authority £7,500.

The Mayor of Hastings, Mr. Alderman P. H. Tree, F.R.I.B.A., on Saturday night switched on the electric light to the whole of the Esplanade, extending for three miles from the Fish Market to the end of the Marina. The installation consists of fifty-two lamps, each of 2,000c.p. Thousands of people assembled on the piers and parades. Two mains are used for the lighting, and to prevent the failure of the current the machinery is duplicated.

The contract for the construction of the new docks at Barry, Glam., has been let to Messrs. Wills and Price, who were connected with Mr. Walker, by whom the contract for constructing the present docks at Barry was secured. The new dock will be a comparatively cheap one to construct, inasmuch as the existing entrance will be utilised, and thus the very great expense of any separate communication with the Bristol Channel will be obviated. Moreover, it is upon low-lying land, so that the work of excavation will not be onerous or difficult.

On the 13th June, in the Canadian Chancery Division Court, before Justices Boyd and Meredith, the appeal of Mr. Neelon, contractor for the new Toronto city buildings, from the decision of Mr. Justice Rose, who affirmed that the architect had authority under the contract to dismiss the contractor, came up for argument. The Court agreed with the construction put upon the contract by the trial judge, and dismissed the appeal with costs. Mr. Neelon intends to carry the case to the highest court of appeal.

At the annual meeting of the supporters of the Church House, held on Thursday in last week, the Archbishop of Canterbury asked for £15,000 by the end of the year in order that the new hall, now in course of construction from Sir A. W. Blomfield's designs, might be completed very quickly.

A new Baptist church erected in the Abbey-road, Malvern, was formally opened on Thursday in last week. The cost has been £4,500.

A new borough police-station is being erected at Reading, and special consideration has been given to the ventilation, which will be effected on the Boyle system, the latest patented improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

At Tuesday's meeting of the Liverpool School Board, it was decided to purchase a portion of land in Sir Thomas-street, near the Municipal Offices, at £20 per square yard, for the purpose of erecting board offices.

The German Emperor has granted the funds to the German Archæological Institute in Rome to enable it to carry out a scientific investigation, and to publish an account of the celebrated reliefs of the Column of Marcus Aurelius.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Acton.—For the erection of a doctor's residence, stabling, fence walls, &c., on the north side of Pembridge-road, Acton, for Dr. A. Cayley Hutchinson, M.D., M.B., C.M. Mr. Edward Monson, jun., F.R.I.B.A., Acton-vale, W., architect. Quantities supplied:—

Dorey and Co., Brentford	£2,985	0	0
Godsen and Sons, Kilburn	2,800	0	0
Hooper, G., Acton	2,792	0	0
Nye, T., Ealing (accepted)	2,700	0	0

Barnet.—For entrance lodge, Barnet burial ground, for the trustees of the Barnet Chancel Estate. Mr. J. C. Traylen, 16, Broad-street, Stamford, architect:—

Pearson, M. A., Barnet	£704	10	0
James, W., Barnet	690	10	0
Butcher, T., New Barnet	670	0	0
Williamson, W. J., Finsbury Park	656	8	0
Voller, F., Wood Green	620	0	0
Willmott, J., and Sons, Hornsey	605	0	0
Lidstone, N., 96, Blacklock-road, N.	576	0	0
Powey, W., Winchmore-hill, N.	568	0	0
Halliday, S. F., Stamford, Lincs*	499	10	0

* Accepted.

Barry, Glam.—For the construction of the new dock at Barry:—
Wills and Price (accepted).

Beverley.—For new casual wards and porter's lodge, Beverley Workhouse. Messrs. Hawe and Foley, architects, Beverley. Quantities by Messrs. Hawe and Foley:—

Scales, G, Scarbro'	£2,321	0	0
Good, E., Hull	2,207	12	6
Pape, G., Beverley	2,000	0	0
Lyons, A., Malton	1,987	0	0
Greenlaw, H., Beverley	1,938	3	8
Foley, J. R., Beverley (accepted)	1,885	15	3

[Architects' estimate, £1,874.]

Brockley.—For the enlargement of the Mantle-road School, Brockley, by 394 places, and the provision of a cookery centre in connection with the school, for the London School Board:—

				A.		
Gregar, W., and Son	£12,760	0	0	£200	0	0
Longley, J., and Co.	11,598	0	0	185	0	0
Hart Bros.	11,340	0	0	183	0	0
Holliday and Greenwood	10,887	0	0	150	0	0
Lovatt, H.	10,825	0	0	124	0	0
Reed, A., and Son	10,785	0	0	150	0	0
Smith, J., and Sons	10,398	0	0	149	0	0
Kirk & Randall, Woolwich*	10,121	0	0	154	0	0

* Accepted.
A.—If brickwork be built in cement, add.

[(a) Cost of school buildings and closets, £6,007; (b) tar pavement, £353; (c) drainage, £522; (d) cookery centre, £453; (e) manual training centre, £1,502; (f) works to existing buildings, £758; (g) extra depth of foundations, £526; (h) add for brickwork to be built in cement, £154; total, £10,275. Cost of existing school, £9,183; of proposed enlargement, £10,275; total, £19,458. Total accommodation of enlarged school, 1,194; total cost per head of ditto, £16 5s. 11d.]

Bromley-by-Bow, E.—For redraining all departments of the Oban-street School, Bromley, for the London School Board:—

Dent and Hellyer	£1,414	0	0
Colls and Sons	1,380	0	0
Calnan, M., and Co.	1,325	0	0
Triggs, E.	1,085	0	0
Peattie and Axtell	1,045	0	0
White, F., and Son	1,009	12	0
Robey, J. T.	1,007	0	0
Gregar, W., and Son, Jupp-road, Stratford (accepted)	994	0	0

Birmingham.—For the completion of the Hockley Brook improvement, for the joint committee of the Birmingham city council and the Aston local board:—
Jones & Fitzmaurice, Birmingham ... £8,492 14 2
Accepted.

Birmingham.—For the erection of additional stabling and granary at Hollady-street Wharf, for the Birmingham city council:—
Fenwick, R., Birmingham (accepted) ... £6,095

Bromley-by-Bow, E.—For reconstructing skylight over hat and cloak-room in the Bromley Hall-road School, for the London School Board:—

Calnan, M., and Co.	£95	10	0
Derby, A. W.	74	0	0
Gibb, D., and Co.	62	0	0
White, T., and Son	59	18	0
Corfield, S. H.	59	0	0
Robey, J. T., Bow-road (accepted)	58	10	0

Bromley, Kent.—For the erection of a house in Bromley Park, Kent, from the plans and specifications prepared by Mr. William H. Duffield, A.R.I.B.A., 34, Queen-street, Cannon-street, E.C., architect. Quantities supplied:—

Patman & Fotheringham, London	£1,951	0	0
Parkey, Peckham	1,825	0	0
Payne, Bromley	1,798	0	0
Lowe, Chislehurst	1,715	0	0
Grubb and Sons, Bromley	1,671	0	0

Bury, Lancs.—For fittings in the chemical laboratory of the technical schools, for the town council:—
Halstead Brothers, Eastwood, near Todmorden (accepted).

Carlton, Wilts.—For additional buildings to Manor Farm, for Capt. T. E. Fowle. Mr. James H. Money, architect. No quantities:—

Huntley and Sons, Honey-street	£452	0	0
Ash, H., Devizes	299	10	0
Toomer, F., Salisbury	293	0	0
Whatley and Co., Pewsey	265	0	0

Charlton, S.E.—For the erection of a school on the Maryon-park site, Charlton, to provide accommodation for 789 children, and also cookery and laundry centres on the site:—

				A.		
Green, T. L.	£21,385	0	0	£559	0	0
Boyce, T.	21,328	0	0	480	0	0
Marsland, J.	20,966	0	0	450	0	0
Lathey Bros.	20,931	0	0	400	0	0
Lovatt, H.	20,856	0	0	356	0	0
Lawrance, E., and Sons	20,623	0	0	401	0	0
Stimpson and Co.	19,940	0	0	530	0	0
Nightingale, B. E.	19,917	0	0	357	0	0
Kirk and Randall, Woolwich	19,244	0	0	445	0	0

A.—If brickwork be built in cement, add.

[(a) Cost of school buildings and closets, £11,744; (b) tar-pavement and playgrounds, £2,689; (c) boundary walls and gates, £1,600; (d) two teachers' rooms, £200; (e) schoolkeeper's house and cookery centre, £1,352; (f) laundry centre, £589; (g) extra depth of foundations, £1,070; (h) add for brickwork to be built in cement, £445. Total, £19,689. Cost per head of (a) only £14 17s. 8d.]

Chelsea.—For general repairs, painting, distempering, and sanitary work at the Chelsea Infirmary, for the guardians of St. Luke, Chelsea. Messrs. Lansdell and Harrison, 12, Compton-terrace, Highbury, N., architects:

Lapthorne and Co.	£697	0	0
Cridlan	595	0	0
Wade	574	15	0
Foxley, G., 36 & 37, King-street, Regent-street, W. (accepted)	555	0	0

Chelsea, S.W.—For works of redrainage at Walton-street board school, for the London School Board:—

Beattie, R. P.	£604	0	0
Humpherson and Co.	584	0	0
Foxley, G.	580	0	0
Kent, G. and F.	539	0	0
Davis, J. E.	528	0	0
Winser and Co.	525	0	0
Polden, S.	519	0	0
Star and Son	495	0	0
King, H., and Sons, Fulham-road*	348	0	0

* Accepted.

Clapton, N.E.—For enlarging Millfield-road schools, Clapton, now in course of erection, by 587 places, for the London School Board:—
Shurmur, W. (accepted) on schedule of prices.
[Contractor for building in progress.]

Clerkenwell.—For the erection and completion of new armoury and officers' divisional quarters at Clerkenwell, E.C., for the 3rd Middlesex Artillery Volunteer Corps. Mr. C. I. C. Pawley, 2, Princes Mansions, Westminster, S.W., architect. Quantities by Mr. Henry Bushell, F.S.I.:—

King, W., and Son	£1,258	0	0
Langdale, Hallett, and Co.	1,200	0	0
Prestige and Co.	1,159	0	0
Holloway Bros.	1,112	0	0
Turtle and Appleton	1,060	0	0
Battley, Sons, and Holness	997	0	0
Hawkins and Wright*	888	0	0

* Accepted conditionally. All of London.

Crystal Palace.—For painting and renovation to the Crystal Palace Station, for the London, Brighton, and South Coast Railway Company. Mr. F. D. Banister, engineer:—
Richardson, J. O., Albert Works, Peckham ... £1,979
Accepted.

Crouch End, N.—For sewers at Topsfield Estat Crouch End, N., for the Hornsey local board:—

Killingback and Co., Camden Town	£8,765	0	0
Cooke, B., and Co., Battersea	8,505	0	0
Dunmore, T. G., Crouch End, N.	7,884	10	6
Jackson, J., Plaistow	7,764	17	6
Hudson, S., Streatham Hill Station	7,699	6	4
Wilkinson Bros., Finsbury Park	7,619	0	0
Griffiths, W., 283, Kingsland-road	7,329	9	0
Adams, T., Wood Green, N.	7,138	12	6
Dickson, J., Townsend, St. Alban's*	6,266	17	0

* Accepted.

Dudley.—For iron fencing on the new road to Netherton, for the town council:—
Hill and Smith, Hart's Hill (accepted).

East Croydon.—For fittings required at new sorting office, Cherry Orchard-road, East Croydon, for Her Majesty's Office of Works. Mr. John Tosh, architect:—
Richardson, J. O., Albert Works, Peckham ... £188
Accepted.

East Dulwich, S.E.—For providing a complete new system of heating for the Heber-road School, East Dulwich, for the London School Board:—

Maguire and Son	£683	10	0
Dawson, R., and Co.	610	0	0
Parries, H., and Harris	581	10	0
Wontner-Smith, J., Gray, and Co.	580	0	0
Rosser and Russell, Limited	577	0	0
May, J. and F.	575	0	0
Pearson, R. H. and J., Limited	560	0	0
Berry, Z. D., and Sons	549	0	0
Wenham and Waters, Limited	495	0	0
Fraser and Son, Millwall (accepted)	389	0	0

Edinburgh.—For widening the North British Railway system from Corstorphine to Abbey Hill:—
Watt and Wilson, Peter's-hill, Glasgow (accepted) about £60,000.

Fulham.—For stables, &c., at Burlington-road, Fulham, for the London General Omnibus Co., Ltd. Mr. Percy W. Britton, Assoc.M.Inst.C.E., engineer:—

Perry and Co.	£4,218	0	0
Holliday and Greenwood	4,113	0	0
Downs	4,097	0	0
Knight	4,069	0	0
Ansell	3,700	0	0
Richardson, J. O.	3,570	0	0
Wall, C.	3,465	0	0
Parker	3,395	0	0
Evans, R. and E.	3,389	0	0
Evans, H. D.	3,345	0	0
Wilkinson Bros. (accepted)	3,271	0	0

Gloucester.—For the erection of a meeting-room and offices, for the county council:—
Forse, W. A. (accepted) £6,899 0 0
[Lowest tender received.]

Harlesden.—For building six shops, High-street, Harlesden. Mr. L. V. Hunt, A.R.I.B.A., 35, Queen Victoria-street, E.C., architect. Quantities by Mr. G. Fleetwood, F.S.I., 15, Furnival's Inn, Holborn, W.C.:—

Whitehead, L., and Co.	£5,750	0	0
Oldrey, H. B., and Sons	5,735	0	0
Holloway Bros.	5,645	0	0
Easterbrook, J.	5,561	0	0
McCormic and Son	5,487	0	0
Bowyer, J. and C.	5,412	0	0
Cowley and Drake	5,350	0	0
Scrivener, W., and Co.	5,232	0	0
Tennant and Co.	5,179	0	0
Gould and Brand (accepted)	4,945	0	0

Hastings.—For electric-light wiring at the Queen's Hotel, Hastings, for the Queen's Hotel Company, Hastings, Ltd. Mr. Arthur Wells, F.R.I.B.A., Queen's Chambers, Hastings, architect and surveyor:—

Spiers and Pond	£510	0	0
Belshaw and Co.	448	0	0
Hastings Electric Light Supply Co.*	358	13	4
Strode and Co.	343	0	0
Roger, Dawson, and Co.	300	0	0
Raynes, Smith, and Co.	269	10	0
Fowler, Lancaster, and Co., Birmingham	265	0	0

* Accepted. Rest of London.

Hastings.—For electric-light fittings and fixing at the Queen's Hotel, Hastings, for the Queen's Hotel Company, Hastings, Ltd. Mr. Arthur Wells, F.R.I.B.A., Queen's Chambers, Hastings, architect and surveyor:—

Barker, J., and Co., London	£411	0	0
Strode and Co., London	346	11	0
Hastings Electric Supply Co.	345	18	4
Hands, London	310	9	9
Verity, B., and Co.	306	19	0

Hastings.—For repairs, alterations, and improvements at the Queen's Hotel, Hastings, for the Queen's Hotel Company, Hastings, Ltd. Mr. Arthur Wells, F.R.I.B.A., Queen's Chambers, Hastings, architect and surveyor:—

Salter, T., Hastings	£2,279	0	0
Lester, J., Hastings	2,277	0	0
Cruttenden, H. E., Hastings	2,195	0	0
Jenkins, P., Hastings*	1,995	0	0

* Accepted, at schedule.

Hastings.—For decorative and sundry other works at the Queen's Hotel, Hastings, for the Queen's Hotel Company, Hastings, Ltd. Mr. Arthur Wells, F.R.I.B.A., Queen's Chambers, Hastings, architect and surveyor:—

Collinson and Lock, London	£2,122	4	8
Smee and Cobay, London	2,100	15	6
Lester, J., Hastings	1,990	0	0
Crossley, J., London	1,820	13	0
King, H., London	1,770	0	0
Cruttenden, H. E., Hastings	1,769	0	0
Miller, S. P., Hastings	1,753	5	5
Jenkins, P., Hastings	1,675	0	0
Lancaster, H., Hastings	1,500	0	0
Barker, J., and Co., London*	1,497	0	0

* Accepted, at schedule.

Hastings.—For fibrous plaster decorative work at the Queen's Hotel, Hastings, for the Queen's Hotel Company, Hastings, Ltd. Mr. Arthur Wells, F.R.I.B.A., Queen's Chambers, Hastings, architect and surveyor:—
Jackson, G., and Son, London (accepted) £101 0 0

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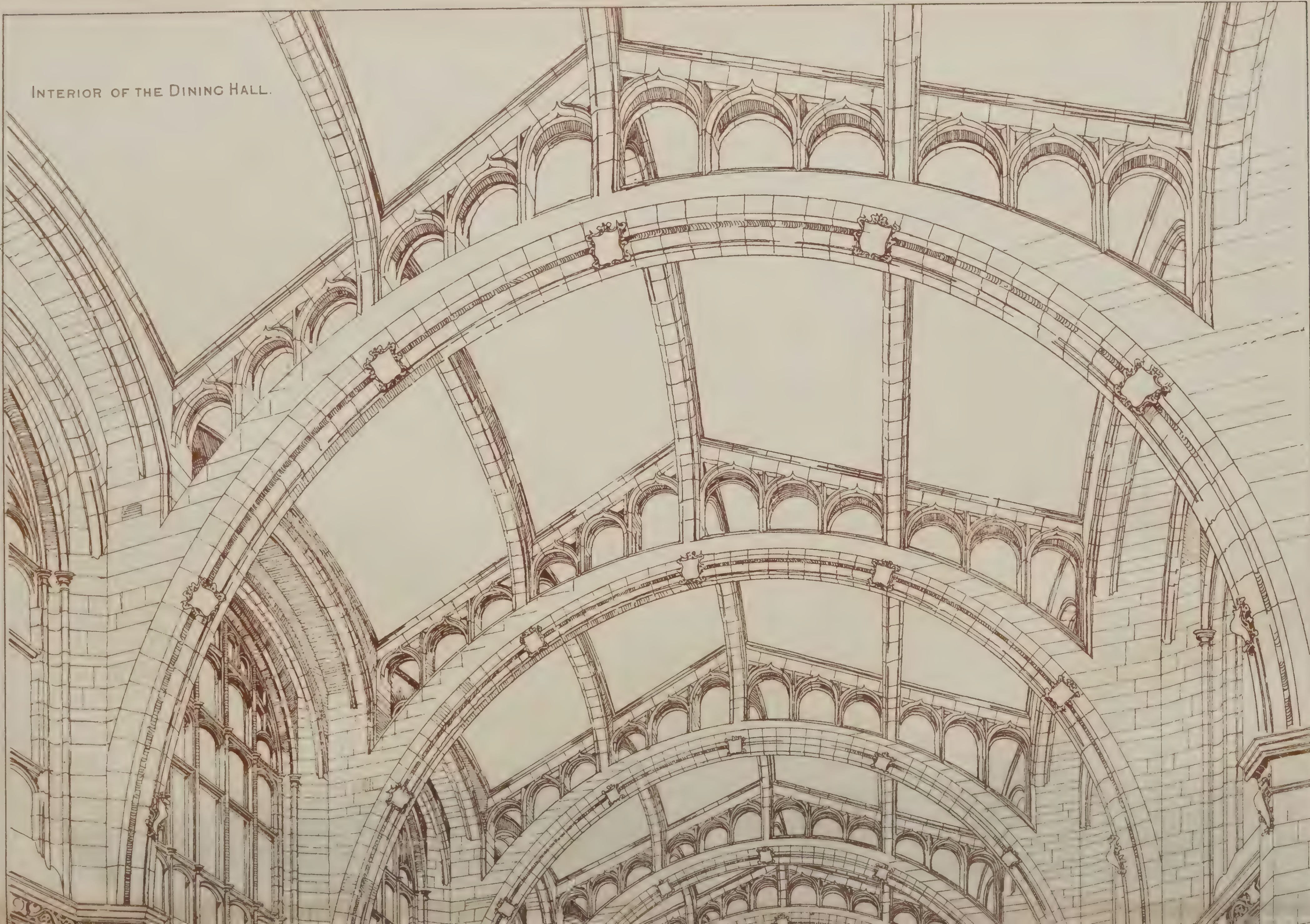
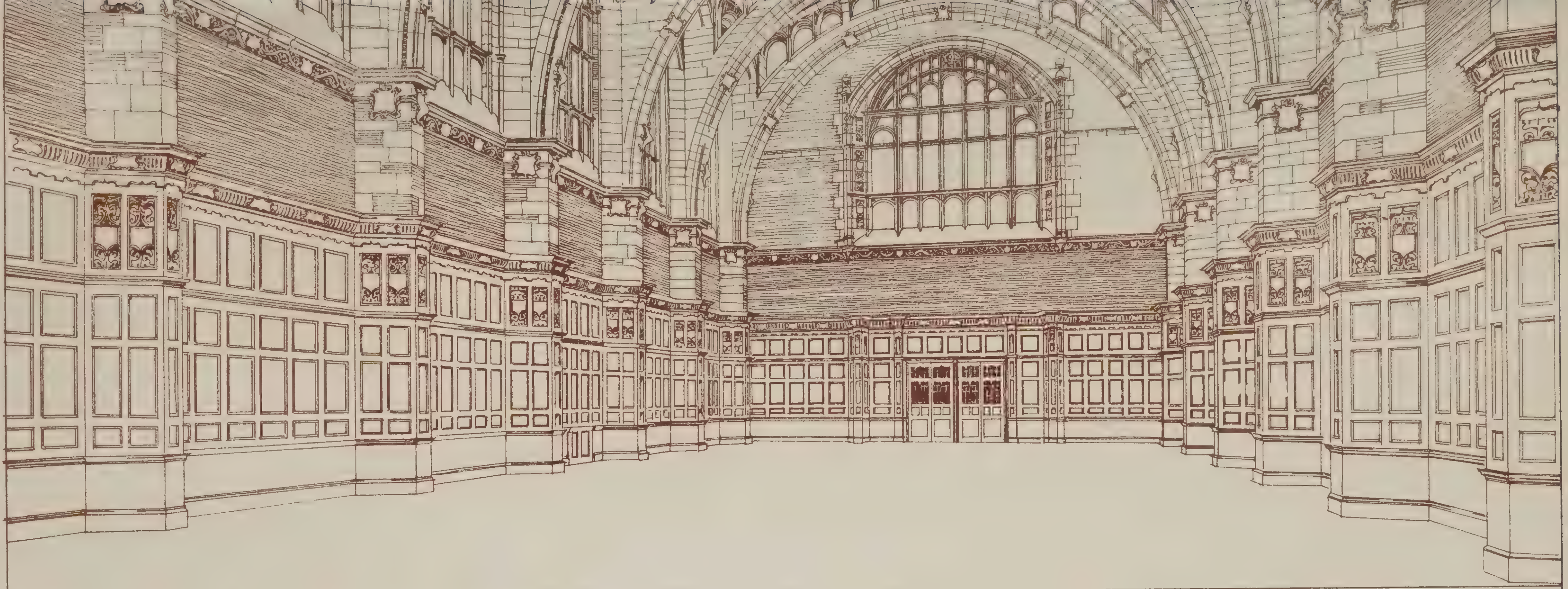
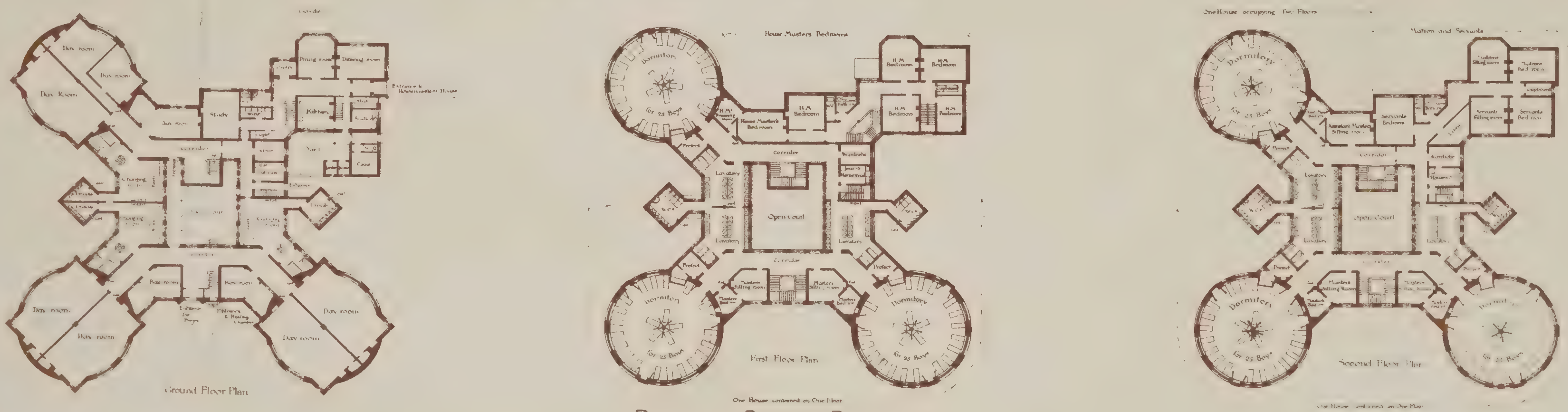


Interior of the Dining Hall.





Plans of School Residences.

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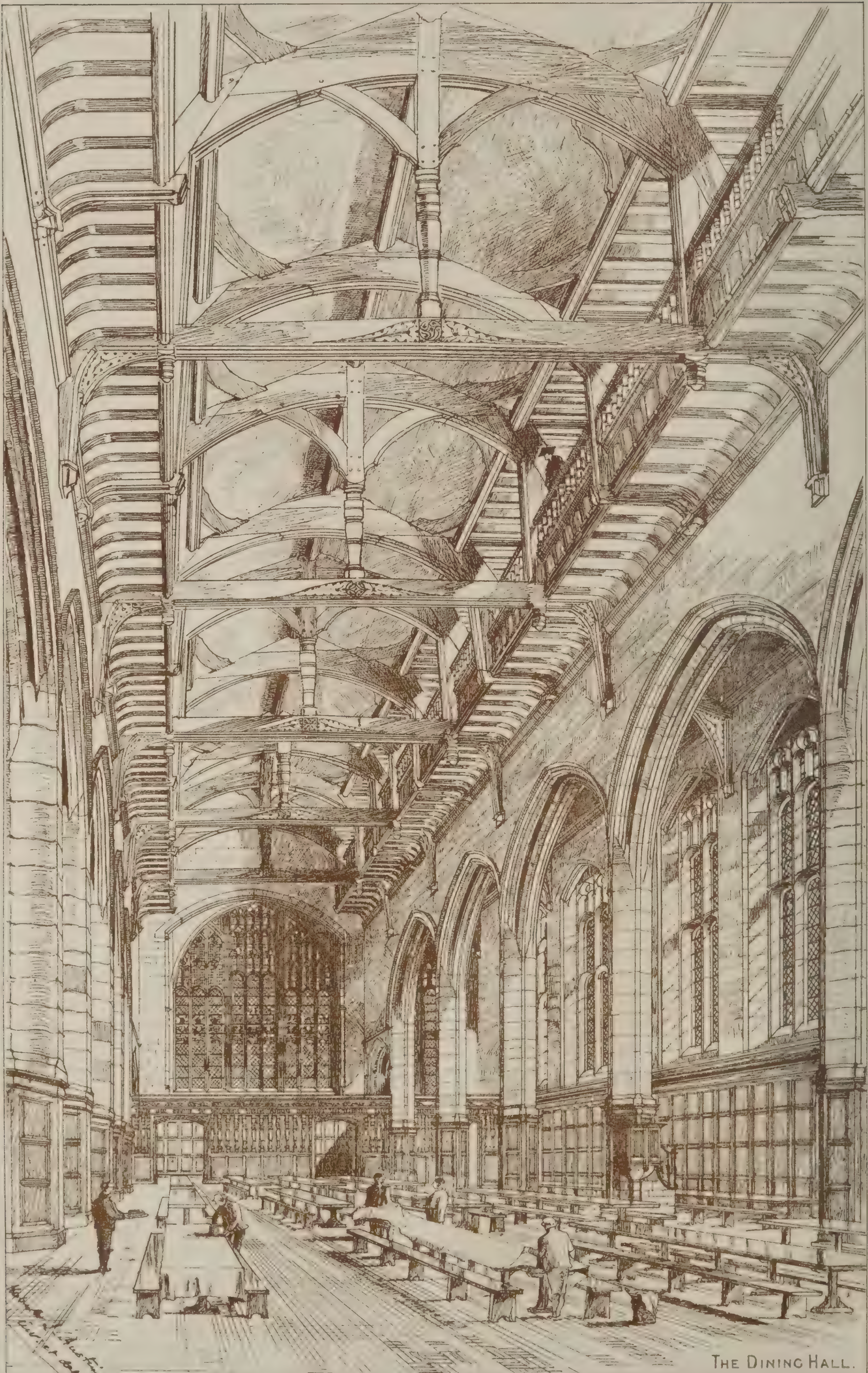
Christ's Hospital - New Boarding Schools at Horsham, Sussex.

Design by T. E. Collcutt, F.R.I.B.A., Arch^{t}.



THE DINING HALL.

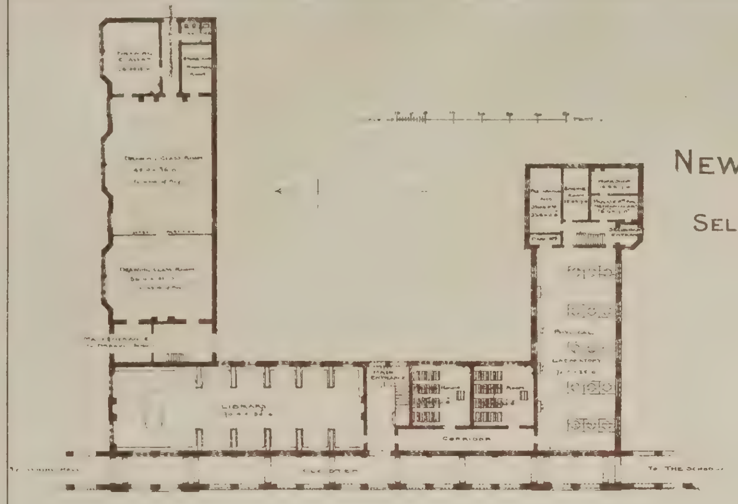
Photo Lithographed & Printed by James Akerman, 6 Queen Square W.C.

CHRIST'S HOSPITAL - NEW BOARDING SCHOOLS AT HORSHAM, SUSSEX.

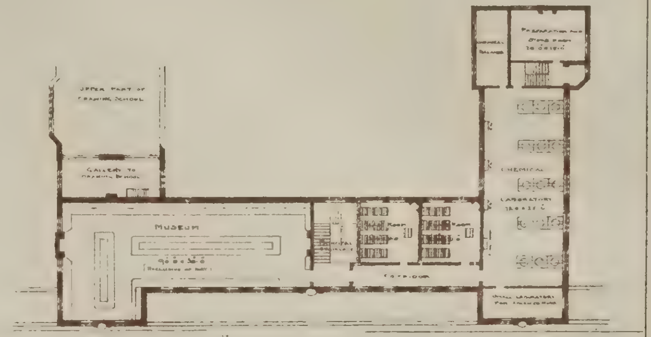
Christ's Hospital

New Boarding Schools at Horsham, Sussex.

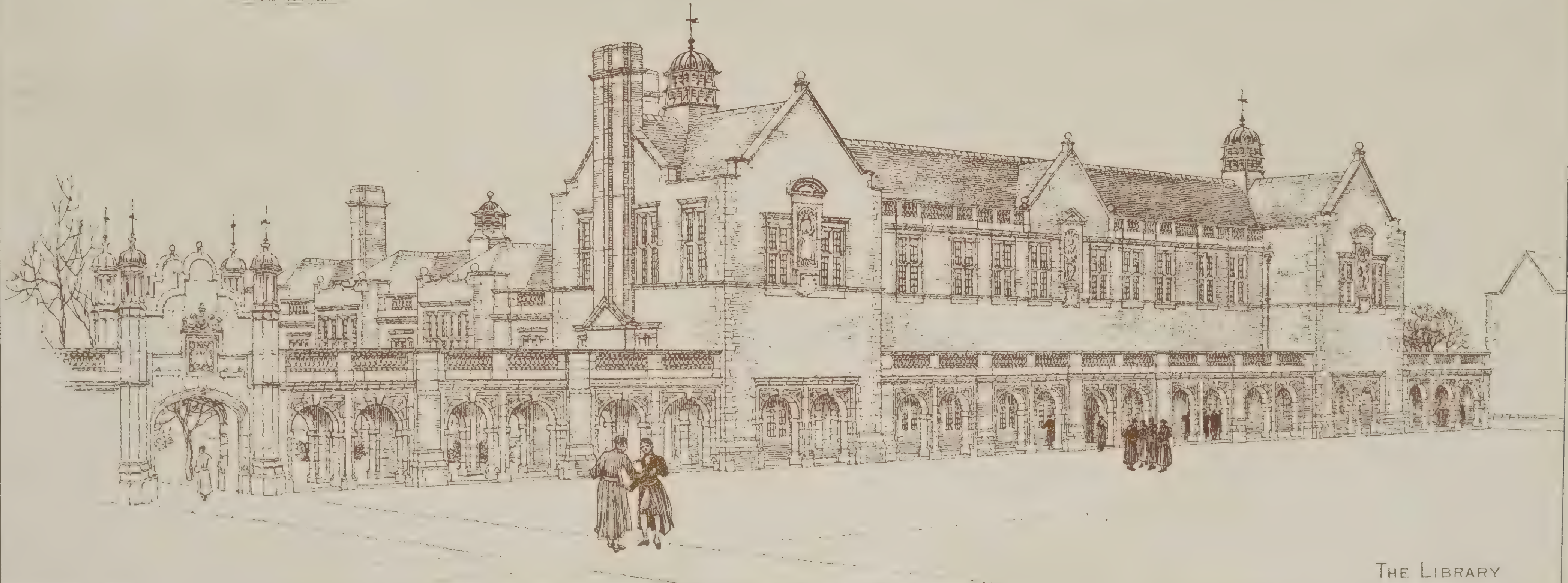
Selected Design. Messrs. Aston Webb & Ingress Bell, Archts.



Ground Floor Plan


Upper Part of Drawing School
Gallery to Drawing School
Museum
Corridor
Chemical Laboratory
Preparation and Store Room
Small Laboratory

— First Floor Plan —



The Library

THE BUILDING NEWS
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FRIDAY, JULY 13, 1894.

WHAT ARE COMPETITIONS COMING TO?

THE architectural world might conveniently be divided into competitors and non-competitors, while each of these classes, again, splits up into several sub-divisions. The architects who refuse to compete differ widely amongst themselves. There are those who are fortunate enough to be, and always to have been, independent of speculative work. They have succeeded, perhaps, to an hereditary practice, and their name is a source of income in itself. There are others who, with no special advantages and no special abilities, have been equally prosperous. All their lives long they have firmly grasped the fact that what their neighbours really care about is not architecture at all, but politics or religion. To produce architecture worth the name is difficult, and the producer perhaps is in the end only casting pearls before swine; but to stick to a party or a sect through thick and thin is easy, and it pays. The prudent man, therefore, with nothing to sell but his soul, sells that, and lives in comfort on the proceeds. The great point is to decide at the outset whom to sell it to. This is a serious matter of business, far too important to be interfered with by personal beliefs or preferences. The only question is, what party bids fair in the long run to pay the best price. The prudent man enters on life by joining *that* party. He drudges for it, he touts for it, he votes for it; he defends its abuses, flatters its members a step or two above himself, and in time comes to be acknowledged as an earnest young man, with principles of the right sort. The party feels that such a young man ought to be encouraged. They make him a delegate, or a secretary, or something else that involves much labour, with apparently little reward. But he does not draw back, for he knows that things are not what they seem. He is getting better and better known; he is getting more and more opportunities of introducing himself; he is becoming trusted, as only that man can be who never admits that he is wiser to-day than he was ten or twenty years ago. Work comes in to his office; his engagements with his party leave him little time to do it, even if he knew how; but in these matters money answereth all things. If his party bring work in, his clerks can turn work out, so he farms them and reaps the profits. Thus he is able to subscribe more and more to his party's funds. It is in this, as we all know, that true greatness consists. Henceforth, therefore, his rise is rapid. He presides at public meetings; he becomes a permanent vice-chairman, and at last a chairman. By this time, perhaps, he has made a fortune and retired. But if he has not, though his profession has hardly heard of him, and though his works may be a disgrace to the town which contains them, his own party, and perhaps even a section of the public outside it, are firmly convinced that he is the greatest architect known.

What some men accomplish by doing the work of a party, others effect by elbowing their way into "Society." They meekly submit to being snubbed, that they may ultimately snub others, and take kicks first in hope of halfpence after. A vulgar proverb declares that we must each eat a peck of dirt before we die; but these people eat a waggon-load. Everyone to his taste, and much good may it do them! Barbarous indeed would the person be who grudged them their reward; and if at last they, too, obtain a steady influx of commissions, we must remember what they have gone through to secure it. But there are other non-competitors besides these, and non-competitors of a very different sort. Our ablest men, who have gained high positions through eminent talent and honest work, not only refrain, as a rule, from competing, but often advise others to refrain too. It is very natural. They find themselves where they wished to be, and they forget, or half forget, that it was success in some great competition which chiefly put them there. It is well that they should rest and be thankful. It is fair that they should be satisfied with using the many opportunities which now spontaneously come to them. A competition is, in one aspect of it, a fight for work. Those who have as much work as they can well get through, act both rightly and generously in declining to compete for more. But if there were no more competitions, there would be few more chances for ability. Hereditary practices would remain—perhaps one in a dozen adorned with hereditary talent, but most with only the shade of a great name. Party hacks would prosper, society-stormers would succeed, but men with mere artistic gifts would live and die unheard of.

Competitions, then, seem to be a necessity—at least, for our times, and perhaps for a long period after. We have no other way, save by rare accidents, of bringing the best men to the front. If competitions fail in doing this, they fail altogether; and their failure in this has for some time past been growing more and more conspicuous. Happily, they do not all fail. One here and there is, or promises to be, a marked success. There is no reason why all, or nearly all, should not be the same. The fault does not lie with the competitors. Never, at least in the present century, have they shown more ability than now. The fault lies in the conditions under which they compete; and till these conditions are altered, we may look forward with certainty to more mistakes—more unwise selections—more and more contests in which the worst man wins.

How do the promoters of a new building initiate a competition? Very often, of late years, by a piece of sharp practice which borders closely on fraud, and which might easily lapse into it. They advertise that copies of their Instructions to Competitors will be sent on receipt of two guineas, or sometimes more, from each applicant; and that this sum will be returned on receipt of a *bonâ fide* design prepared in conformity with the instructions. It is not till after you pay your money and see the instructions that you really learn what you must do to get it back; how many drawings you have to make, how large the scale is, and how soon they have to go in. An enterprising person might easily raise a few hundred pounds on this system. He has only to ask for a large number of drawings, say, to inch scale, and to insist that they shall be delivered within a week, and all the fees he received would become his own. The Courts of law, if they were moved, might or might not interfere in such a case; but it would not be worth the while of one individual architect to begin an action on the doubtful chance of recovering two guineas—and we all know that architects will suffer greatly rather than combine. These entrance fees were probably first suggested by the fact that a deposit is sometimes required, under the advertisement system, from contractors wishing to tender. That, however, is a totally different matter. A set of lithographed bills of quantities for a large building actually costs, for lithographing alone, as much, or more, than the deposit asked for. The set may run to hundreds of pages; the labour of packing it, and the cost of postage, moreover, are considerable, and a committee can hardly undertake to issue copies of it gratis to every unknown person who may be curious enough to apply for one. But where a set of quantities costs a guinea for lithographing, a set of competition rules only costs, perhaps, twopence or threepence for printing, and it goes in an ordinary envelope, with a penny or three-halfpenny stamp. The first building committee who found that there were hundreds of men going about at large, and yet ready to send a couple of guineas for a set of twopenny instructions, must have felt that they had never before fathomed the fatuity of their fellow-mortals. It is true the guineas are to be returned on receipt of a *bonâ fide* design. But what architect with any work of his own knows whether he will or will not, after all, have time to make one? If he has, well and good; but if more pressing matters intervene, he either loses his deposit through not competing, or he swells the number of competing designs by a crude, worthless set of plans, sent in simply to get back the money. So it comes to pass that this deposit-system, which is in the one case little better than a barefaced robbery, is in the other case a direct incentive to the sending in of worthless rubbish, which overwhelms by its bulk the minority of skilful and well-studied schemes. Architects give quite enough when they give the time, thought, and expense which every competition involves; it is rather hard to insist on their giving money also—and money which lessens, instead of increasing, the chances of a meritorious design. But now committees have once tasted blood, many of them will continue to hunger for it. If they do, it would be better for all parties that architects should be bled in moderation. Let the instructions for a competition be sold outright to every applicant, say, for only ten or twelve times the actual cost of each copy, and let no money be returned. At the price of half a crown committees would still realise a handsome profit, and they would no longer be tempting competitors without experience or position to inundate them with trash in order to get back money that should never have been asked for.

So much for one cause of failure. Others, still more serious, often arise from the "instructions" which competitors receive. It is a rule, with very few exceptions, that the promoters of a building ask for much more accommodation than they are willing to pay for. This is an evil which grows worse and worse. All the world knows that laws of increasing stringency are being made every year about sanitary matters. Walls have to be thicker than formerly—if not in London, at least in many other places. Sites have to be freed from decaying substances; the whole area of buildings has to be concreted over; drains have to be disconnected and ventilated, and have in many towns to be soundly bedded on a concrete foundation: and a multitude of other things—useful enough, but not compulsory till in recent times—have everywhere to be done. In public buildings of several kinds the regulations about ingress, egress, air-space, water supply, and protection against fire involve yearly a heavier and heavier cost, and while all buildings have thus to be carried out in a more expensive way than formerly, the cost of labour also tends to rise higher and higher. Shorter hours and higher wages cannot be expected to make building cheaper, though they ought to make it better; and we may say, in passing, that workmen would receive, both from architects and the public, a great deal more sympathy than they do at present if they agitated not only for better pay, but also for better work. But, returning to our competition "instructions," it is high time for committees to recognise that modern improvements of every kind cost money. Buildings cannot be put up now at the same rate as they were twenty years ago. There is nothing gained in the long run by telling competitors that they must provide a £10,000 hall, or college, or school for £9,000, or £8,000, or perhaps even £7,000. They do not do it, though some of them, perhaps, may send in designs which promise to do it. But the promoters reap no benefit in this way. They have asked for an impossibility: the author of the design they select may have hoped, and may have told them that he hoped, to accomplish the impossibility; but it will not be accomplished. If the committee happen to be rather below the average of men as to conscience—a state of things which sometimes goes along with an inward sense of being considerably above them in that important matter—they may hereafter abuse their architect, and rob him of his time and trouble. Perhaps they have put a clause in their "instructions" which, as far as law is concerned, will bear them out in doing so. But it will not make their conduct just; and, above all, it will not give them their £10,000 building for their £9,000, or £8,000 or £7,000. Then why not act fairly at first, and either enlarge their estimate or reduce their requirements? Unless they do, they will be impaled on the usual dilemma, when they come to make their choice of a design—the dilemma of selecting a wretchedly poor scheme because of its cheapness, or a better one which will cost 20 or 30 per cent. beyond the stipulated amount. This dilemma is a second and ever-recurring cause of failure in competitions.

It happens, not very unfrequently, that the outside observer, startled by the extreme badness of the designs which have carried off the first, second, and third premiums in a competition, looks for the names of the authors, and understands the matter at a glance. The most successful competitor, perhaps, has just built a house for the chairman. The two others, it may be, are friends of the promoters, or at any rate they are "local men." A glowing paragraph appears in the papers to the praise and glory of, let us say, the three Silchester architects who have brought out their town victorious at such mighty odds. The implication is, of course, that they have done it fairly, and that the Silchester Committee did not know whose plans they were choosing. We have certainly nothing to say against "local men" as such, whether their locality is in London or the provinces. Their local knowledge gives them—and fairly gives them—a considerable advantage over competitors from a distance. But this advantage should show itself in the production of better designs than outsiders can furnish. Now, in the case we are supposing—a case of which some examples are likely to be within our readers' recollection—the premiated designs by local men have been not better, but glaringly worse, than others. Yet, how is it possible, some too innocent person may ask, that with all the precautions about secrecy at present in vogue, any member of a committee should know the authorship of a design? Formerly designs were sent in under motto; but now not even mottoes are allowed. There is no passing a watchword of this sort to any of the promoters, since the designs, like prisoners in Siberia, are simply distinguished by a number, marking the order of their arrival. There is no knowing them either by their size, for in this they are all alike; there is no picking them out by their mounts, for mounts, as well as borders, are excluded; and, finally, there is no recognising them by the writing on them, for everything now has to be printed or type-written. Then, how can the promoters possibly tell which drawings were by their friends, and which by strangers? Their choice must have been an honest one, since, with all these precautions, they could not have known who was who.

So may reason some confiding soul, too good for this wicked world; and so, doubtless, the local committee hoped and believed we should all reason. Unfortunately experience has enlightened us. Good friend—we should say to this confiding person—the problem which baffles you is of the same order as that which puzzled the rustic who took cold after sleeping in the middle of a field. He had carefully shut the gate, latched it, and put the padlock on; and yet his illness seemed to show that there must have been a draught. How did it get in? Much in the same way as information about the names of their competing friends gets in amongst the promoters of a competition—that is, from every quarter except perhaps the one they have taken such precautions to close. For you must remember that it is only the two or three designs that their friends have submitted which the promoters need to recognise. They do not want to learn, and they do not learn till the competition is over, who are the innumerable outsiders, the "foreigners," as they are called in some Midland towns. As to *their* names, no one feels much curiosity. The vital matter is to recognise the work of personal favourites, of "respected townsmen"; and the ways in which this may be done are numberless. They need not be pre-arranged. There is no need for a code of signals, though a code is possible enough. The knowledge that a certain design is by a certain architect may come to the committee in a perfectly blameless way. Perhaps that architect is executing other work for some committee-man: he calls at the office, and by an accident gets a glimpse of that architect's design before it goes in. Perhaps there is a builder on the committee, who, in the same manner, has seen more or less of several schemes as they were being worked out in local offices. We remember a case of this sort in which, though more than a hundred sets of drawings were submitted under motto, all the principal ones were openly discussed under their authors' names long before the sealed envelopes were opened. This was in London, and what is possible there is much more possible in smaller places. Then, again, the way in which designs arrive makes some knowledge of their source inevitable. Those which come with a main-line railway label, and a notice that they are to be delivered immediately, can hardly proceed from the office which, the promoters hope, will win the competition, and which is situated in the next street but one. And if a clerk from that office arrives with a packing-case on a cab, and if the secretary or the caretaker happens to recognise him, how can an accident like this be avoided? You cannot make it a rule that everyone who delivers a set of competition plans must wear a crape mask, like a highwayman. And if you could, there still remain a thousand other ways in which the committee, even if they desired to avoid it, would learn which designs are by their personal friends and acquaintances. Here, then, we have a third source of failure in competitions—a third reason why it is becoming less and less common for the best man to win. The pretence of secrecy has grown into a cover for injustice. The system that was to secure fair play for everybody has proved, in too many cases, a mere hotbed of jobbery and favouritism.

More than ten years have passed since a very large number of architects signed an undertaking not to join in any public competition unless one or more professional assessors of established reputation were appointed to advise the promoters on the relative merits of the designs. It was a promising and well-intended step; but what have been its results? The chief one has been to show that everything now depends on the choice of an assessor; and that satisfactory assessors are wonderfully rare. We have had one, to whose wide knowledge, openness of mind, and determination to secure satisfactory results the country will owe some of its most successful buildings. We have had others, and many of them, to whom it will be indebted for a great deal more that is commonplace and bad. Their selections have often been no better artistically than the selection which a committee would make for itself; while in matters of arrangement and convenience they have been far inferior to it. "Established reputation": how are a lay committee to judge of it? To them, the hereditary practitioner, and the party-hack, are men of established reputation; the local surveyor—good enough in his own province, but not in the province of architecture—is a man of established reputation; the man who put up the last large building in the nearest large town is a man of established reputation; so is any professional friend of the chairman, or of the secretary, or of the chief members of the committee. For one committeeman to object to the intimate acquaintance of another, on the ground that he was not an architect of established reputation, would be almost a *casus belli*. Thus it happens, in a multitude of competitions, that the assessor is one who has scarcely been heard of by the profession in general, or one in whose judgment there is a plentiful lack of confidence. This lack of confidence is too often justified by the result.

Objectionable assessors are of many kinds. Lately, if we may judge from results, the squeezable assessor has often come to the front. The "influential man" of the committee—for every committee has one "influential man," and if peace is to be preserved, not more than one—walks with him round the room where the drawings are on view. "We consider," says this great personage, as they stop before as undistinguished a set of plans as any in the room, "that this is one of the most satisfactory schemes submitted. We are nearly all in favour of it, though there is a small minority who prefer another design, which I shall point out to you presently. I earnestly hope that your judgment may coincide with ours; but if you should feel compelled to prefer the other set of plans, of course we should bow to your opinion, and give it a premium, though I think I may say that, in any case, the one you are now looking at is the one we shall build." If the assessor is pliable or putty-like, this settles the matter. He decides as he is directed, and outsiders marvel at his judgment. He gets his fee with little trouble, and if he is bought, the competitors are sold. Then there is the assessor who knows nothing about the particular class of building he is dealing with; it is the "practical man" of the committee who takes him in hand and leads him. If there is no practical man, he judges by such light as he has, which is probably very little. He mentally compares all the designs with the two or three buildings of the same kind which he remembers best, and gives his award in favour of that which follows their lines most closely. We can all see how much hope there is for an original thinker when the fate of his work rests with a helpless being of this sort, and yet such helpless beings have, before now, settled the destinies of many hundreds, perhaps many thousands, of designs. Then there is the up-to-date assessor, who is only fit to pick out the last new thing in styles, and who can assure the promoters that "this is how we are making them now." The old fogey assessor is the converse of him: he will go back for half a century, and give the first prize to somebody who has learnt nothing and forgotten nothing since the age of Pugin and Barry. Then there is the draughtsman-assessor—a much commoner type than people fancy—with whom plan and arrangement and composition all go for nothing, unless they are set forth by beautifully-ruled lines and admirably-turned circles. There is the self-seeking assessor, watchful beyond everything that his award shall not give some rival a lift; and the bravo-assessor, who uses his report to stab behind the arras of a motto some fellow-architect whom he dislikes, thinking that he can neither ward off the blow nor strike back in return. The competing architect has to take his chance of being at the mercy of such assessors as these. Some of them may be men of "established reputation," but a reputation in one branch of the profession does not qualify a man to be an assessor in another branch. Most of them are not so in any sense; but committees believe them to be, and who is to disabuse them of the belief? This indefinite phrase, "established reputation," is the very rock on which the great competition reform we all hoped for has struck and gone to pieces. The results have been successful where assessors have been of the class which these vague words were really meant to indicate; they have been disappointing, or utterly bad, where they have been of other classes. And the net result is that the fourth and perhaps most conspicuous cause of failures in competitions is at present the unwise choice that is often made of an assessor. It is harder, if anything, to select an assessor than to select a design. How can we expect committees to do the one when they could not do the other?

Minor causes of failure are plentiful, but these four are unmistakable. We must leave for another article such suggestions as present themselves for removing, or at any rate for lessening, them.

SHOULD THE ARCHITECT SUPPLY DETAILS?

DETAILS enter so largely into the spirit and merit of a building, that we cannot conceive a design perfect without them. During the best periods of architecture, they were considered as necessary to the integrity and perfection of a building as the general design, and we have ample proof of this in refinements of outlines and mouldings of Greek temples, and those of the best period of Gothic. No doubt during the Early Renaissance the details were less carefully studied, as they were mostly taken from Classic work and grafted on the Gothic forms which were then in use. Renaissance work, both on the Continent, and in England, show that the details of moulding and ornament retained very much of the Classic character, especially in many of the earlier examples. Thus the mullion and transom window, so common in the time of Elizabeth and James, was practically a Late or Domestic Tudor feature. The gable also was retained, though made more ornamental by devices and fragmentary portions of pediments, and it is quite possible, therefore, that the designers of many of the fine old houses of those reigns were contented to copy the details of windows and mouldings, or to leave them to the taste of the master-workmen and masons. We have corroborative proof of the repetition of details in examining the buildings of this period in every locality, where we shall find the same stone or brick mouldings in perhaps half-a-dozen old houses, similar gables, and windows and mullions, and a general resemblance in the woodwork details of wainscoting and framing. Whether, therefore, we have any right to conclude, as Mr. J. Alfred Gotch, F.S.A., has done in his able work on the "English Renaissance," that, because John Thorpe and his contemporaries have not left us working details of their designs—these being absent from his collection—therefore the inference is that the master-workmen supplied their own details is open to doubt. It is more probable, to our minds, that the details were copied or adapted from existing buildings, these being in most instances specified by the architect or surveyor. The critical remarks by Mr. Phené Spiers and Mr. Wyatt Papworth on Mr. Gotch's work possess interest to the modern architect at this moment, when the question of the position of architect in old buildings has not yet been satisfactorily cleared up. Was he, indeed, as Mr. Gotch infers, an ordinary surveyor and the designer of shells of houses, who left all the designing and embellishment to the master workmen, as Thorpe is said to have done; or an architect who carried out the design and details as the modern practitioner does now? As Thorpe is regarded by the author as the "type of the architect and surveyor of his day," it follows that he is taken as a representative of the practice of architects, or so-called "surveyors," of that period. Thorpe was unquestionably a surveyor, as Mr. Papworth asserts, and his collection of drawings — probably those measured for the proprietors' records—were drawn to a small scale. Interspersed with these surveys were found copies of designs made by other hands, it is supposed, and which Thorpe in some cases altered. Whether he was a copyist only, or a designer of houses, we need not inquire here; certain it is that he carried out few, if any, of the buildings attributed to him. Mr. Gotch argues that his drawings or sketches were made for houses; that he prepared plans and elevations which were handed over to local master-workmen to carry out. Some of these were rough. He says: "In no place that I yet know of is there anything to suggest that there was a person who supplied all the drawings in the way in which architects supply them nowadays, or to suggest that there was one controlling designer." Many old building contracts and accounts of work are cited to show there is nothing in them to indicate the existence of a general designer. With reference to the erection of Burghley House or Hatfield House, there is no reliable evidence to prove that an architect was employed as he would be now. From what we know, and from accounts of work and items of this period, we are forced to the conclusion that the master-workmen were responsible for much of the detail which now falls to the lot of the architect, and it was very probable, as we have suggested, that the surveyor gave the general plan and drawings, and that the working masons and carpenters carried out the details according to some old example as they were directed. From the evidence we have of the old workman and the excellence of his craftsmanship, it is obvious that he possessed considerable artistic training in his own branch; while it is equally certain the master-workman had a general knowledge of building, and set out the details and made the drawings that were required. They were well acquainted also with the best examples, and took a personal interest in studying the details of building, and were in these respects very different from the modern tradesmen and average foremen. Old documents, building accounts, and agreements speak of "surveyor" or "surveyour," of master-mason, of carpenters and plasterers, and other trades, but not of architect. In several instances mention is made in old accounts and entries of plasterer's work, in which he supplies "modells" or "paternes" of the ornamental work, which certainly indicates the custom in vogue of copying suitable details, or rather of adapting old forms.

Whichever conclusion we adopt, it is very clear that the old workman had far more to do with the details of the buildings than his modern successor. The question naturally occurs, What would be the effect on our modern architecture if the workman had a similar share in its production? Would it be safe to allow every tradesman to design the details of our buildings, or the architect to hand over to him the detail of any particular trade? From what we know of the average workman, his artistic discernment is not keen. Even improved technical training and mechanical agencies have not made him perceptive; indeed, they have rather taught him to rely too much on others, and too little on himself, and to regard himself as a machine. He has been taught to copy drawings, to obey the orders of those for whom he works, of the foreman or builder. We should be almost afraid to let loose on a building a number of carpenters and plasterers to do as they pleased. Details would be awfully "mixed up" in matters of style. Gothic mouldings and methods would probably be used in buildings where all else was Classic, and *vice versâ*. But even under our present system these things need not be so. If workmen were brought into contact with architects in studio and workshop, we might still have a trained body of men equal to the best traditions of art, whom the architect would engage in his works. We look forward to a time when technical instruction will be directed by masters who can give an artistic direction to manual skill, when the workman will be able to express himself in drawing out details and possess an interest in his own trade.

The method by which the architect now furnishes details for a building is different to the old plan. The working drawings and small scale details are now furnished for contract purposes, and are usually made before the quantities are taken out, and are consequently more or less hurried; but when the trades were invited to do their respective parts by the "piece" or by the day, there was no hurry—each workman had time to make his own details, and to arrange with other trades how a certain part, like a window, had to be finished. In these days, between the architect and his clerk of works, it is often a trouble to get a working detail soon enough, and when the contractor gets it, he perhaps grumbles at the amount of labour involved, and tries by sundry devices to pick holes and alter it. Perhaps the workman is called into the secret councils of his employer to do what he can with less cost of material and labour. The depth of a moulded joint or mullion is reduced; it is "boxed" or built up of thinner pieces of stone; architraves and cornices are similarly treated. Instead of a solid wood moulding, it is made up of small scantlings. In these circumstances the workman loses all interest in his work.

The system of drawing up bills of quantities and measuring artificers' work has done much to place details in the hands of the contractor. As the main object is to reduce material and labour, the quantity surveyor practically takes the detail out of the architect's hands. An appeal to the quantities is made in every case. In the progress of a large building, a great deal of this kind of work devolves upon the clerk of works, who often makes a full-size drawing of the detail or sets it out himself, having all the requisite data at his disposal. He, in fact, occupies much the same position as the master-workman of old days, and were it not for his presence on the works, a large building would fare badly. The great difference between the two systems resides in the fact that, in the old régime, the working details were made on the spot; in the modern, that they are prepared in the office. Architecture has lost a great deal of its local character and charm by this modern process. A work by a London architect in Yorkshire, Northamptonshire, or Somersetshire retains a good deal of Londonism in character and detail, though local workmen may be engaged. From the London office every detail comes, and there is naturally a good deal of sameness in the work. Formerly local designers and workmen were employed; there may have been only a few architects or surveyors like John Thorpe, but the workmen who did the details were generally local men who knew the peculiarities of the materials and workmanship of the district. In this way they gave us halls and mansions like Wollaton, Kirby, Burghley, or Hatfield, examples of individual strength and local interest. The emanation of the whole design and its details from a London office hundreds of miles away must necessarily impart a oneness or sameness to the building, which we can hardly fail to perceive in many of the recent structures for municipal and other purposes erected in distant counties, from the designs of London architects. The office-made details have a stamp of their own, which cannot be mistaken: we lose the natural sympathy and correspondence between the local stone and its type of ornament and moulding; local architectural types are absent, and often a constrained and forced effect is apparent in the features and details of the design. Then we have the obvious loss of sympathy which prevailed when the workman made his own details. How can the draughtsman confined from year to year in an office, who knows little of the actual exigencies or of workshops or buildings, feel any particular interest for a work he has never seen? These, among other reasons, can be brought forward to prove the weakness of the modern system. No doubt it may be urged, on the other side, that the architect is the right person to design the details, and to bring them all into harmony with each other.

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THEATRES.—XXXVIII.

By Ernest A. E. Woodrow, A.R.I.B.A.

The fittings and fixtures in a theatre call for special notice, for if they are injudiciously chosen or badly placed, they may destroy much of the care that has been taken in planning the house, with a view to public safety. Such, for instance, would be the case if the seating of the auditorium were not arranged, and the gangways placed, with due regard to the position of the exit doors. The exact position of each seat, and the precise number of them, must be definitely decided upon when drawing the plans. The theatre manager will require to know how many seats, from which a good view of the performance can be obtained, his house will contain, and which will be saleable seats, before he can calculate upon the estimated nightly returns, and whether or no his enterprise will leave a margin of probable profit. The authorities, also, will require an exact plan of the number and position of each chair or bench. The architect will be well advised to work out his seating plan to a large scale before commencing the building, so as to be certain of the position of each seat to an inch.

There is another reason for this demand for accuracy. Where the seats have to be fixed (as all theatre seats must be) to concrete floors, some method of securing them has to be provided, by inserting lengths of wooden fillets in the floors, or by plugging the floors for each screw. Where the exact position of each row is previously determined, fillets can be laid in the concrete floor as the work proceeds, thus saving much cutting away and making good, economising time and money.

The rule of the London County Council on this point reads as follows:

"Such drawings shall also show the respective numbers of persons to be accommodated in the various parts of such premises, and the area to be assigned to each person, which shall not be less than 1ft. 8in. by 1ft. 6in. in the gallery, and not less than 2ft. 4in. by 1ft. 8in. in other parts of such premises."

Mr. Buckle, in his work on Theatre Construction, gives the following notes as the result of much study and observation with regard to the space required for seating in various parts of the theatre. The pit seats, which are generally continuous, he says, need not exceed 9in. or 10in. in width when without backs, and 12in. or 13in. when with backs; when the seats are divided, 18in. are allowed for each person; with an inclination of the floor of half an inch to the foot, the height of the seat may vary with advantage from 15in. in the front rows to 17in. in the middle, and 19in. at the back. The distance from back to back of pit seats is given by Mr. Buckle as 2ft. 2in. when without backs, and 2ft. 4in. when with backs. Speaking of other seats, the same authority advises, for the stalls, 20in. to 24in. in width and 3ft. from back to back; for the dress circle, a similar size, but slightly higher in the seat; for the upper circle, 1ft. 6in. for each person, and 2ft. 6in. from back to back; for the gallery continuous seats, 2ft. 3in. from back to back.

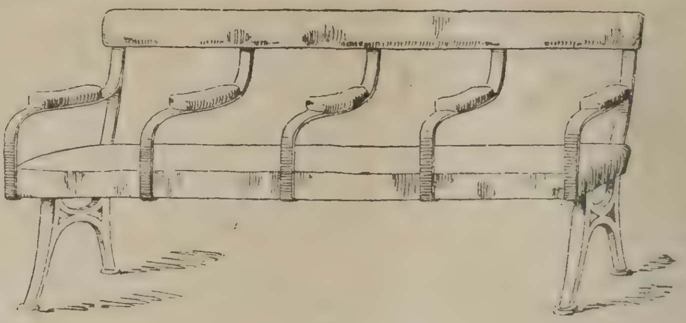

Fig. 1.

It is advisable for the comfort of the audience that the seats should be divided off from each other by arms and should also have backs. This is not, however, always acceptable to the manager in the cheaper parts of the house—as the gallery and pit—for it is found that where there are no arms people will "pack" closer than the regulation 1ft. 6in. Where there are no backs to the seats, intermediate gangways are not introduced, but only the 3ft. gangway all round the seating required by the rules of the authorities, as the people can then step from seat to seat, but where backs are used intermediate or central gangways are frequently required, as well as the side gangways leading to the exits. This means loss of floor-space for seats to the management and a nightly loss on the takings.

There is, however, another point of view to look at this question from, and one that has been accepted by many managers as the wiser policy. Make your audience as comfortable as you possibly can, do not crowd or crush them in their places; remember they have to occupy them for three or four hours, and if they go away suffering from cramped limbs, they will not be likely to come again, however good the play; give them every comfort and ease, and they will sooner sit in your theatre than in their own armchairs. There is no doubt that, although the house may not hold so much money each night, that, in the long run, this policy is the paying one. The greatest expense that the management has to contend against is a constant changing of the bill, and the immense outlay for new productions; the longer, therefore, a play will last, the greater the profits, even if the house is made to hold some ten or a dozen less people in the cheaper parts. Profits are made at the end of the run of a play, not at the beginning, for out of the first takings the book, scenery, wardrobes, &c., &c., have to be paid for.

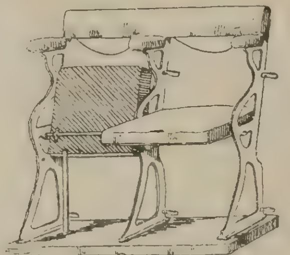

Fig. 2.

In order to illustrate this article I have made sketches from information supplied me by different manufacturers; but, as in dealing with similar cases in these papers, it must be distinctly understood that I do not mention the names of the firms with any idea of stating that they make a better chair or seat than any other firm, but merely give sketches of their work because they illustrate the meaning of my paper. Fig. 1 is a pit-seat, showing how the dividing arms are introduced, so that each person is given an allotted space and overcrowding avoided. This seat is manufactured by Mr. Lazarus, of Curtain-road.

Fig. 2 is the pit-seat of the Garrick Theatre, London, of which I am enabled to give a sketch through the kindness of Mr. John Hare, the noted actor, who, with the aid of the well-known architect, Mr. Walter Emden, designed the seats for the pit audience with special features of comfort. The seat, as the sketch shows, is a tip-up seat; at the side of the seat are two rings for placing an umbrella or stick, and at the back is a cord upon which to hang a coat. I have not been able to find out the maker of this particular chair. It is clearly obvious that anyone wishing to spend half-a-crown upon an entertainment would far rather choose a theatre where such regard for comfort is displayed than go where only the hard wooden form without any back to rest against is provided, as used nearly always to be the case in the pit and gallery of theatres.

The frequenter of the pit is often at a loss how to dispose of his overcoat, hat, and umbrella, without sitting on the one and allowing his neighbours to trample on the others. This seat does away with those annoyances.

We may take it as a rule that all seats should have arms and backs, and it would be a great blessing if theatres had to be licensed like steamboats and omnibuses to contain only such a number as there were authorised and numbered seats in the house; this would be a most beneficial measure for the safety and comfort of the public, and it would entirely do away with overcrowding.

With regard to the "booked" seats in a theatre, the space given varies according to the position and price paid for the tickets, from the minimum allowed by the authorities to almost any width in the stalls that the luxury and the comfort of space between the arms demand; the same remarks apply equally as to the space from back to back. This, however, as a rule, is far too narrow, either for the comfort of sitting or for passing in and out in front of those already seated. Most of my readers will have experienced the discomfort in the circles of a theatre of jamming his knees into the back of the seats in front, or when the steppings are low of irritating the occupant of the seat in front by inadvertently jogging him in the back; to avoid this it is necessary to sit sideways in one's seat and twist one's neck to see the stage.

Fig. 3 is an ingenious contrivance which the Bennet Furnishing Company, of Glasgow, have arranged in order to give as full a width of space for walking down between the rows as possible. When the seat is unoccupied and closed-up, the back is perpendicular, but when the seat is pulled down and occupied the back is tilted, as shown

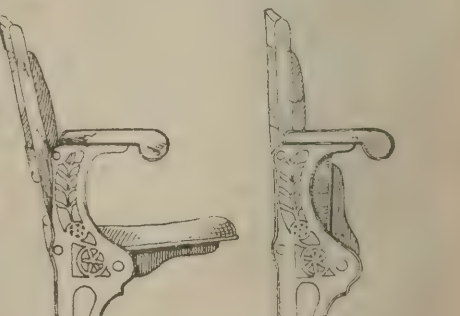

Fig. 3.

in the sketch. Should any one be passing behind, the inclination of the sitter is to lean slightly forward, and it is claimed that the back of this stall follows, and thus those in the rear have the extra space of 5in. given them for ingress and egress. The makers of this chair claim that 2in. more of passage space between the rows can be obtained by their chair when set out at 2ft. 3in. distances, than when the ordinary chair with fixed backs are set out at 2ft. 6in. from back to back. They also state that the advantage of economising space is so great that another row in every nine can be added, still allowing the sitters the same amount of room and comfort as would be obtained in a chair with a fixed back. I should state that I have not seen this chair in use.

Tip-up seats are preferable where saving of room is required, and Fig. 4 gives a sketch of an ordinary tip-up chair in iron frame and standard, as made by Mr. Lazarus.

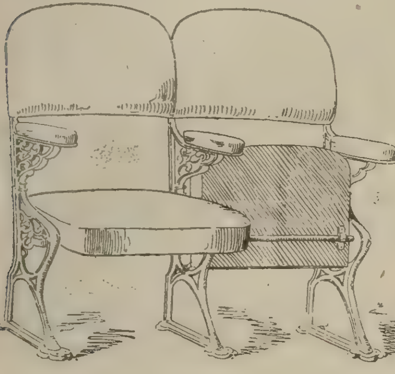

Fig. 4.

There are, however, some managers who consider that the space required for passage between the rows should not be acquired by tipping up the seats but by a more liberal spacing of the chairs, making them 3ft. or 3ft. 2in. between the rows; they also state that where half a guinea is charged for a seat, that seat should be as comfortable as any in the drawing-room which is left for the time for the theatre stall. No doubt in certain centres these arguments have been found to be the right ones, but in these papers we have to consider unfashionable as well as fashionable houses. Messrs. Gregory, of Regent-street, through the very kind offices of Mr. John Hare, have given me a sketch, Fig. 5, of the stall arm-chair at the Garrick Theatre. This chair is set out at 22in. centres, and 3ft. from back to back. It was adopted after the making of several models, including one of a circular-backed and stuffed arm-chair, made after the pattern of an old writing chair. Under the chair, as the sketch shows, is a ledge or box for the placing of a hat, and on the back of the chair is a pocket in which those occupying the row behind may put their programme. A well-known inconvenience with rising-flap seats is that people are not always sufficiently careful to see that the seat is placed down ready for them to occupy, and the result is somewhat unexpected and undignified. An architect some few years ago suggested that the arms as well as the seat should be made to lift up, and that they should rise together with one action, and he pointed out that this would also overcome the inconvenience of stooping down and holding the seat while in the act of sitting, as the seat could be lowered by pressing down the arm. In my next number I have further to consider this all-important question, and will introduce some sketches of patent folding theatre chairs.

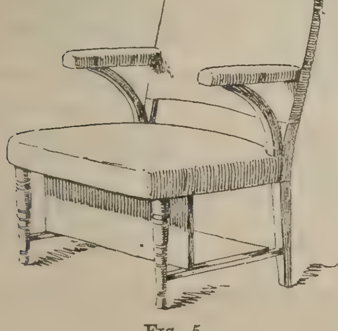

Fig. 5.

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THE SOCIETY OF ARCHITECTS.

THE last meeting of the Society of Architects for the present session was held on Tuesday last at St. James's Hall, the chair being occupied by Mr. G. Highton, F.R.I.B.A., the President. A considerable list of donations to the library having been announced, the following were duly elected as members:—Henry Etherington, 12, Doddington Grove, Kennington, S.E.; William G. Ingram, City Bank Chambers, 44, Theobald's-road, W.C.; Henry Lovegrove, A.R.I.B.A., F.S.I., 314, Old-street, E.C.; William J. W. Roome, 63, Clarendon-road, W.; and William Herbert Scott, Midland Chambers, Walsall.

A chatty lecture was then delivered by Mr. G. A. T. Middleton upon the Architecture of the Rhine Valley, he explaining that he had been asked not to write a formal paper, but rather to give an illustrated description of the route followed during a sketching tour last April. The new route to the Continent *viâ* the Hook of Holland being utilised, with its fine night service from Harwich, Cologne was reached on a Saturday afternoon, and several days spent there in sketching the huge Gothic cathedral, the Rathhaus, with its Late Gothic tower and its Renaissance porch, and the great Romanesque churches for which the town is, to the architect, perhaps more famous than anything else, the churches of Sta. Maria, St. Martin, St. Gereon and the Apostles, all magnificent examples of Romanesque art, and, though recently restored, not spoilt by the restoration. This, unfortunately, cannot be said of some of the other churches of the same date in the Rhine Valley. The great church at Andernach is now hard and cold; while that at Boppard is utterly spoilt, past all remedy, as completely as is St. Alban's Abbey. Boppard, however, is a pretty little town, and is rendered archæologically interesting by its Roman gate. From there to Bingen the route is through the famous Rhine gorge, with mediæval castles, now in ruins, at every few miles distance on either bank, and with little towns sheltering beneath their protection, each with its walls and bastions more or less intact. At Mayence the cathedral and the Roman aqueduct are the only erections which time will allow of being visited. The cathedral has both eastern and western apses, and is Restored Romanesque—magnificent in general grouping, but crowded round with shops and houses. Canon Schneider has found here a fine collection of wood-carving of all dates, and also takes great pride in showing the mural effigies of the various bishops, each a good illustration, with its canopy, of the German work of the period when it was erected. Worms Cathedral was the last of the Rhine churches seen, and that is just about to be practically rebuilt, and none too soon, the cracks in the masonry, both of the western apse and the south transept, being of such proportions as to call aloud for immediate attention. Work has already commenced, and in opening up the foundations of an earlier western apse have been discovered, semicircular in form, within the existing one. Branching off from the Rhine, the castle of Heidelberg was described—that renowned Renaissance structure, than which few more beautiful exist, the wealth of carving being still in almost perfect preservation, even upon the shell of the great portion which was destroyed by fire. From Heidelberg to Würzburg the route lay along the Neckar Valley, more beautiful, though less known, than that of the Rhine, and then across the watershed between the Neckar and the Main. Würzburg, however, is a disappointing place, with little except the Rathhaus tower, which is worth a sketch; but it is quite a different thing with Nuremberg. There, within the almost perfect walls, everything is old and quaint and beautiful. It is a mediæval town, in fact, with scarce a modern building in it, and these fortunately carried out in a spirit which harmonises with the old. It is a place for months of study, but hardly the right spot for an unfledged student to go to. Much, though picturesque to the extreme, is impure in style. The spirit is all that can be desired, but study there must be cautiously entered on.

A vote of thanks was proposed by Mr. S. W. Kershaw, F.S.A., who drew special attention to the Stations of the Cross by Kraft at Nuremberg. It was seconded by Mr. Lawrence Hooper, A.R.I.B.A.—who spoke of the monuments to the great men of the country, and to the fountains, great features of German work, successful exactly where the English generally fail—and supported by Mr. Henry Lovegrove.

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THE ARCHÆOLOGICAL CONGRESS.

THE Sixth Congress of representatives of archæological societies was opened on Monday afternoon, in the meeting room of the Society of Antiquaries, Burlington House. Sir Wollaston Frank presided. On the motion of Mr. Nevill, it was resolved to continue the printing of the lists of those parishes where a transcription of the registers in existence had been made. The question of a photographic survey of England by counties was brought forward in the report of a committee, read by Mr. Nevill. Dr. Cox read a paper on "Popular Archæological Errors and Fictions." He suggested that a glossary of popular archæological errors should be prepared, and proceeded to deal with errors in ecclesiology. The first was, that cross-legged effigies were not certain proofs that those they represented were Crusaders. In proof of this, he stated that many well-known Crusaders were not represented as cross-legged, that the effigies of some ladies were cross-legged, and that the habit of crossing the legs was common long after the Crusades had terminated. Leper windows were not openings through which a leper could see the sacred elements or communicate. Whitewash on stones was not an abomination of the Reformation, but was commonly used long before that period. The cleaning and stripping of all colour from oak was an ignorant blunder, and one which had resulted in charming work being almost completely spoiled. The application of the terms "Pastoral staff" to a bishop's crook, and "crosier" to an archbishop's cross were, he contended, errors, and many other popular blunders were pointed out. At Shaw House, Newbury, there was preserved a Mother Shipton hat, which was always described as the headgear of Oliver Cromwell. Other fictions were also referred to—such as the elopement of Dorothy Vernon from Haddon Hall, and he insisted that, in the cause of truth, all such fictions and errors should be exposed. The chairman said that it was a fiction that the British Museum was in want of a Queen Anne farthing, and that, although they had two, they were ready to pay anything to get the third, whereas there were five varieties issued, and one only was very rare. Many brass counters of Queen Anne's reign were offered to the Museum as Queen Anne farthings. Applications were constantly made at the Museum to see the stone brought from Wales which once marked the spot where St. Paul preached (laughter). The arrow, also, with which St. Edmund was shot was constantly turning up. Mr. St. John Hope referred to the legend that all underground passages connected with old castles or houses led long distances underground, and were used for walking along or escaping; whereas, in his opinion, they were most likely used for drainage purposes. Mr. Nevill referred to the legend that an underground passage formerly ran from Dover to Canterbury. Mr. Wildridge, of Beverley, spoke of the discoveries of valuable tracings of frescoes which had followed the removal of ancient whitewash from walls and pillars of churches.

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The memorial it is proposed to erect on the north side of the chancel of St. Augustine's church, in memory of the late Rev. Prebendary Gordon Calthrop, M.A., will probably be ready for erection the latter end of the coming month. It has been designed in harmony with the architectural surroundings, which are of 14th century, or Decorated Gothic character, by Mr. J. Douglas Mathews, F.R.I.B.A. The drawings suggest a tablet of veined and polished warm-coloured alabaster, measuring some 7ft. high by 5ft. wide. Flank buttresses on either side support the superstructure generally. These buttresses are panelled and traceried on their front surfaces and terminate in crocketed pinnacles. The central head is of ogee outline enriched by crockets and terminating with a boldly-outline finial. The whole of the base will be most ornately carved, and in the centre will occur the arms, motto, and crest of the deceased cleric, carved and decorated by heraldic colour. Messrs. Harry Hems and Sons, of Exeter, are the sculptors.

BRITISH BUILDING STONES.—IX.

IRELAND (*continued*).

No.	Quarry.	County.	Geological Formation.	Description.	Colour.	Weight of a Cube Foot.		Water Absorbed per Cube Foot.	No. of Cube Feet to 1 ton.		Remarks. Where used, analysis, crushing strain in tons per ft. super., cost per cube foot.
						Dry.	Wet.		Dry.	Wet.	
						lb. oz.	lb. oz.	Pints.	ft. in.	ft. in.	
273	Carrickmacroly.. Carndonagh (7).	Donegal.	Metamorphic beds. *Lower Silurian.*	Quartz rock, finely granular.	Greenish grey.	180 1	180 7½	¼	12 5	12 5	Crushes with 720 tons on bed, 1,400 tons on edge. Works well.
274	*Carrigmore	Cork.	Limestone. *Carboniferous.*	Crystalline compact limestone.	Light grey.	168 10½	168 14¾	1.6	13 3¼	13 3	St. Finn Barr's New Cathedral, Cork.
275	Cave Hill ... Belfast.	Antrim.	Chalk. *Cretaceous.*	Compact indurated, altered by heat	Cream.	161 11¾	164 13¼	2⅜	13 10¼	13 7	An average of two specimens gave 920 tons as the crushing weight.
276	Cloghrenan.. Carlow (2).	Queen's County.	Millstone grit. *Carboniferous.*	Fine-grained sandstone.	Dark greenish grey.	163 3¼	164 9	1⅛	13 8½	13 7¼	Used for walling in Cloghrenan Castle, with brick dressings, and for tombstones, and burnt for lime!
277	*Clonaslee... (seven miles from a railway station).	Queen's County.	Old Red sandstone. *Devonian.*	Fine-grained sandstone, bedding not obvious.	Light grey.	155 4½	158 2	2¼	14 5	14 2	Proprietor says, "Up to 14 or 15 years ago we carried on an extensive business in these quarries, since which time they are virtually idle." Stone-cutters and quarrymen emigrated for want of employment. Used in Mountmellick and Templetouhy R.C. Churches; Killeigh Church; Hollow Chapel, Mountrath; steps, &c., in the restoration of St. Patrick's Cathedral, Dublin, 1862. The stone was supplied to Lords Digby, Portarlington, Listowel, De Vesci, Ormond, Charleville, Ashbrook, &c. Stones can be obtained from 16ft. to 20ft. long, 10ft. to 14ft. wide, and from 1in. to 6ft. thick.
278	Clonmel ..... (Quarry ½m. from town).	Tipperary	Old Red sandstone. *Devonian.*	An aggregate of quartz grains.	Greenish white.	126 6	135 2½	7	17 8½	16 6¾	West Gate, Clonmel. Easily worked, about 8ft. of plain work per day. Crushes with 213¾ tons, average of two samples, on bed and edge. The Clonmel Workhouse is built with limestone quarried on the site. The river Suir, which flows through Clonmel, divides the limestone district from the old red sandstone, the former being on the north side of the river, and the latter on the south side.
279	Cookstown ... Cong Quarry (¾).	Antrim.	Calciferous sandstone. *Carboniferous.*	Micaceous sandstone, with ochreous spots..	Yellowish Cream.	142 8¾	151 6½	7	15 8½	14 9½	A stone, 3in. by 3in., with a 12in. bearing, broke with a little less than half ton in the centre.
280	Cong	Mayo.	Limestone. *Carboniferous.*	Semi-compact crystalline.	Dark Grey.	174 14½	174 14½	0	12 9½	12 9½	Bridges, canal works, churches, and other buildings in the locality. This district is remarkable for its underground rivers, which flow through huge caverns in the limestone rocks. The stone crushes with 711 tons.
281	Cork .... Brickfields (½)	Cork	Old red sandstone, *Devonian.*	Fine-grained, laminated, calcareous sandstone.	Deep red.	168 13¼	168 15½	⅛	13 3	13 3	A stone, 3in. by 3in., with a 12in. bearing, broke with 2 tons in the centre.
282	Cortubber ... Kingscourt.	Meath ...	Yoredale beds. *Carboniferous.*	Fine-grained sandstone, micaceous.	Greyish white.	147 9¾	151 8½	3⅛	15 2¾	15 1½	Crushes with 819 tons.
283	Creeve .... Granard (9)	Longford.	Limestone. *Carboniferous.*	Semi-crystalline.	Light grey.	170 1¼	170 1¼	0	13 2	13 2	Baron Lefroy's house, Carrickglass. Used extensively in Longford town. A good building stone. Beds 3in. to 3ft. thick. Crushes with 1,003 tons. Stones, 10ft. long by 5ft. or 6ft. wide, can be obtained.
284	Crossdoney... Cavan.	Cavan......	Granite.	Fine, syenitic, quartzose.	Bluish grey.	173 9½	173 15½	¼	12 10¾	12 10½	A stone, 3in. by 3in., with a 12in. bearing, broke with 1ton 11cwt. 1qr. 14lb. in centre.
285	Crossdrum ... Oldcastle.	Meath ...	Limestone. *Carboniferous.*	A very pure, highly-crystalline limestone.	Ash grey.	168 10	169 0½	¼	13 3¼	13 3½	Works smoothly; 6ft. chiselled, 8ft. punched, work per day. Crushes with 1,008 tons.
286	Crossrea ...... Granard (10)	Longford.	Limestone. *Carboniferous.*	Coarse and highly fossiliferous.	Dark grey.	173 6¼	173 6¼	0	12 11	12 11	A stone, 3in. by 3in., with a 12in. bearing, broke with 1ton 11cwt. 1qr. 1lb.
287	Dalystown ... Granard (1½)	Longford.	Calciferous sandstone. *Carboniferous.*	Silicious grit, with carbonaceous and ferruginous matter.	Steel grey.	170 9½	170 15½	¼	13 1½	13 1¼	A stone, 3in. by 3in., with a 12in. bearing, broke with 2tons 3cwt. 3qr. across the bed. Crushes with 730 tons.
288	Dernasill ... Augher (3)	Tyrone ...	Calciferous sandstone. *Carboniferous.*	Granular, silicious, highly micaceous.	Greyish white.	143 6	—	—	15 7½	—	Crushes with 468 to 742 tons.
289	Donegal ...... Town Quarry	Donegal ..	Calciferous sandstone. *Carboniferous.*	Earthy compact, slightly calcarious.	Black.	169 9	170 2¼	½	13 2½	13 2	A piece of stone, 3in. by 3in., with a 12in. bearing, broke with 1ton 16cwt. in centre.
290	*Doonagore.. Doolin.	Clare	Millstone grit. *Carboniferous.*	Very fine, compact, minutely crystalline sandstone mica in beds. A beddy stone.	Light bluish-grey.	164 4¼	165 8¾	1	13 4	13 3½	This quarry is at present extensively worked for flagging, curbing, &c. The quarry-owners have a depot in Dublin, where the stone is stocked, and skilled flaggers are engaged for squaring and laying the stone.
291	Drumbane ... Thurles (12)	Tipperary	Old red sandstone. *Devonian.*	Quartz grains in an argillo-silicious matrix. Slightly micaceous.	Light grey.	159 7	162 4½	2¼	14 0½	13 9½	New Courthouse, Nenagh, and buildings in Tipperary. A good-face working stone. Carries 661 tons.
292	Drumkeelan.	Donegal ..	Calciferous sandstone. *Carboniferous.*	Fine quartz grains in a slightly calcareous cement. Traces of mica.	Greenish cream.	146 9	150 5½	3	15 3¼	14 10½	This stone cost from 6½d. to 9d. per foot super, worked 50 years ago. Breaks with 1ton 9cwt. on a piece 3in. by 3in. Supports 12in. apart.
293	Dundiven...... Fintona (2).	Tyrone ...	Old Red sandstone. *Devonian.*	Aigillaceous, felspathic and calcareous.	Greyish white.	150 11¼	155 0	3½	14 10¼	14 5½	Fintena R.C. chapel. Greenish grey bed. Crushes with 729 tons; another fine-grained cream-coloured bed with 463 tons.
294	Dungiven...... (Altmorer Quarry.)	Londonderry.	Old Red sandstone. *Devonian.*	Semi-crystalline, with argillo-silicious cement.	Greenish grey, with brown tinge.	135 13½	143 11	6¼	16 5¾	15 6¾	Court House, Londonderry.
295	Farm Quarry, Westport.	Mayo	Metamorphic. *Silurian.*	Dense grit, silicious.	Greyish blue.	174 8¾	176 1½	1¼	12 10	12 8½	Court House and private houses in Westport. Bed of stone from 1ft. 6in. to 2ft. thick. This limestone "is traversed by numerous very fine cleavages, nearly vertical, and independent of the ordinary joints."
296	Fermoy.........	Cork	Limestone. *Carboniferous*	Compact, crystalline, unequal texture.	Light-blue grey.	171 2¼	171 9	⅜	13 1	13 0½	New barracks, Fermoy. This stone is like the Ballin-temple limestone. Crushes with 787 tons to the foot.
297	Finglas	Dublin ...	Limestone. *Carboniferous.*	(1) Compact, fine-grained, slightly crystalline.	Dark grey.	172 15	173 3¼	⅜	12 11½	12 11	Crushes with 1,215 tons.
				(2) Earthy "calp."	Brown grey.						"Calp" is a bad weather stone. May be seen in many rubble walls in the suburbs of Dublin in an advanced state of decay.
298	Glanmire-road, Cork (1).	Cork	Old Red sandstone. *Devonian.*	Fine-grained, beddy, calcareous sandstone.	Deep red.	167 5	167 5	0	13 2¾	13 2¾	This stone is chiefly used for rubble walling. It is a kind of slaty indurated marl.
299	Glack .... Longford (½).	Longford	Old Red sandstone. *Devonian.*	Coarse white quartz grains, imbedded in a yellowish argillo-calcareous cement.	Cream.	140 15¾	146 6½	4⅜	15 11½	15 3½	Used extensively in the town of Longford. Weathers white; soft when quarried, but hardens on exposure. Beds 2 to 4ft.
300	Glanmore ...	Wicklow .	*Lower Cambrian.*	Close, compact slate.	Greyish purple.	170 9½	170 9½	0	13 1½	13 1½	Crushes with 1,384 tons on bed, and 751 tons on edge. A kind of slate. A piece of stone 3in. by 3in. on a 12in. bearing, broke with 4tons 8cwt. in the centre.
301	Glencull ..... Aughnacloy (¾).	Tyrone ..	Limestone. *Carboniferous.*	Silicious, with ferruginous stains; mica.	Greyish white.	150 0	160 3½	8⅛	14 11	13 11¾	Crushes with 900 tons on edge, 859 tons on bed.
302	Golden Hill Blessington	Wicklow .	Granite of *Lower Silurian* age.	Coarse quartzose, felspathic.	Grey and slightly discoloured.	161 13¾	164 9½	2⅛	14 5½	13 7¼	Four Courts, Dublin. Crushes with 273 to 193 tons.

No.	Quarry.	County.	Geological Formation.	Description.	Colour.	Weight of a Cube Foot.		Water Absorbed per Cube Foot.	No. of Cube Feet to 1 ton.		REMARKS. Where used, analysis, crushing strain in tons per ft. super., cost per cube foot.
						Dry.	Wet.		Dry.	Wet.	
						lb. oz	lb. oz.	Pints.	ft. in.	ft. in.	
303	GRAIGUE ...... Carlow (1½)	Carlow ...	Limestone. *Carboniferous*	Close, compact, minutely crystalline.	Dark blue grey.	171 7½	171 8¾	1/20	13 0¾	13 0½	Takes a polish like black marble; works well. 6ft. plain work, 3ft. plain mouldings, 1½ft. intricate do. per day. Crushes with 694 tons.
304	GRIBBONS ...... Armagh	Armagh .	Limestone. *Carboniferous.*	Compact, crystalline, with fossils.	Reddish grey.	172 11½	—	—	12 1	—	Was extensively used in Armagh. There is a linestone bed 8ft. deep in this quarry, succeeded by marble beds from 12ft. to 19ft. deep. The specimen examined was from the 19ft. marble bed. Blocks of large size can be obtained.
305	HILL HEAD ... Carndonagh (2)	Donegal.	Calciferous sandstore. *Lower Carboniferous.*	Fine-grained, crystalline, slightly laminated, silicious.	Greyish blue.	168 4¼	168 6¾	⅛	13 3½	13 3½	Crushes with 864 tons.
306	KILLARNEY ...	Kerry.	Millstone grit. *Carboniferous.*	Granular, silicious grit.	Dark grey.	172 10½	172 12¾	⅛	12 11½	12 11½	Used for walling in the locality. A Keuper sandstone from Cheshire was used for dressings at a mansion erected in this locality some years back !
307	KILLEA .... Manorhamilton (5).	Leitrim.	Yoredale beds. *Carboniferous.*	Granular; silicious and micaceous.	Greyish white.	144 1	149 10¼	4½	15 6½	14 11½	Crushes with 614 tons. Beds 4in. and 2in. thick; specimen examined from the 4in. bed. Blocks of large size can be obtained. The stone works freely.
308	KILROE .... Tuam (8).	Galway	Limestone. *Carboniferous.*	Semi-crystalline.	Bluish grey.	172 8½	172 8½	—	12 11½	12 11½	New R.C. Cathedral, Tuam. Many of the stones here were fractured, owing to the beds being worked hollow. The stone works well—6ft. to 9ft. plain work in a day; crushes with 860 tons.
309	* KILTOOM...... Athlone (4½).	Galway.	Limestone. *Carboniferous.*	Highly crystalline; granular.	Bluish grey.	167 4½	167 9¾	¼	13 4¾	13 4½	R.C. Chapel, Athlone, and Bank of Ireland. Limestone suitable for monuments; 1s. per cubic foot up to 6ft., 1s. 6d. up to 10ft., 2s. up to 20ft. Quoins a foot high, 10d.; "blocks or starts" about the same. (Richard Smith's quarry).
310	KINGSTOWN ...	Dublin.	Granite.	Highly crystalline, dense, with muscovite and biotite.	Grey.	171 9	171 13½	⅜	13 0½	13 0¼	Kingstown railway station; crushes with 648 tons. Kiliney granite was used in O'Connell's Monument, Glasnevin, Kingstown Pier, and some was sent to the Thames Embankment. The following analysis of the Fox Rock granite, by Haughton, will give an idea of the general composition of this stone: Silicon oxide 73·00, aluminium oxide 13·64, ferric and ferrous oxides 2·44, calcium oxide 1·84, potassium oxide 4·21, sodium oxide 3·53, magnesium oxide 0·11, water 1·20.
311	KINTALE ...... On Lough Swilly, Rathmullen (1½).	Donegal.	Metamorphic. *Lower Silurian.*	Fine crystalline, micaceous, laminated.	Bluish grey.	159 5¼	159 8½	¼	14 0¾	14 0½	Rathmullen Pier. Crushes with 585 tons.
312	KERLISH ...... Southerstown (11).	Fermangh	Old Red sandstone. *Devonian.*	Semi-conglomeritic quartz grains in felspathic cement.		153 11¾	157 5¼	2⅞	14 7½	14 2¾	Crushes with 621 tons on edge, 562 tons on bed.
313	KNOCKALTON.. Nenagh (2).	Tipperary	Limestone. *Carboniferous.*	Compact, minutely crystalline.	Blackish grey.	171 11	171 13	⅛	13 0½	13 0¼	Crushes with 1,026 tons.
314	*KNOCKADARA Ennis.	Clare.	Limestone. *Carboniferous.*	Crystalline, compact, with bituminous matter.	Light grey.	168 5¾	168 8¼	Light. ⅛	13 3½	13 3½	Lunatic asylum, post office, convent, and college, Ennis; new Franciscan Church, Dublin. The stone has been used to all the principal buildings in Clare. It is sold by the perch of 16½ft. square. (James Glynn's quarry).
					Dark grey.	168 2½	168 5¾	Dark. ⅛	13 3¾	13 3¾	
315	LISBUNNY ...... Nenagh (½).	Tipperary	Limestone. *Carboniferous.*	Earthy, slightly calcareous.	Black.	167 2¾	168 4¼	¾	13 4½	13 3¾	Nenagh Gaol. Easily worked. Crushes with 756 tons.
316	LISTOWEL......	Kerry.	Limestone. *Carboniferous.*	Coarse compact (3ft. bed).	Blackish Grey.	175 9	175 15½	¼	12 9	12 8½	Listowel Bridge. Top beds of quarry used for walling only. 10ft. plain work per day. Crushes with 1,490 tons.
317	LISRYAN ...... Granard (4).	Longford.	Limestone. *Carboniferous.*	Earthy, compact; minute crystalline particles.	Dark grey.	168 12½	169 0½	⅛	13 4	13 3	Crushes with 1,188 tons. A "calpy" stone.
318	LOUGHORNE ... Nenagh (3).	Tipperary	Limestone. *Carboniferous.*	Very compact, full of fragments and veins of crystallised calcium carbonate.	Dark grey.	172 2	172 3¼	1/20	13 0	13 0	Crushes with 1,112 tons.
319	MIDDLETON ...	Cork.	Limestone. *Carboniferous.*	Compact, semi-crystalline, unequal texture.	Dark Grey.	174 9½	175 0	¼	12 9½	12 9½	Crushes with 922 tons.
320	*MILVERTON.. Skerries.	Dublin.	Limestone. *Carboniferous.*	Compact, crystalline; equal texture, splintery.	Bluish Grey.	167 14	168 5¾	½	13 4	13 3½	
321	MOHILL .... Workhouse Quarry.	Leitrim.	Limestone. *Carboniferous.*	Compact, earthy.	Black.	170 11½	170 13½	⅛	13 1½	13 1½	A stone 3in. by 3in., with 12in. bearing between supports, broke with 2tons 7cwt. in centre. Stone for dressed work in Mohill was generally brought from Mealwood Quarry, three miles from Carrick-on-Shannon.
322	MONEEN ...... Castlebar.	Mayo.	Limestone. *Carbonferous.*	Highly crystalline.	Blue grey.	167 9½	167 11½	⅛	13 4½	13 4½	Crushes with 445 tons. Castlebar gaol and barracks built with this stone. Carries a good arris.
					Dark grey.	165 4½	165 4½	—	13 6½	13 6½	Crushes with 792 tons.
323	* MOOR QUARRY. Newry.	Down.	Metamorphic granite.	Quartz, orthoclase biotite, hornblende.	Light grey with black spots.	168 0	168 5¾	¼	13 4	13 3½	A specimen of heavy granite, from Goragh Wood Station, is remarkable for the low percentage of silica it contains. Haughton gives the following analysis: Silicon oxide, 62·08; aluminium oxide, 15·92; iron peroxide, 7·72; calcium oxide, 5·52; magnesium oxide, 2·16; sodium oxide, 3·34; potassium oxide, 2·19. Loss, 0·89.
324	*MOUNT CHARLES.	Donegal.	*Lower Carboniferous.*	Crystalline sandstone, with small quartz pebbles; bedding observable.	Light cold grey.	160 15¼	164 10¼	3	13 11	13 7¼	Sligo Bank for dressings, with facings of chiselled Ballisodare limestone. Science and Art Museum, Dublin; Court House, Sligo; Letterkenny Cathedral; Killygordon church. 1s. 2d. per foot in random blocks delivered into boat at quay. This stone is quarried by the sea coast, and is loaded in vessels of from 60 to 100 tons. A vessel cannot lie at Mount Charles pier in rough weather. It is therefore difficult to get a cargo of stone at certain times. Crushes with 639 tons on bed, 841 tons on edge.
325	MOYNE .... Ballina.	Mayo.	Limestone. *Carboniferous.*	Fine-grained oolite structure.	Dark grey.	169 13½	169 13½	—	13 2¼	13 2¼	Moyne and Roserk abbeys; Killala round tower. 4ft. plain work per day. Crushes with 1,156 tons.
326	MULLAGHGLASS......... Newry (2½)	Down.	Granite.	Coarsely crystalline, white quartz and felspar. Biotite.	Light grey.	171 15½	172 6¼	¼	13 0	13 0	Crushes with 864 tons. (See No. 323.)
327	*MULTIFARNHAM	West Meath.	Limestone. *Carboniferous.*	Compact, slaty texture.	Blackish grey.	163 11½	164 4¾	⅜	13 8	13 7½	Used in Mullingar, Ballinacargy, and various parts of the surrounding country. "Price of stone varies, and depends on a variety of circumstances." It is sold quarried, or not quarried; dressed, or in the rough. A "lucid" description of what may be required will bring a fixed price on application to the proprietor, F. L. Mason.
328	RATHCLINE .. Lanesborough	Longford.	Limestone. *Carboniferous.*	Crystalline and fossiliferous.	Light brownish grey.	175 2	175 3	1/20	12 9½	12 9½	A good working stone, takes a polish. Crushes with 910 tons.
329	RINCLEVEN ... Dunfanaghy.	Donegal.	Metamorphic beds. *Lower Silurian.*	Highly-crystalline limestone.	Creamy white.	172 6¼	172 10½	¼	13 0	13 0	Good for all dressed work, but difficult to work. Crushes with 540 tons.
330	ROSS .... Near Lough Sheelin.	Cavan.	Limestone. *Carboniferous.*	Highly crystalline.	Light dove colour.	170 14½	171 2½	⅛	13 1	13 1	Crushes with 432 tons.
331	ROSSBRIEN ..	Limerick.	Limestone. *Carboniferous.*	Compact and highly crystalline.	Light bluish grey.	165 15½	166 15¾	¾	13 6	13 5	Sample examined has patches of dark slaty-blue colour throughout the mass. The stone is rather hard to work, is quarried in blocks up to about 25c.ft., and costs 1s. per foot for ordinary-sized blocks. The proprietors are Messrs. John Ryan and Sons.
332	SALLYCROSS ... Kanturk (2½)	Cork.	Limestone. *Carboniferous.*	Compact, slightly crystalline, veins of calcium carbonate.	Whitish grey.	171 15	172 1½	⅛	13 0	13 0	Very hard to work, owing to presence of veins of calc-spar. About 1½ft. super. of plain worked stone per day.

No.	Quarry.	County.	Geological Formation.	Description.	Colour.	Weight of a Cube Foot.		Water Absorbed per Cube Foot.	No. of Cube Feet to 1 ton.		Remarks. Where used, analysis, crushing strain in tons per ft. super-cost per cube foot.
						Dry.	Wet.		Dry.	Wet.	
						lb. oz.	lb. oz.	Pints.	ft. in.	ft. in.	
333	Scorthaun … Roscommon (3).	Roscommon.	Limestone. *Carboniferous.*	Compact, with crystalline fragments.	Grey, with brownish tinge.	172 6	172 8¼	⅛	13 0	13 0	Easily worked; 8ft. to 10ft. plain work in a day. Crushes with 1,084 tons.
334	Scrabo …… Newtonards.	Down.	Lower Keuper. *Trias.*	—	Greenish grey.	126 10¾ 141 15	136 8½ 149 10	7⅞ 6¼	17 8 15 9¼	16 4¾ 14 10¾	Wilkinson experimented on 21 beds of stone from three quarries; tabulated trials give extremes of results. Good working stone, from 13ft. to 15ft. plain work in a day. Crushes with from 144 to 680 tons.
335	*Shandon … Dungarvan.	Waterford.	Limestone. *Carboniferous.*	Highly crystalline, compact.	Light bluish grey.	169 6	169 14½	⅜	13 2½	13 2	The Disestablished church tower; county court; three large bridges. Stone is sold at 2s. per cube yard in quarry: Quarrymen get 15s. per week and explosives. Much of this stone comes to Newport, Mon., as ship's ballast. The Stone is used about Dungarvan for dressings to brick-built houses.
336	Shankhill …	Kilkenny.	Carlow Flags. Coal measures. *Carboniferous.*	Hard, thin bedded; silicious grit; calcareous.	Greyish blue.	163 9 169 11	165 10½ 170 5¼	1⅝ ⅛	13 8¼ 13 2½	13 6¼ 13 1¾	Chiefly a flag-stone quarry, the beds varying in thickness from ½in. to ¼in. Flags may be obtained 14ft. square. The flags are sometimes used for roofing.
337	*Sheephouse. Drogheda.	Louth.	Limestone. *Carboniferous.*	Compact, highly crystalline; distinct crystals of calcium carbonate.	Light grey.	168 6½	168 8¾	¼	13 3½	13 3½	1s. 6d. per *superficial* foot, delivered to Drogheda railway station.
338	Sherkin Island. Cape Clear.	Cork.	Old Red Sandstone. *Devonian.*	Quartzose, granular; micaceous, slaty.	Greenish grey.	167 0½	169 0½	1⅝	13 6½	13 3	R.C. Chapel, Bangs, and in and around Skibbereen, for dress work. Soft when quarried, hardens on exposure.
339	*Strang's Mill.	Waterford.	Limestone. *Carboniferous.*	Crystalline, compact, with splintery fracture.	Dark bluish grey.	168 12¼	168 14¾	⅛	13 3¼	13 3¼	This is the best stone for dressings, at present quarried near Waterford. The stone from Ballykilaboy was a better stone, but the quarry is closed. Strang's Mill quarry is worked by P. O. Keefe and Sons.
340	Tardree ……	Antrim.	Basalt. *Miocene.*	A pearlstone porphyry, with felspar crystals.	Greyish white.	141 0	146 8	4⅝	15 10½	15 3½	Easily worked. Crushes with 508 tons.
341	Taylor's Hill. Galway (1).	Galway.	Granite.	Highly crystalline, red and green felspar, dark-green mica.	Pink, with greenish tinge in places.	173 7	173 9¼	⅛	12 10¾	12 9¾	Limestone is generally used for building in the county town.
342	Two Mile Ditch. Galway (2).	Galway.	Limestone. *Carboniferous.*	Coarse, crystalline.	Bluish grey.	175 3¼	175 3¼	—	12 8½	12 8½	Court House, Galway. Works easily; 10 to 14ft. plain work per day. The rough blocks, as quarried, were sold for 2d. per cube foot.
343	Tuam ………… Quarry (¾).	Galway.	Limestone. *Carboniferous.*	Semi-crystalline; fossil remains.	Blackish grey.	171 14¾	172 1¾	¼	13 0¼	13 0¼	Crushes with 572 tons. (See 308.)
344	Wade's Point Kinsale.	Cork.	Lower Slate. *Carboniferous.*	Hard, chloritic; slightly micaceous.	Greenish grey.	165 12	169 7¾	3	13 6	13 2½	Used for general building purposes, though beddy.
345	Wakefield … Castlebar.	Mayo.	Limestone. *Carboniferous.*	Slightly oolitic, crystalline.	Light grey.	170 0	170 2	⅛	13 2	13 2	Flat bedded, Calpy, good for rubble walling. Crushes with 670 tons.
346	Westport … Workhouse Quarry.	Mayo.	Limestone. *Carboniferous.*	Granular, crystalline, with fragments of fossils.	Grey.	173 10½	173 15	1/6	12 10	12 10	Cherty. Hard to work.
347	Woodbine … Athy (1).	Kildare.	Limestone. *Carboniferous.*	Hard, compact, fine-grained, thin seams of calc spar.	Black.	173 15½	174 1¾	1/10	12 10½	12 10½	Hard to work. Seldom used for dressings. Crushes with 969 tons.
348	Valentia Island.	Kerry.	Slate.	Fine-grained, compact.	Purple.	177 5¼	177 5¼	—	12 7½	12 7½	Walling of Derriquin Castle. Exported to England and France. Used for roofing, walling, and some dressings. 6ft. plain surface per day, with the bed. Crushes with 846 tons on bed, 700 tons on edge.

THE VENTILATION AND FLUSHING OF SEWERS.

THE moot question of sewer ventilation has been discussed much of late years. Engineers and medical authorities are by no means agreed as to the mode by which the ventilation should be accomplished—whether by open surface gratings in the streets, or by shafts and ventilating tubes carried up at certain points, and the sanitary authorities of towns are still uncertain as to any definite policy. The medical officer of health to the Lowestoft Urban Sanitary Authority, Dr. Francis W. Clark, M.B., D.P.H., Camb., has presented a report upon the relation of the system of sewers by open manholes to the public health, which is partially founded on information he has obtained from various medical officers of health of other towns. Dr. Clark enters fully into the question, adducing the opinions of several sanitary experts, such as Sir Douglas Galton, Sir Robt. Rawlinson, Mr. James Mansergh, C.E., and others, on the subject of surface gratings. The increase of mortality from diphtheria in many towns is attributable to the plan of ventilating the sewers at the street level as one of several causes. The author, referring to school attendance, observes that those attending school would be most exposed to infection, especially if any offensive manhole existed in the neighbourhood of the school. The incidence of the disease would naturally fall on the pupils of that school, for diphtheria is a disease of childhood. The gullies in the school-yards would, by imperfect trapping, act as surface ventilators to the sewers. Mr. James Mansergh, C.E., a well-known specialist, referring to the sewers at Beckenham, proves that the multiplication of ventilators does not abolish the nuisance arising from surface gratings, for although there is a ventilator at every 82 yards throughout the district, which is in excess of the requirements of Sir R. Rawlinson (of 100 yards), yet annoyance is experienced from the surface gratings in spite of the good condition, self-cleansing, and flushing arrangements of the sewers. Dr. Clark quotes this case, as it "discounts the argument that if a surface grating is offensive, it is necessarily so as the result of some temporary and removable defect in the flow of sewage, which should be dealt with by flushing." Sewage, therefore, even in well-constructed sewers, will generate offensive gases, and these should be given vent at a considerable elevation. The report further goes on to show, what is well known—that all ventilators, surface as well as shaft, act both as inlets and outlets according to varying atmospheric conditions; that the emanations from these gratings have a depressing effect upon the vitality of the human organism, and predispose to diseases like enteric fever and diphtheria; that incidence of diphtheria in Lowestoft points to a gradual contamination of the sewers by the germs of this disease. The recommendations are that a less dangerous method of sewer ventilation than that of surface gratings should be adopted, and that systematic flushing be used. Dr. Clark maintains that the less the movement of the air of sewers, the less will the disease germs be carried into the outer air, and he contends that one of the greatest faults of the modern system of sewer ventilation is the creation of draughts throughout the length of our sewers. We must aim, he says, "on comparative stillness of the sewer-air, and be content to provide small outlets here and there at high elevations, which shall act solely as safety-valves, giving exit to the sewer-gas when the internal pressure is greater than that of the atmosphere, and *vice versâ*, admitting air to the sewers when the internal pressure becomes negative." We have no space to enter into the facts and data which have been collected from various towns, but refer to the remedies proposed. Dr. Clark's scheme avoids, on the one hand, the surface grating; on the other, the large and ungainly shafts, which would mar the front of any residential building. He suggests "that in all houses newly built, where the drains do not pass under the building, permission be given to dispense with the intercepting trap required by by-law 56 with respect to new streets and buildings, to be placed between the main drain of house and sewer. The soil-pipe or main drain would discharge direct into the sewer, and the ventilating shaft required by by-law 58 would act as a ventilator to the sewer; but under these circumstances the second opening, known as the fresh-air inlet, must be dispensed with. Seeing that it is almost invariably blocked up by the tenant in consequence of its acting as an outlet to the effluvia given off by the interceptor, this, it is thought, will be no great innovation. All remaining drains, both sink, waste-pipes, &c., must be provided with traps, so that these are not in aërial communication with the sewer. Where the drains pass beneath some portion of the building an intercepting trap is to be used as heretofore. Whenever an interceptor is inserted between the main house drain and sewer, a ventilating shaft of 4in. diameter will be provided and erected at the charge of the sanitary authority from the sewer side of the interceptor, carried above the eaves of the building; the ventilation of the house-drains to be effected as at present by two openings, one as an inlet for fresh air, and the other as an outlet for the gases in soil-pipe, &c. As to existing properties, it is proposed that the authority immediately close every surface ventilator that may be within 50 yards of any public school entrance, and all surface ventilators within the same distance of any existing ventilating shaft; the remaining surface ventilators not to be closed until permission to erect at least three 4in. ventilating shafts from the sewer side of the interceptors of adjacent property be granted. The opinions of medical officers which have been summarised show that the majority of authorities do not approve of man-hole ventilators, and that the suggestions made are generally approved.

* * *

Mr. Henry Irving, having had his attention called to the state of disrepair and discoloration of the marble tablet which was, in 1839, erected by Charles Kean to the memory of his father, Edmund Kean, on the wall of Richmond Church, has written to Mr. Skewes-Cox, the churchwarden of the parish, offering to bear the expense of restoring the memorial, and the necessary work is being carried out by Mr. Walter J. Long.

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ILLUSTRATIONS.

ROYAL ALEXANDRA HOSPITAL, RHYL.—STABLES, GRAYTHWAITE HALL, WINDERMERE.—SCULPTURE AT THE ROYAL ACADEMY.—THE NEW TOWER BRIDGE.—DESIGNS FOR NEW SCHOOLS FOR CHRIST'S HOSPITAL.—DECORATIVE DETAILS FROM THE HOME ARTS EXHIBITION.

Our Illustrations.

ROYAL ALEXANDRA HOSPITAL, RHYL.

The foundation-stone of this hospital has been laid to-day by the Prince and Princess of Wales. The architects are Messrs. A. Waterhouse and Son. We have no further particulars to hand.

THE NEW STABLES, GRAYTHWAITE HALL, WINDERMERE.

These stables have been built for Lieut.-Col. T. Myles Sandys, M.P. They consist of three blocks of buildings, forming three sides of a square, the fourth being inclosed by a wall and railing, and having the principal entrance in the centre, between the grooms' and coachman's houses. The block at the east side consists of coach-house, horse-washing room, cooking-rooms, &c. The corresponding block on the west side contains open shed, storerooms, &c. The south block, facing the entrance gateway, has the harness-room in the centre, and ranges of stalls and loose-boxes on either side. The loose-boxes are arranged so that each can be used as two stalls if desired. The whole of the buildings are two stories in height, the upper part being arranged as lofts and storerooms. A clock-tower is carried up in the centre of the south block. The whole are built of the local stone, quarried on the estate, in the lower parts, with red sandstone dressings and brick chimneys. The upper parts throughout are timber-framed, and the roofs covered with strawberry - coloured Staffordshire tiles. Internally, the stables are lined with pitch-pine boarding in the lower parts, with cream-coloured glazed bricks above, the floors being of granolithic. The contractors have been Mr. Pattinson, of Windermere, for the excavating, stone, and brickwork; Messrs. G. Woods and Son, of Bootle, Liverpool, for the woodwork, tiling, plastering, &c.; and Mr. Braythwaite, of Ulverston, for the plumbing, glazing, and painting. The stable fittings are by Messrs. Musgrave, of Belfast. The clerk of the works has been Mr. C. Noble, and the whole of the works are from the designs, and carried out under the superintendence, of Mr. R. Knill Freeman, F.R.I.B.A., architect, of Bolton and Manchester.

SCULPTURE AT THE ROYAL ACADEMY.

These two panels of "Night" and "Morning," designed by Mr. Frederick E. C. Schenck, illustrate the quotations which the author has chosen to be fixed to his work. Both passages are printed on our plate, which is taken from photographs printed from the originals now on view in the Lecture Theatre Gallery at the Royal Academy. We have already referred to Mr. Schenck's work when we described all the leading works of sculpture now at Burlington House, so that no more remains to be said in this place beyond a word of further commendation to him for both these capital reliefs.

THE TOWER BRIDGE.

The week before last, when the Prince and Princess of Wales opened this bridge, we gave general drawings of the structure and some details of the towers. The full description printed at the same time furnished the leading particulars of the work and its construction. To-day we give the general elevations of the façades and flanks of the main towers from drawings by Mr. George D. Stevenson, A.R.I.B.A., the architect engaged to perfect the design and modify the work, so as to adapt the buildings to the altered requirements of the engineer, Mr. Wolfe Barry, C.B. So truly national a work cannot fail to interest a very large class of our readers, and we propose to follow up our present and previous plates with other drawings, none of which have been illustrated in any other journal.

CHRIST'S HOSPITAL NEW BOARDING SCHOOLS, HORSHAM.

The double-page plate given herewith illustrates the dining-hall of Messrs. Aston Webb and Ingress Bell's selected design, and so we complete our very exhaustive series of plans and views of this very admirable and successful scheme. During the last three weeks we have given the only comprehensive illustrations published of this great competition. Last Friday the dining-halls designed by Messrs. Paley, Austin, and Paley, and Mr. Thomas E. Colcutt, were illustrated. To-day we print Mr. Hubert Austin's design for the college chapel, which certainly is treated cleverly, with much of that masterly freedom which the executed work of his firm accustoms us to expect at their hands. Dignified as this interior undoubtedly is, we cannot say that its special fitness as a college chapel, as distinguished from a parish church, is quite so manifest as custom usually dictates.

DECORATIVE DETAILS FROM THE HOME ARTS EXHIBITION.

In our issue of June 29th last we gave an account of the Home Arts and Industries Exhibition at the Royal Albert Hall. We now supplement this with some sketches taken on the spot. The Fender Box, in unpolished walnut, was inlaid in various coloured woods, and made a rich-looking article, the Toadstools being in orange, crimson, &c., with here and there a black one. The ornament was designed by the Hon. Mabel de Grey, and was executed by John Reason. The Hymn Indicator, also in walnut, was constructed by J. Macmullan, and carved by H. Baster. The Hanging Cupboard was in unpolished oak, and contained some nice carved work, the two demure figures, of which we give a sketch of one, making quaint terminals to the two sides. It was constructed by Thos. Funnell, and carved by Harry Skelton. The "Waiter," inlaid in walnut, was designed by the Hon. O. de Grey, and was made by J. Macmullan, and ornamented by J. Bray. The Wrought-iron Candle Bracket and the Wooden Potato Bowl are both interesting in their respective materials. The former was designed by the late Canon Sutton, and made by F. Coldron; the latter Messrs Voisey and Wm. Tooke are responsible for.

CHIPS.

Mr. John Morgan, surveyor, R.E. Civil Staff, has just retired, after a service of 34 years, having been stationed during this period at Aldershot, Curragh, Portsmouth, Mauritius, Woolwich, Belfast, and other places.

Mr. Thomas Berry, surveyor, R.E. Civil Staff, has just retired, after a service of 35 years, having been stationed during this period at York, Straits Settlements, Devonport, Nova Scotia, Dover, Dublin, and other places.

A new Wesleyan church, with seats for 600 persons, has been erected at Ashton-on-Ribble, at a cost of £3,442.

It is proposed to place in the church of St. Michael, Coventry, probably on the north wall of the interior of the great tower, a large memorial brass in memory of all the bishops who have ruled the several dioceses in which that old Saxon tower has been placed from the time of the creation of the Mercian see at Repton, in the year 656, to the present day. On this memorial will be inscribed the names and dates of consecration of 4 Bishops of Mercia, 31 Bishops of Lichfield, 6 Bishops of Coventry, 33 Bishops of Coventry and Lichfield, 13 Bishops of Lichfield and Coventry, 4 Bishops of Worcester, 1 Bishop Suffragan of Coventry. The arms of the Archbishop of Coventry and the United Bishopric of Coventry and Lichfield, and the Bishopric of Worcester, with other devices, will be engraved and coloured on the brass.

COMPETITIONS.

Bristol.—A special meeting of the Bristol Finance Committee was held on Tuesday to consider the designs sent in for laying out the ground above St. Augustine's Bridge as an open space. In answer to the committee's advertisement upwards of forty designs were sent in, and premiums of £50, £30, and £20 were offered. The premiums have been awarded as follows:—First, £50, Messrs. W. J. Taylor and H. J. Weston, Associate of the Institute of Civil Engineers, 24, Portland-street, Southampton; second, £30, Mr. Edward S. Sinnott, Associate of the Institute of Civil Engineers, Bristol, who designed the exhibition building; third, £20, Mr. Thomas H. Mawson, garden architect, Windermere and Market Drayton. The three selected plans will be open for the inspection of the town council, together with any others that members might desire to have submitted. It does not follow that either of the plans awarded premiums will be adopted, because the element of cost has not yet been considered.

Goole.—At a meeting of the General Purposes Committee of the Goole Local Board, held on Wednesday week, the report of Mr. Brown, "architect and builder," Liverpool, who was engaged by the board to advise on the plans for the new Market Hall, was submitted for the consideration of the members. The statement is an exhaustive one, and fully explains the reasons why particular plans are recommended for acceptance or rejection. The committee thereupon decided to inspect the plans once more, and for this purpose they assembled at the place of exhibition in Carter-street subsequently. The matter was fully discussed, and it was agreed to recommend that the first prize of £100 should be awarded to the design of a particular set of plans which were placed first in the order of merit by Mr. Brown, and a keen contest ensued between two plans as to which should be awarded the second prize of £50. It was expected that at the monthly meeting of the board, on Wednesday evening, a resolution would be passed deciding upon the meritorious plans, and that afterwards the sealed letters of the exhibitors would be opened; but our telegram to the Clerk of the Board has elicited no answer up to the time of going to press.

Kirkham, Lancashire.—At a meeting of the Fylde Board of Guardians, held at Kirkham on Wednesday week, the first premium was awarded to designs submitted by Messrs. Haywood and Harrison, of Accrington and Lytham, in an open competition for new union offices, board-room, and receiving wards, at an estimated cost of £2,000.

Lancashire County Cricket Club. — We understand that Mr. Thomas Muirhead, whose design was placed first in the recent competition for a new pavilion by the assessor, Mr. Frank T. Verity, has been appointed to carry out the work.

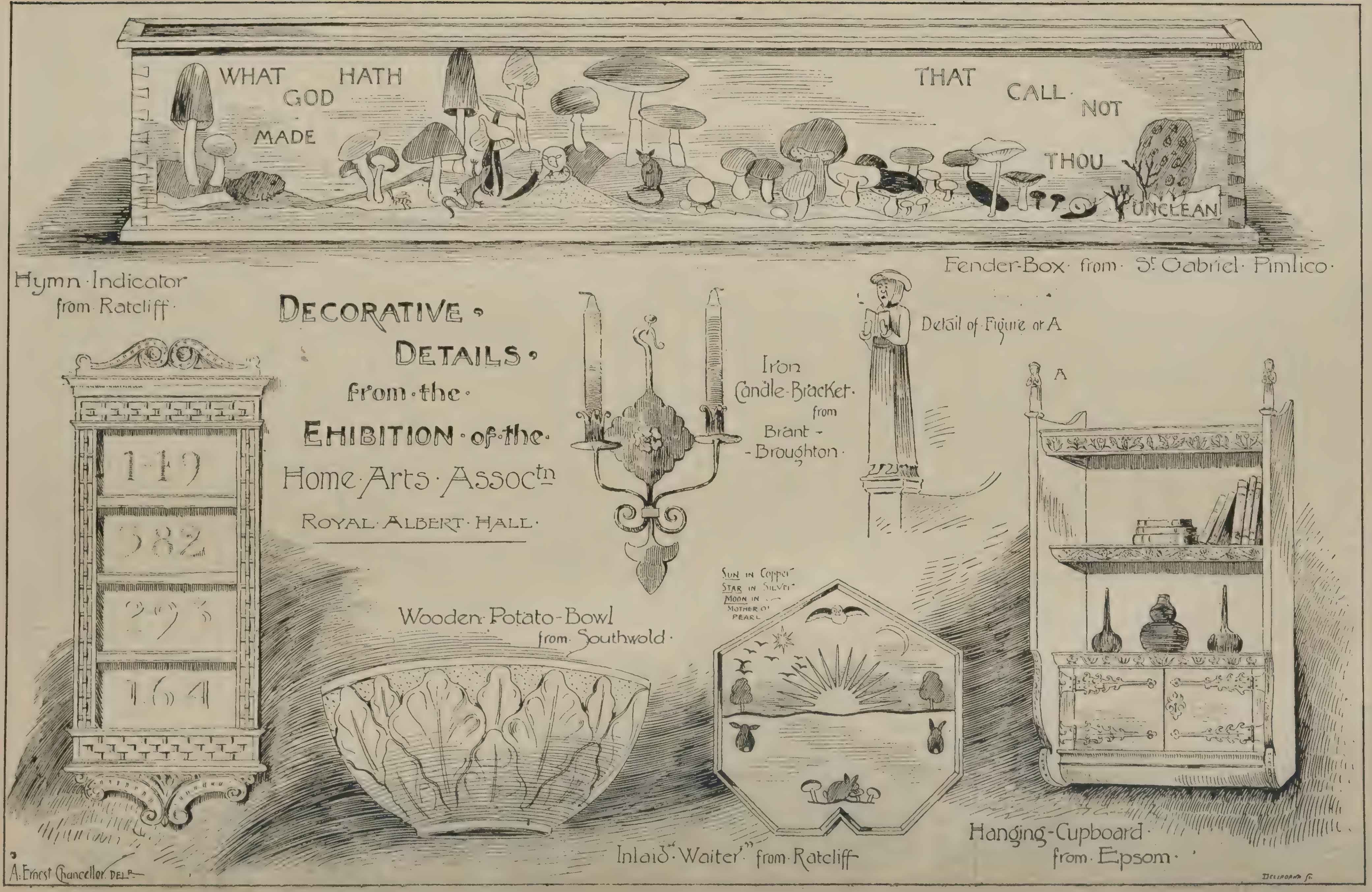
Southend-on-Sea.—The school board having decided to build another school situate on the Leigh-road, invitations were issued to architects practising within the borough for designs in competition. Mr. F. W. Roper, A.R.I.B.A., was engaged to advise the board upon the plans and specifications. At the result of Mr. Roper's report, it was decided to adopt the designs submitted by "Knowledge," subject to any modifications required by the board. The author of these plans is Mr. W. Yendall Hobbiss, architect, Clarence-road, Southend-on-Sea. There were four other competitors.

◆

The death is announced of Mr. Edward Clarke. While speaking to a stageman, named Fox, on Monday, he complained of being unwell, and asked to be taken into the Alhambra. His request was complied with, and he expired within a few minutes. He built the Ilford Local Board offices, the design for which we illustrated June 23, 1893; and also was the author of the design for the Ripon Cemetery buildings, illustrated April 14, 1893.

The class-rooms of both the girls' and boys' schools at Clevedon are about to be enlarged. Tenders for the work were opened at a committee meeting on Thursday week, from Mr. T. Hill, £306; Mr. W. A. Green, £295; Mr. W. H. Drewett, £265; and Mr. Jas. Chapman (Bristol), £259. The tender of Mr. Drewitt was accepted. Mr. H. Hewlett is the architect.

It has been decided to hold the annual excursion of the Northern Architectural Association at Thirsk, Rievaux, and neighbourhood, on Saturday, the 21st of July.


WHAT GOD HATH MADE THAT THOU CALL NOT UNCLEAN
Fender-Box from St Gabriel Pimlico
Hymn Indicator from Ratcliff
149
582
293
164
DECORATIVE DETAILS from the EHIBITION of the Home Arts Assocn ROYAL ALBERT HALL
Iron Candle-Bracket from Brant-Broughton
Detail of Figure or A
A
Wooden Potato-Bowl from Southwold
SUN IN Copper
STAR IN Silver
MOON IN MOTHER OF PEARL
Inlaid "Waiter" from Ratcliff
Hanging-Cupboard from Epsom
A. Ernest Chancellor DELT

WAYSIDE NOTES.

I learn that the Select Committee on the accommodation of the House of Commons has decided by a large majority not to increase the actual legislative Chamber. There is great unanimity in favour of putting the kitchen on the second floor. There are on that story rooms, now occupied by the servants of the House, more than sufficient for the demands of the kitchen; and if this desirable change were made members would be able to take their meals in the existing dining-rooms free from the insufferable heat and unpleasant fumes which consitute a perpetual source of annoyance and complaint. The accommodation and conveniences of the Press Gallery were investigated at the sitting of the Committee on Wednesday; but nothing very definite was arrived at. If it were not probable that by the political changes of the near future the number of members of the House of Commons will be greatly reduced—possibly to one-half, it would be desirable to begin to agitate for the radical changes in the structure which have been more than once indicated by Mr. Masey, Mr. Barry, and others in these columns. Tinkering of the sort that seems in favour with the Select Committee is of little use.

Sir Henry Layard, whose death, at the age of 77, occurred last week, for 15 years had taken no part in British affairs, with one unimportant exception. But for nearly half a century he was one of the most prominent of Englishmen. To students his volumes on Nineveh are of paramount interest, and the sculptures he secured for the British Museum constitute an everlasting monument to his zeal as an explorer. But his life-work was really that of a politician and diplomatist. He seemed mostly in his latter capacity to put himself in opposition to events; but he was energetic, and ever English, and could go for an opponent like one of his own Assyrian bulls might have done. Few other busy men have done so much for archæological research.

Mr. Weir overstated his case in the House of Commons when he said that there were always unscrupulous builders who would not be deterred from erecting houses merely because the site was swampy. The "unscrupulous builder" has to build where he can, and Mr. Weir's object, which was a good one, need not have been prejudiced by the slander of builders. His motion, which practically had for its object the insertion of provisions in the London Streets and Buildings Bill, which would render it compulsory to deal effectually with all surface-water, was defeated. Further legislation in this direction cannot be much longer delayed; but it must be taken on the action of the London County Council, and with care. If an architect's superintendence were compulsory in all cases, it would seldom be needed.

From what I hear, there is to be a select competition for the new Roman Catholic cathedral which, if rumour be true, is to be built at Westminster, on the site which was bought for the purpose many years ago, adjoining the Archbishop's house, and close to the Vauxhall Bridge-road. Among the names suggested as likely to be invited to take part in this contest are Messrs. J. F. Bentley, Dunn, Hansom, and Dunn, H. A. K. Gribble, Leonard Stokes, Pugin and Pugin, Goldie and Child, Bernard Smith, and F. A. Walters. Anyway, it seems that a strenuous endeavour has been made on the part of some few architects associated with the Italian Mission in this country to secure the job, which is being "kept very quiet" at headquarters, and so far I have not heard of any appointment having been actually made, though rumours have been circulated in favour of one pushing gentleman whose name is generally kept well to the front of professional affairs. Lack of adequate funds will necessitate a less ambitious scheme than that which distinguished the masterly French Gothic design prepared some twenty years ago by Mr. Henry Clutton, the highly capable R.C. architect, and relative of the late Cardinal-Archbishop Manning. A decided contrast with the grand historic abbey church of St. Peter, at Westminster, is naturally enough to be preferred to an attempt to vie with its scale and beauty or style, while, on the other hand, a repetition of the Oratory church at Bromptom is certainly not in favour with many from whom material help is expected, and so as a compromise a Basilican type of church is contemplated. Whether its detail is to assume a Classic character or embody a free development of the Mediæval style is seemingly hardly settled. The problem in either case must be considered as a highly interesting one, architecturally speaking.

Public dining-rooms and restaurant facilities continue to develop in London in a very sumptuous and attractive style, much to the detriment of the West-End clubs, whose members no longer entertain their friends therein so hospitably as heretofore, or even dine themselves at their clubs so frequently as they used to do. The new hotels built of late years now afford facilities for the dining public at more moderate prices, and furnish their tables so well as to attract an increasing amount of custom. In evidence of this development I may mention the costly extension of the Holborn Restaurant, which Mr. T. E. Collcutt, the architect of the Imperial Institute, has in hand for the Gordon Hotels Company. The main feature of the scheme will consist of a great banqueting hall, and the cost, which I have heard mentioned, is about, if not over, £50,000. The present building, with its marble and expensively gilded fittings, designed by the late firm of architects, Messrs. Archer and Green, must have cost a very considerable sum also, whatever may be said about its architectural merit.

The Art Union of London on Monday established, in the Court of Appeal, its claim to exemption from rateability—in respect of its premises in the Strand—as a society instituted for purposes of fine art exclusively. The Union was defeated in the Divisional Court, and only secured the judgment of a majority of the Court of Appeal. The chief objection appears to have been the lottery system which the Art Union is authorised to carry on, in furtherance of its objects, and which, it might be contended, imported into the case an element of gain inconsistent with its avowed character as a society solely for the advancement of art. But the Court of Appeal overruled this objection on the facts, and the Art Union has thus gained a decisive, though not a bloodless, victory over the rating authorities. It need hardly be pointed out that the exemption of such bodies throws the extra burden on the general ratepayers.

The *Times* states that there is a proposal to convert Wolvesey Palace, Winchester, into a diocesan church-house, a movement that has been set on foot by the Bishop of Winchester and Dean Kitchen. The palace is near the river Itchin, between Winchester College and the deanery gardens. It would be a great pity that a property of such historic interest should be allowed to be sold as proposed some time ago. The original Wolvesey Castle was built by Bishop Blois about A.D. 1138, on the site of the ancient Episcopal Palace. It was dismantled during the turbulent reign of Henry III., and finally destroyed by Cromwell in 1646. The ruins now remaining belong to the Keep, which was built of flints. The present episcopal palace was began by Bishop Morley, under Sir Christopher Wren, after Cromwell's time, but was never completed. Several features of interest and some good ornament of the Norman and Transitional periods are, we believe, visible.

The development of the American "sky-scraping" structures in New York, Chicago, and other cities of the United States, threatens to outdo itself. The improvements of lifts and elevators, and the perfection of the steel frame manufacture have given renewed impetus to the erection of these atrocities. The self-supporting wall has been supplanted by the steel cage or frame, which, as our readers know, gives support to the curtain wall or screen, so that the wall of each story is independent of those above and below it. The masonry-built wall of the earlier structures of this class occupied too much valuable space in the basement and lower stories, therefore there was only one alternative—to abandon the "high" building or to make it a framework of steel. A large number of very respectable buildings are now being bought by capitalists to pull down, so that one monster erection of 20 stories may take their place. We are glad our Australian cousins are not likely to repeat the experiment, and the *Australian Builder* expresses the hope that "those colonies will never come to copy such constructional atrocities of the Yankee."

BOOKS RECEIVED.

A History of Westmoreland, by Richard G. Ferguson, M.A., LL.M., F.S.A., Chancellor of Carlisle (London: Elliot Stock), is another addition to the "Popular County Histories" which Mr. Elliott Stock has been bringing out at intervals. We have no space to examine the History which the learned author has compiled from various authenticated sources, such as the papers in the *Transactions* of the Cumberland and Westmoreland Antiquarian and Archæological Society. The present Chancellor of Carlisle's own local works have furnished a great deal of the present volume. As in other volumes of this series, the work deals first with the early inhabitants of Westmoreland, the Roman conquest, describing the antiquities, the Norman settlements; the baronies of Appleby and of Kendal, held directly from the Crown, are minutely described with their charters and local incidents. The 15th, 16th, and 17th centuries, the troubles and the times of the Restoration and the Revolution, form interesting chapters in a volume which displays considerable topographical and antiquarian learning and research. It is a decided omission that there are no maps or illustrations; a map of the county, or a few small-scale maps of certain localities would add greatly to the value and interest of these local histories.——*Concrete: its Use in Building*, by Thomas Potter, new edition (London: B. T. Batsford, High Holborn), is a new edition of the author's work on this valuable building material, describing the making and mixing of concrete, the construction of concrete walls, floors, roofs, and other things. The work has been entirely re-written, and is a bulkier volume than the last. Mr. Potter lays all the leading authorities under contribution, and many of the data relating to the subject have been given in our own pages. The second part or volume contains chapters on monolithic walls, wall blocks like Hayward's building blocks, slab walls describing the various forms of slabs on the market; paving fireproof floors and roofs, concrete stairs, tanks, &c. In these chapters the author discusses more or less fully the question of fireproof floors, the effect of fire on floors of concrete and iron, their strength, expansion, and the illustrations given clearly explain the different systems in use. We see the Homan's floor, the Doulton-Peto, Millar's, Lindsay's, and the Fawcett, and other recent types of concrete floor have been introduced. As a treatise on the manufacture and practical applications of concrete, Mr. Potter's work deserves a high place.——*Stresses in Girder and Roof Trusses*, by F. R. Johnson, Assoc.M.Inst.C.E. (London: E. and F. N. Spon, Strand), will be welcome to a large class of architects, engineers, and draughtsmen who have no time or inclination for mathematical calculation. Mr. Johnson simplifies the process for both dead and live loads by simple multiplication. Stress constants for 100 cases are furnished in the form of tables, accompanied by truss diagrams, so that all that is necessary is to find out the kind of truss required and its condition and the stress constants, and to multiply these by the panel load to give the maximum stress on any member. Of course, it is always possible to calculate the stresses of a roof or girder due to dead or live load in the term of a unit panel load, but the author's book will facilitate the operation by giving all the constants necessary for ordinary structures. The introductory remarks and abbreviations used enable the most unpractised to learn the method. Thus for a lattice girder, each panel of which is covered with a unit load of, say, 1 ton, or any other unit, distributed over each of the 12 panels, the resulting stresses in terms of the load are given. Each of the truss diagrams has the load-line marked either on the bottom or top flange, and the numbers on the diagrams indicate each member of the girder. Looking at the table under the head of any particular loading, we find the panel number, and opposite it the stress constant with its sign + or −, the first signifying compression, and the second tension. The book includes lattice Linville, inverted Linville, Warren, parabolic bowstring, braced trusses, and every kind of roof truss ordinarily used. An index to the various type given is wanted for reference. Mr. Johnson's little book is just the one that every architect and engineering draughtsman wants, as many a weary and unreliable calculation may be saved by its use.——*A History of Tong, Shropshire, and Notes on Boscobel*, by George Griffiths, illustrated by Edmund H. New, Gertrude M. Bradley, and Chas. W. S. Dixon (London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd.)—The volume on our desk is a second edition of an interesting history of Tong and its church. The church is much visited for its historic associations and monuments and altar-tombs. A good plan and several sketches are given. In plan, Tong Church has a nave and two aisles, a south porch and chapel, a central tower over the nave at the east end, and a long chancel, and has undergone few changes. The tower is an octagon above the square, and is crowned by a low spire and embattled parapets, the style of the edifice being Early Perpendicular. Many interesting features are to be found, which are here described and illustrated, such as the Vernon chapel, with its fan-traceried vaulting; the stalls, richly carved; choir-screen; seven fine altar-tombs, &c. The screen between chancel and tower is Transitional, of elaborate design, and in good preservation. The cornice is carved with oak-leaves and acorns, and the surbase is enriched with the vine. The plates of effigies in the Vernon chapel, &c., are interesting, and the work is full of inscriptions and quotations from various sources. As a guide to the church and neighbourhood, Mr. Griffiths's work will be found of much interest.

Building Intelligence.

Bristol Cathedral.—At the last meeting of the executive committee, the report of the clerk of the works stated that the tower would probably be finished by the end of the present month. The four pinnacles at the base of the turret-spire have still to be restored, after which the scaffolding will gradually be removed. The turret on the east side of the north transept will now be proceeded with, and this will complete all the exterior work west of the choir. With regard to the interior, the marble paving of the choir-floor is being prepared, and will shortly be laid down upon a raised bed of concrete. Services will be held in the nave, as the choir will be screened off by a hoarding, to enable the improvements already undertaken to be proceeded with. A contract has been signed for the removal and reconstruction of the stalls at a sum of £1,384. The committee also had before them the matter of the ceiling of the choir, aisles, and transepts. It will have been noticed that this has for a long time been in a very defaced and discreditable condition, the distemper, which was placed on the roof about 1860, having to a great extent perished. The architect has pronounced the plaster, with which the grained and panelled ceiling is covered, to be, without doubt, ancient, and it has therefore been decided to preserve it for future decoration, as originally intended, only cleaning and distempering it afresh for the present. The present condition of the ceiling has probably arisen from imperfect ventilation; steps have therefore been taken to secure the best advice as to the most effectual method of ventilating the Cathedral. On the matter of lighting the choir, it was generally agreed that it should be electricity and not by gas. Mr. Cowlin, the contractor, has now furnished estimates for the restoration of the north arm of the cloisters, running parallel to the nave, and dating from the end of the 15th century, three bays of which may still be seen in a ruinous condition. The cost of restoring each bay will be £148.

Burley.—The memorial stones of a new Primitive Methodist Chapel were laid at Burley last Saturday. Messrs. Howdill are the architects. The designs show a building in the Gothic style of the 13th century, simply treated. The chapel will comprise a nave and choir (with apsidal termination) 70ft. long, and side aisles 53ft. long, divided from the nave by a stone arcading. A rectangular tower will rise to a height of 65ft. The structure will be of Burley pitch-faced stone, with dressings of Horsforth stone. Welsh slates will cover the roof, and the roof principals will be of dressed Baltic redwood. Pitch-pine sittings will be provided for 608 persons, and the cost of the structure is estimated at £2,400.

Charing Cross Hospital Convalescent Home.—We published on April 28, 1893, a double-page illustration of the Charing Cross Hospital Convalescent Home, the foundation stone of which was laid yesterday at Oxted by Mr. J. Passmore Edwards, who sent a cheque in 1891 for £5,000 towards its cost, and has guaranteed to defray whatever more may be required. Some slight modifications in the design have been made since we published our illustration. The architect is Mr. John J. Thomson, A.R.I.B.A., of 1, Durham-place, Chelsea, whose plans were accepted in a limited competition. The home will accommodate 50 patients, and the general dining-hall will seat 72, thus providing for future additions to the wards.

Edinburgh.—The new parish church of St. Cuthbert's, Edinburgh, was opened on Wednesday. Except the western tower, which was erected in 1789, the entire building has been reconstructed from the foundation. The architect is Mr. Hippolyte Blanc, A.R.S.A. The retention of the tower determined the style of the edifice, which if that of the Early Italian Renaissance. The seating accommodation is larger than that of the old building, though there is only one gallery, and the large apse, nearly 40ft. deep and 30ft. broad, is not included in the allocation, being reserved for the choir and elders' seats. The chancel is approached by marble steps, and a further ascent beyond the choir leads to a plinth, partly of marble and partly of mosaic, on which stands the Communion table. The structural material of the table is ivory-tinted statuary marble, the front being divided into three panels by pilasters and capitals delicately carved. The table is based upon early examples of the Byzantine date, with adaptations of the best period of Italian Renaissance work. A scheme of stained-glass windows has been prepared, of which a number have already been presented. Two oaken carved seats for the collegiate ministers have been placed at the entrance to the choir. On either side of the apse large chambers have been left for the organ, only one of these being occupied at present by an instrument which has been introduced for temporary use. An extremely plain wooden pulpit has also meantime been erected on the north side of the chancel. The font in use in the old church, the work of the late Mr. Brodie, is of Caen stone, and has been placed on a marble plinth on the south side of the chancel. Vestries for the ministers are provided on either side of the apse. The building has cost considerably over £20,000.

Harrogate.—On Tuesday afternoon the Mayor of Harrogate laid the memorial-stone of the new Montpellier Baths, Harrogate. Designed in the style of the English Renaissance, the building, 260ft. long by 190ft. high, is grouped with a dome as central feature, backed by two towers, and flanked by raised pavilions. It consists of central hall or pump-room for the use of water-drinkers; a winter garden; suites of special and slipper-bath rooms and dressing-rooms for ladies and gentlemen; a Turkish bath and rooms for the pulverisation and inhalation of the waters, dry massage, and other treatments. The whole of this accommodation is on one level. In connection with the central hall are cooling, reading, and refreshment rooms, besides manager's office, &c. The winter garden is 220ft. long and 42ft. wide, covered with a curved glass roof, and ornamented with a fountain and flower-beds. The estimated cost is £100,000. The architects are Messrs. Baggallay and Bristowe.

Widnes.—The foundation-stone was laid last week at Widnes of a free library and technical school. The buildings are to cost about £10,000. The designs are by Messrs. Woodhouse and Willoughby, Manchester. The style is English Renaissance, and the material to be used is red Ruabon brick, with terracotta dressings. In the technical school ample provision is to be made for the teaching of chemistry, the most important technical subject in the Widnes district. The laboratory will have accommodation for about 50 students, and there will also be a large chemical lecture theatre. The rooms in the library are grouped round the lending department. The reading-room will have a lofty, open-timbered roof. Provision will be made in gallery-form for the storage of 50,000 volumes.

It has been decided to aim at a complete restoration of the north aisle of Leek Church, and to extend the aisle as far as the tower. The preparation of the necessary plans has been intrusted to Mr. A. E. Street, who designed the present chancel. Probably some £2,000 will be required.

Correspondence.

CRIPPLEGATE INSTITUTE.

To the Editor of the Building News.

Sir,—My attention has been drawn to the description of the above building given in your last week's number, wherein it is stated that "plans in competition from many well-known architects were sent in, and both Mr. Smith's two designs were placed first by Mr. MacVicar Anderson." If this be true, it certainly does look bad for the "many well-known architects"; but I venture to think there is some mistake. At any rate, let us have their names.

Several who were invited to compete very properly refused to do so, owing to the conditions of the competition, one of which was that the successful architect should be paid only 4 per cent. commission upon the cost of the building, and that the premium was to be merged in this amount. This means that, allowing for the cost of the competition drawings, the successful architect would receive about 3½ per cent. for his work, and it is my impression that no architect with any self-respect, or any regard for his brother architects, would compete under such conditions. Among those who refused were Mr. Brydon, Mr. Murray, and yours, &c.,

Ed. W. Mountford.

17, Buckingham-street, Strand, W.C.
July 12.

MARYLEBONE BATHS COMPETITION.

Sir,—Will you permit me to say, in connection with the above, how very unsatisfactory in the result were the instructions issued to competitors?

Previous to parting with the sovereign asked for the instructions, I called on the clerk and asked to see a copy of the instructions. These were shown me, and I at once asked for some information as to the cost intended to be gone to, as there was nothing to guide competitors. The clerk at once told me that it could not be done properly for *less* than £50,000, as a previous suggestion as to a partial alteration had been vetoed, on the ground that the whole thing had better be done well. I naturally took these figures as an approximate outlay, and made my plans accordingly.

Of the award itself my mouth, as a competitor, is closed, and when I say that amongst the plans hidden away at Boscobel-place, instead of being shown with the prize plans, at least a dozen sets were far ahead of my own, I think I cannot be accused of any improper motive in writing this; but I do feel that, although plan is the very first consideration in such a scheme, it did not present opportunities for architectural beauty of elevation; but the prices which I understand it is proposed to go to would certainly preclude anything which may be called striking in the way of design being adopted.

I would again repeat, I do not criticise the award itself; but I think those responsible might have also, in common courtesy to those spending so much time and thought on plans, have exhibited all the drawings together in one convenient place, for their inspection.—I am, &c.,

Chas. E. Savery, M.S.A.

2, St. George's-square, S.W.

TOWER BRIDGE.

Sir,—Mr. E. Marsland, in criticising the Tower Bridge, shows that he is not at all conversant with his subject. If Mr. Marsland had seen the works as they progressed, it would have been evident to him that the engineer and architect were working well together. At the same time, it should be remembered that the Tower Bridge is no ordinary building; the ironwork is very complicated, and has many moving parts, leaving the architect anything but a free hand. If Mr. Marsland knew the many obstacles which arose during the construction, he would be better able to appreciate the merits of the architect, who has successfully overcome them. Your correspondent speaks of the multitude of windows. There is nothing of the kind; the windows are simply placed where required, to light staircases, landings, lifts, &c.

With regard to the corbelling of the angle columns from the round to the octagon, many people hold a different opinion to your correspondent. It was absolutely necessary to corbel out, on account of the huge suspension-chain bearings, which cut nearly through the masonry at this point.

Why blame the architect for "the skeleton arms in all their naked ugliness"? These are, of course, the work of the engineer; and, judging from the ornamental ironwork designed by the architect, there is no doubt he had "ample resources" had it been thought necessary to clothe the "skeletons."

When Mr. Marsland criticises the engineer, he is still more hopelessly at sea. He would do away with the suspension chains and put a lattice girder to carry the side spans, similar to those of the top footway. Is he aware that the top footway is only about 13ft. wide and 200ft. long, and only carries pedestrian traffic? Yet it needs girders 13ft. deep. What would be the depth of girders to carry, in a similar manner, the side spans, which are 60ft. wide, 270ft. long, and carry heavy road traffic? They would indeed "have a substantial appearance," would be vastly more of an "eyesore" than the suspension chains, and swamp the whole composition, which at present combines strength with dignity.

I do not think there are many who share Mr. Marsland's regrets. Those who *do* know something of the matter, consider that Mr. G. D. Stevenson has, under the circumstances, dealt very successfully with the architecture.—I am, &c., A.R.I.B.A.

Intercommunication.

QUESTIONS.

[11177.]—**Sash and Roof.**—Can anyone tell me what a Venetian sash is? Also a De Lormer roof? Questions upon these were set at a recent technical examination, and doubtless a reply would interest others as well as myself.—CANDIDATE.

[11178.]—**Fixing Tiles.**—I should be glad if someone would kindly inform me as to the best means of fixing tiles to a 9in. wall? I understand the method for studwork, but should prefer an opinion before advising.—ENQUIRER.

[11179.]—**Thrusts on Walls and Arches.**—Will some student who is reading the important article on "Thrusts on Walls and Arches," now appearing in the "B. N.," give me a demonstration of the following? In last week's "B. N.," p. 4, Fig. 13, B F is the line bisecting angle D B A, and it is assumed that it is only the wedge-shaped piece of earth D B F which tends to overturn the wall. The whole object of the investigation is to find the pressure on the back of the wall. Then why assume that it is only this wedge, D B F, which causes the pressure, and not a greater or smaller one?—J. B.

[11180.]—**Details.**—Will some of your professional readers kindly enlighten me as to the scale of detail charges it is customary to make in London and district for small surveys of land and buildings for conveyance or transfer, &c.?—TEMPLETON.

REPLIES.

[11176.]—**Payment for Quantities.**—The surveyor's fees for the quantities become due on the signing of the contract, and immediately the contractor receives a first instalment, the surveyor should send his account. If the contractor declines to pay, a writ should be served.—HENRY LOVEGROVE.

CHIPS.

Messrs. E. H. Shorland and Brother, of Manchester, have just supplied some more of their patent Manchester stoves to the Westhulme Hospitals, Oldham, the patent Manchester stoves previously supplied having proved very satisfactory.

The Congregational Church, Burton-on-Trent, is to be newly seated, and to undergo thorough restoration and decoration, from the plans, designs, and under the superintendence of Mr. R. E. Carpenter, architect, of Burton.

Holy Trinity Schools, Burton-on-Trent, are being enlarged from the plans and under the supervision of Mr. R. E. Carpenter, architect, Burton, as approved by the Educational Department. The builder is Mr. J. Parlow, of Burton.

The Frome (Somerset) Rural Sanitary Authority have appointed Mr. J. E. Willcox, C.E., of Birmingham, consulting engineer in connection with the scheme for water supply for the district of Coleford, which has been prepared by their surveyor, Mr. W. T. Purnell.

The Stourport Local Board have called in Mr. J. E. Willcox, C.E., of Birmingham, to advise and report upon the question of sewerage and sewage disposal of the district.

The Sowerby District National Schools, near Halifax, are proposed to be again enlarged by an addition to the girls' school, and Mr. Patchett, architect, Halifax, has prepared plans for that purpose. This will be the fourth time he has extended them during the last 25 years. There is no school board in the village.

Legal.

ABOUT FIRE-PLUGS.

THE Court of Appeal has been seriously engaged in considering who should pay for the fire-plugs fixed and kept in repair by the Grand Junction Waterworks Company in the district of Brentford during the last six years. In order to settle this matter the water company sued the Brentford Local Board for the whole sum so expended, and after getting judgment in full at the trial before Mr. Justice Lawrance, the Court of Appeal has now reversed the whole of his decision, and left the water company to bear the cost of their litigation as well as the expense of their fire-plugs. The case is really an instructive instance of our municipal muddling and the divisions of local power and local authorities, although Lord Justice Lindley gave a decision which is clear enough upon the statutes. As to the facts, it appears that the water company fixed a lot of fire-plugs in the roads of Brentford, some before and some after the Local Board for that place was created, and they kept them in repair. Lately coming across certain sections in the Waterworks Clauses Act and the Public Health Act, it occurred to the water company that the Local Board having used their fire-plugs should be liable to pay for their fixing and repair, in the same way as if the Board had requested the company to lay down such fire-plugs, as they can do under these statutes.

The Court of Appeal, however, held that as a matter of fact there had been no such express request, and that none could be implied from the subsequent user of the fire-plugs by the public. They also ruled that although the Local Board was bound to provide fire-plugs, and could be compelled to do so by the Attorney-General acting under the power of the Public Health Act, this had nothing to do with the relations of the Board and the water company. It was, indeed, the duty of the local authority to fix fire-plugs, and it could and should request the water company to do so, and if it did, then the Local Board would be liable for the cost and repair of these plugs. Private owners might also require the water company to fix such plugs, and this would then be done at their expense. Here the water company had been good enough to fix the fire-plugs and repair them without being asked by anyone, and so they had no remedy. The end of this case is simple justice, though it be arrived at oddly, and it would have saved many muddles of this sort had the companies who sell the water at a good profit been throughout compelled to fix and keep in repair all fire-plugs for the use of the public.

FRED. WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

P. AND P.—ARCHITECT.—CONTRACT.—EXTRAS.—It may depend on the form of the contract; but you should refuse to pay such a claim without particulars and the plans, &c. The extras seem enormous in so small a job. Better consult your solicitor, and let him defend any action they may bring.

G. H. G.—LIGHT.—CHURCH.—OBSTRUCTION.—There is no special limit within which buildings can be erected; nor is the matter governed by any angle, as suggested. It is, in each case, simply a question of fact whether the obstruction will substantially reduce the light hitherto enjoyed by the dominant tenement, and if it will, then the Court will interfere by an injunction, or give damages.

Earl Stanhope laid the foundation-stone of the new Church of All Souls', Cheriton, on Tuesday week. The edifice is being built at a cost of £4,000.

The sixth annual exhibition of the Artists' Guild will be held, under the patronage of Princess Christian, at South Kensington, in November next. The judges will be Messrs. W. P. Frith, R.A., H. Stacey Marks, R.A., Walter Severn, Leslie Ward, Mrs. E. M. Ward, Mrs. Jopling, and Miss Rowe.

On Sunday, the dedication took place of a new east window erected in St. Andrew's church, Beamish. The building, which has cost something like £1,600, is in every way adapted to meet the requirements of the growing population. On the ground floor there are two classrooms and caretaker's house, &c., whilst on the second-floor there is a hall, with sitting accommodation for 240 people, besides the various ante-rooms, &c. The architects for the buildings are Messrs. J. Smith and Sons, Shotley Bridge.

LEGAL INTELLIGENCE.

THE RESPONSIBILITIES OF BUILDERS.—An exceptional case was heard before Judge French, at the Shoreditch County-court on Tuesday, by which James Greenaway, bricklayer's labourer, of 16, Brettenham-road, Edmonton, sued Mr. John Anley, builder, of 27, Dalston-lane, to recover £50 damages for injuries sustained through the alleged negligence of defendant's servant. Mr. Salter appeared for plaintiff, and Mr. Ruegg for the defendant. Plaintiff's case was that on March 29th he was in defendant's employ, and was removing some *débris* from a house in course of construction in Dalston-lane. Two walls were being built in the front, with a space of 4ft. 9in. between them. Bricklayers were at work on a scaffolding at the top, there was no guard-board to the scaffolding, and, in consequence, about half a brick came off the scaffolding, struck him on the back of the head, inflicting a severe wound, which had since rendered him incapable of working. He had been an out-patient at St. Bartholomew's since April the 5th, suffered from slight deafness, pains in the head, and, since the accident, had not been able to "collects his thoughts properly." Mr. Ruegg: A great many of us cannot do that. (Laughter.) Defendant's was that it was a pure accident; that if there was negligence, it was on the part of plaintiff, who ought not to have been in the area at the time. Defendant paid plaintiff his full wages for six weeks afterwards, and up to the time of his receiving a solicitor's letter from him. His Honour said Mr. Anley had behaved in a very handsome manner under the circumstances; still, a guard board might have been put up, and the plaintiff stood upon his legal rights, and he should give him a verdict for £21, with costs.

ACTION FOR SLANDER.—ONE FARTHING DAMAGES.—BRASS v. HOLLINGTON.—The plaintiff, Mr. William Brass, a builder, carrying on business as William Brass and Son, formerly of Old-street, St. Luke's, but now at Page-street, Westminster, sued Mr. Alfred Hollington, County Councillor and Common Councillor of the City of London, of the firm of Hollington Bros., clothiers, of Middlesex-street, Aldgate, to recover damages for alleged slander. The plaintiff's case was that in October last year the manager of a company which fixed lifts and machinery, in the course of some negotiations with the defendant as to the fixing of a lift upon his premises, mentioned that his company had fixed a lift for Mr. Brass, and thereupon defendant said that plaintiff was a bankrupt, and had lost all his money in gambling on the Stock Exchange.—The defence was a positive denial that defendant had ever uttered the words complained of.—The jury, after a short deliberation, returned a verdict for the plaintiff, with one farthing damages.—Judgment accordingly. Mr. David applied that the plaintiff should be deprived of costs. The Lord Chief Justice said he would consider the question, and, replying to Mr. Bowen, he promised also to consider whether he would give a certificate for a special jury.

WATER SUPPLY AND SANITARY MATTERS.

BRIDGEND.—Major-General C. Phipps Carey, R.E., held an inquiry at the Town Hall, Bridgend, Glamorganshire, on Wednesday, the 27th ult., into an application made to the Local Government Board by the urban authority of the Bridgend local board and the rural authority of the Bridgend and Cowbridge union to borrow £9,000 and £7,000 respectively for works of sewerage. The main outfall from the town of Bridgend to the sands, the site selected for treatment of the sewage, is about 2¾ miles in length, the cost of which will be borne by the above-named authorities in proportions already agreed upon. The towns of Tondu and Aberkenfig, and the districts adjoining them, will be efficiently drained. Mr. George Fenton Lambert and Mr. J. C. Rees, the engineers of the scheme, went fully into the technical details of the scheme, and explained the plans which they had prepared. It is estimated to meet the requirements of about 10,000 people. The inquiry lasted some hours, and Mr. Lambert was examined by some of the persons present as to the existing state of the town drainage and as to the method of ventilation he proposed to adopt in the new scheme, and his replies were considered very satisfactory. The inspector afterwards inspected the site of proposed outfall and line of sewer, also the district above Bridgend—viz., Tondu and Aberkenfig—thus taking a great deal of time and pains throughout the inquiry, which lasted from 11 a.m. until 6 p.m. There was no opposition to the scheme.

St. Peter's Church, Duddon, near Tarvin, has been restored, a new heating apparatus has been laid, a vestry and porch have been added to the building, the flooring has been rearranged, new seats have been provided, and the church has been painted and generally beautified at a total cost of £350.

Our Office Table.

SIR FREDERIC LEIGHTON appeals for £3,000 wherewith to complete the Wellington Memorial in St. Paul's. He says:—"The monument has been transferred to its proper position and surroundings; it now awaits completion, and it is in this necessary work that I would ask the co-operation of such of your readers as are careful of a supreme artist's fame. The original design of the sculptor—which may be seen at present by the side of the unfinished monument—shows an equestrian statue of the great Duke occupying the now vacant pedestal which surmounts the whole, and worthily crowning the magnificent conception. Of this statue a rough unfinished model from his hand is in existence, and will, if made accessible, serve as a sufficient guide to the artist who shall be privileged finally to carry out this portion of the cenotaph; that artist should be a man whose genius will carry him worthily through such a task, and whose reverence for the name of Alfred Stevens will insure that close adherence to the leading lines and features of the first design which the public voice would justly demand; such a man, both in his gifts and in his reverence, the Dean and Chapter of St. Paul's have seen in Mr. Alfred Gilbert, R.A., whose selection for so noble a task will command, I cannot doubt, universal approval. It now remains to us to seek the necessary sum wherewith to defray this final expenditure—a sum estimated at £3,000."

A PUBLIC meeting, convened by the City Church Preservation Society, was held last Friday at the Mansion House, in furtherance of a movement to protect churches from destruction. Dr. Freshfield moved:—"That this meeting, while favourable to a much-needed reform in the ecclesiastical arrangements of the City, is of opinion that any further destruction of churches and desecration of sites is to be deplored, and must be strenuously resisted." Professor Shuttleworth, Rector of St. Nicholas Cole Abbey, seconded the resolution. In his opinion the time had arrived when a strenuous protest should be made against the destruction of edifices which owed their origin to the genius of Sir Christopher Wren. There were many reasons why City churches should be preserved. He claimed for them that on antiquarian, architectural, archæological, and practical grounds churches within the City boundary ought not to be demolished. The resolution was declared carried. Mr W. Neave Hill moved: "That this meeting, having in view the great historical interest, as well as the practical value, of the Church of St. Ethelburga, Bishopsgate, deeply regrets that an attempt is now being made to bring about its destruction, and pledges itself to use every means in its power to avert so deplorable a result." The resolution was passed unanimously.

THE Hybrid Committee of the House of Commons, appointed to inquire into the merits of the London Streets and Buildings Bill, have brought their labours to a conclusion, and after a prolonged inquiry, the Bill was ordered to be reported to the House. As now passed, the Bill embodies all existing legislation relating to London streets and buildings, with such amendments as sanitary science has proved necessary. The buildings which have been exempted from the operation of this Bill are the existing schools of the London School Board, those owned by the four Inns of Court, and all buildings used solely for railway purposes.

A REPORT on the dust destructor at Kensal Town, by Mr. T. W. E. Higgens, A.M.I.C.E., surveyor of the vestry of Chelsea, is of interest to local authorities. Mr. Higgens describes the several schemes submitted by Messrs. Horsfall, the Municipal Appliance Co., Messrs. Manlove, Alliott, and Co., and Livet's British Steam Generator Co., and the estimates of these. He suggests that the scheme of the Muncipal Appliance Co. be adopted, if it is thought advisable to erect a destructor on sanitary grounds, and to utilise the heat for the baths. This way of utilising the heat is thought the best. The scheme would cost £4,895. This plan would be adopted by the vestry in conjunction with the Baths Commissioners; there would be four cells (half-sunk), and a chimney 150ft. high. If the vestry desire to erect a destructor (without the baths), and utilise the heat for lighting the offices and destructor buildings, Messrs. Horsfall's scheme is proposed, with the addition of a chimney 120ft. high. Mr. Higgens does not believe in the popular cry that London can be lit by electric light for nothing by its dustbin refuse.

THE annual exhibition of work executed by the scholars and pupil-teachers in the London Board Schools will be held at the Hugh Myddelton School, St. James-walk, Clerkenwell (near the Farringdon-road station), on Friday, Saturday, Monday, Tuesday, and Wednesday, July 20, 21, 23, 24, and 25. The exhibits will include various branches of drawing, shading, designing, outline from plants, casts and models, and modelling in clay; designing in coloured paper, cardboard-work, woodwork, needlework, cookery and laundry-work, and kindergarten.

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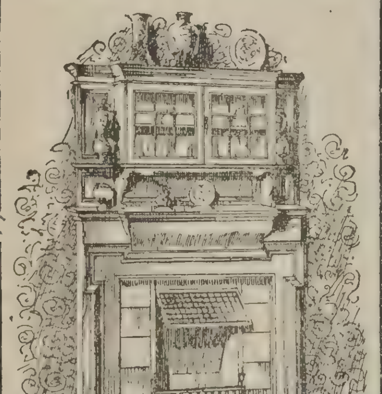

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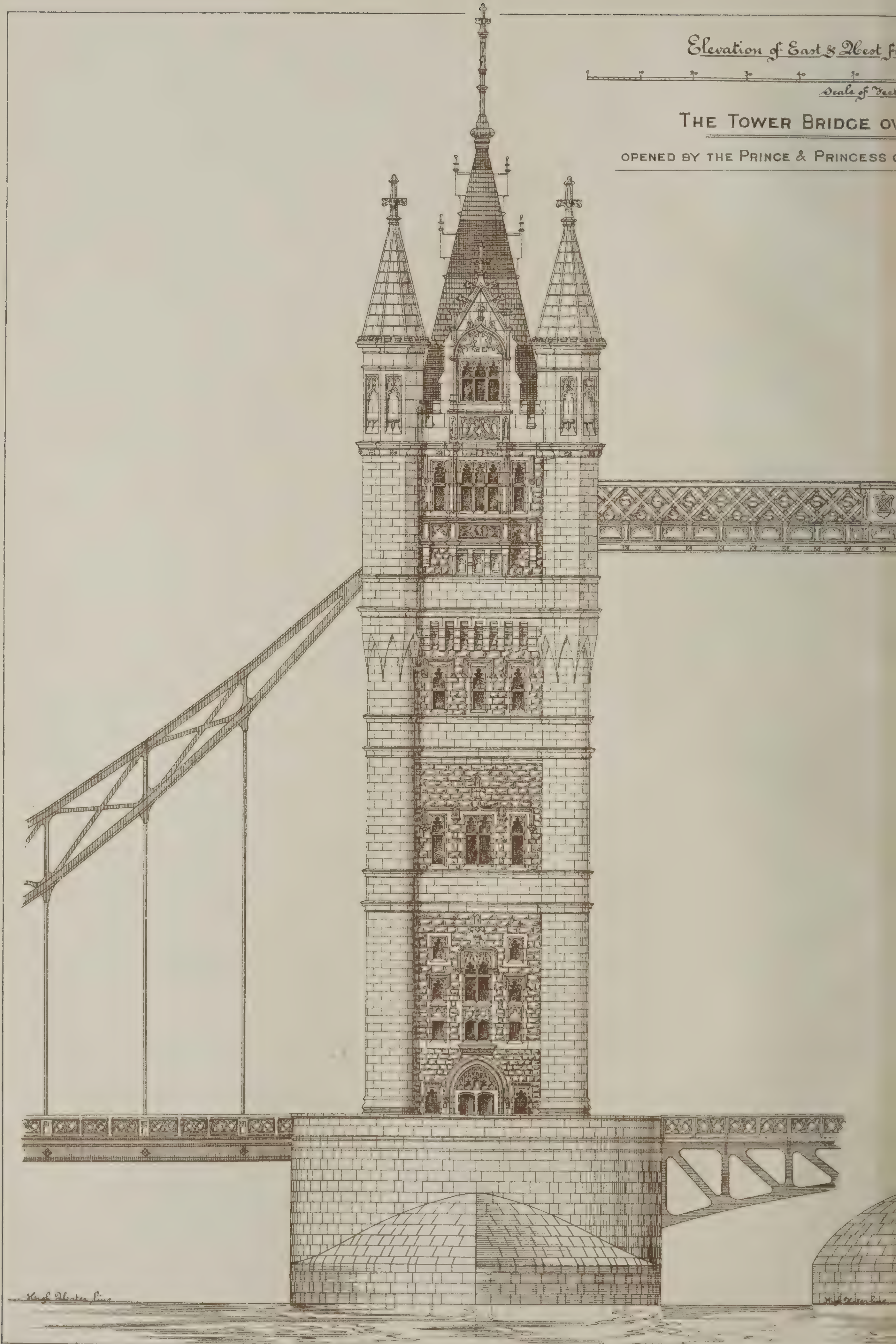


Elevation of East & West F

Scale of Feet

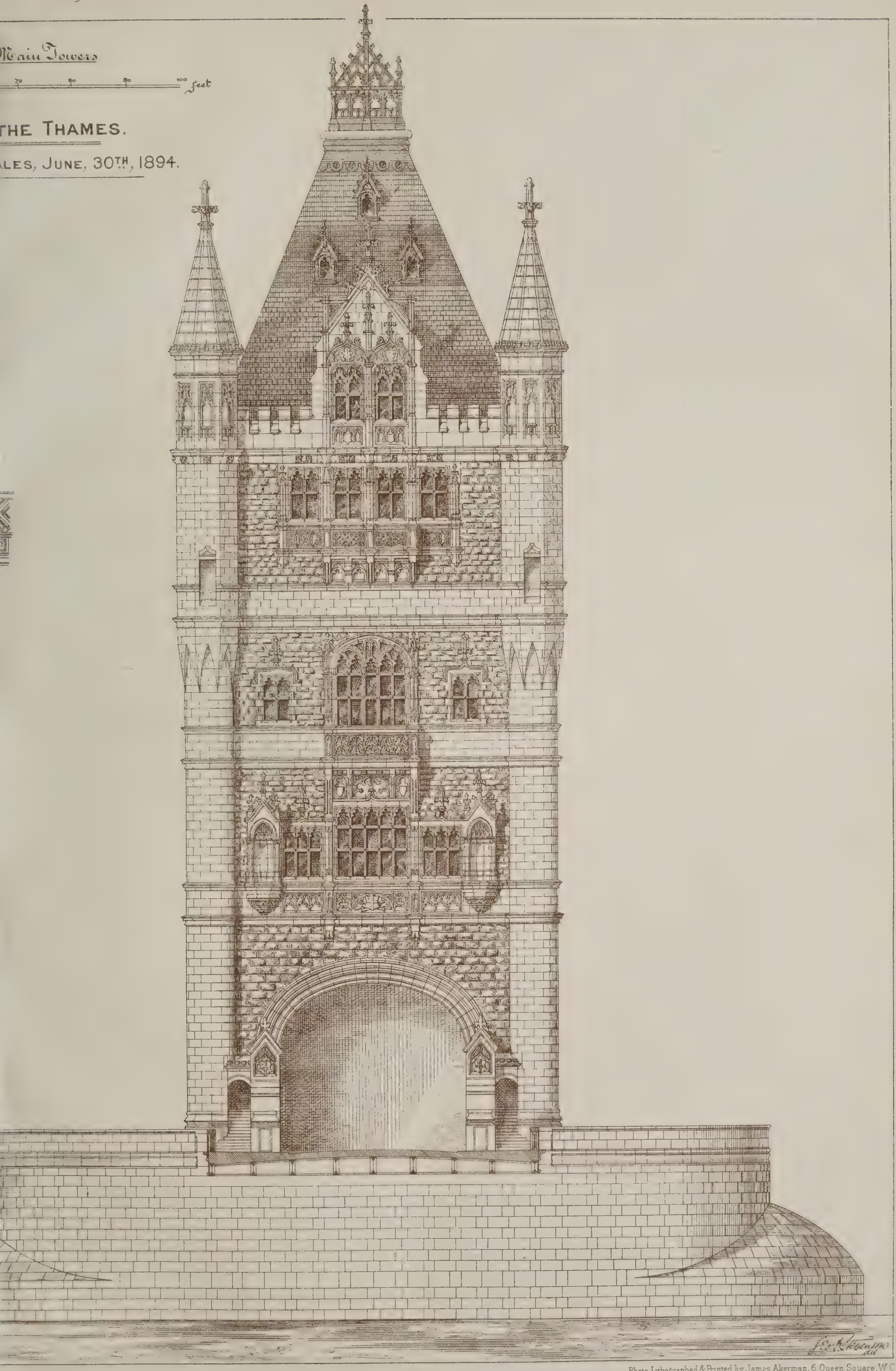
THE TOWER BRIDGE OV

OPENED BY THE PRINCE & PRINCESS O

Main Towers

THE THAMES.

ALES, JUNE, 30TH, 1894.



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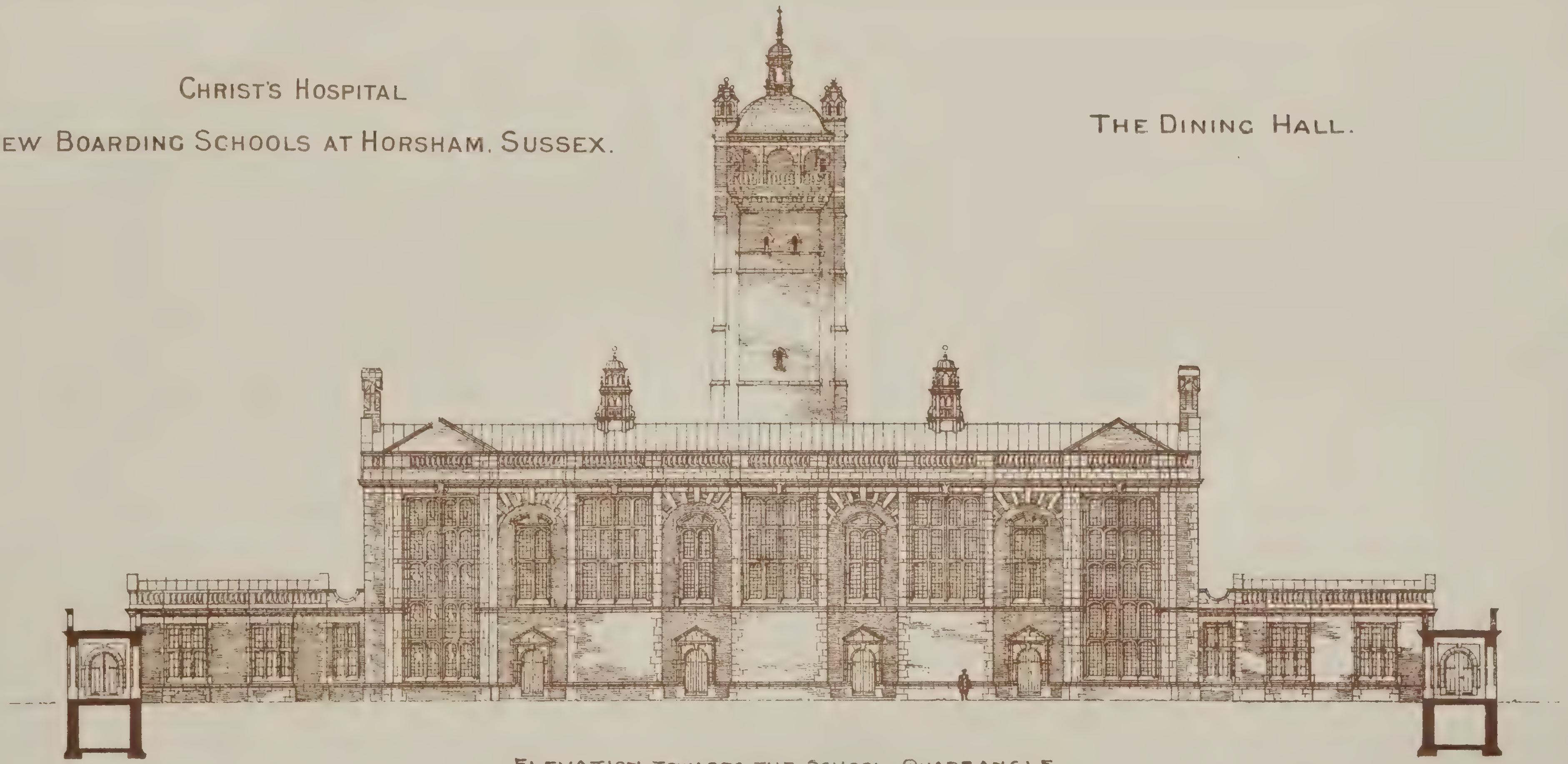
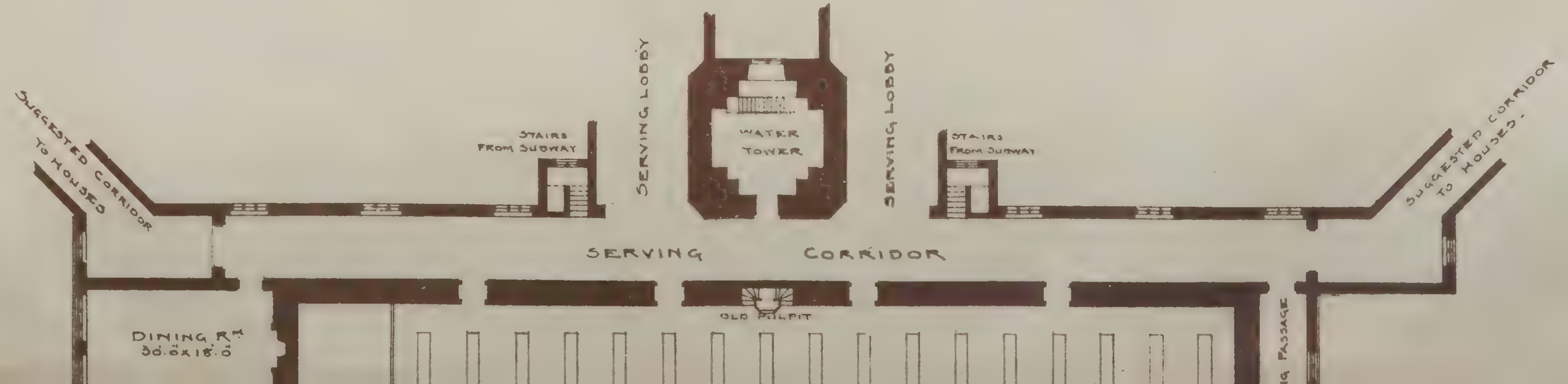
CHRIST'S HOSPITAL

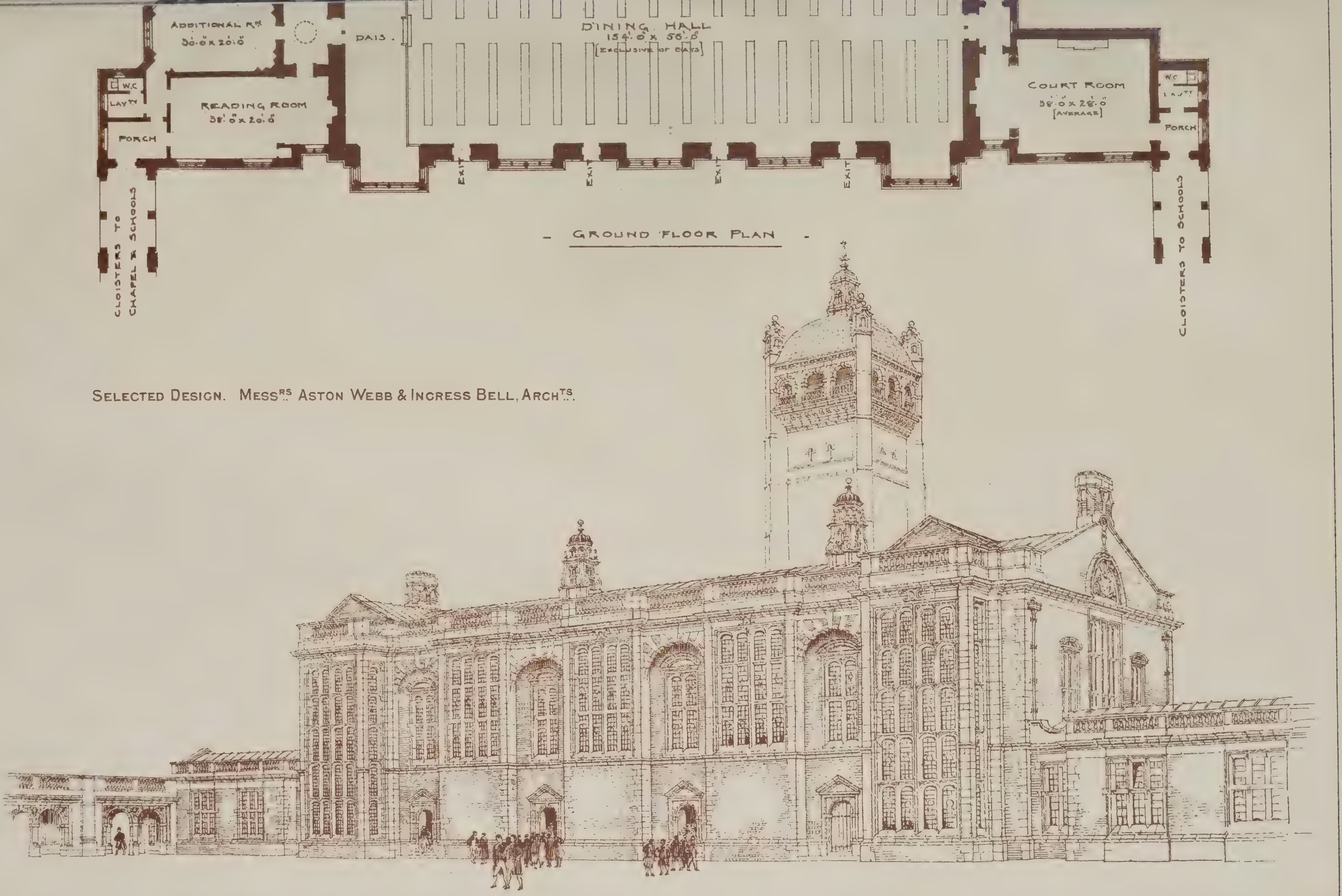
NEW BOARDING SCHOOLS AT HORSHAM, SUSSEX.

THE DINING HALL.



– ELEVATION TOWARDS THE SCHOOL QUADRANGLE –





SELECTED DESIGN. MESS^{RS} ASTON WEBB & INGRESS BELL, ARCH^{TS}.

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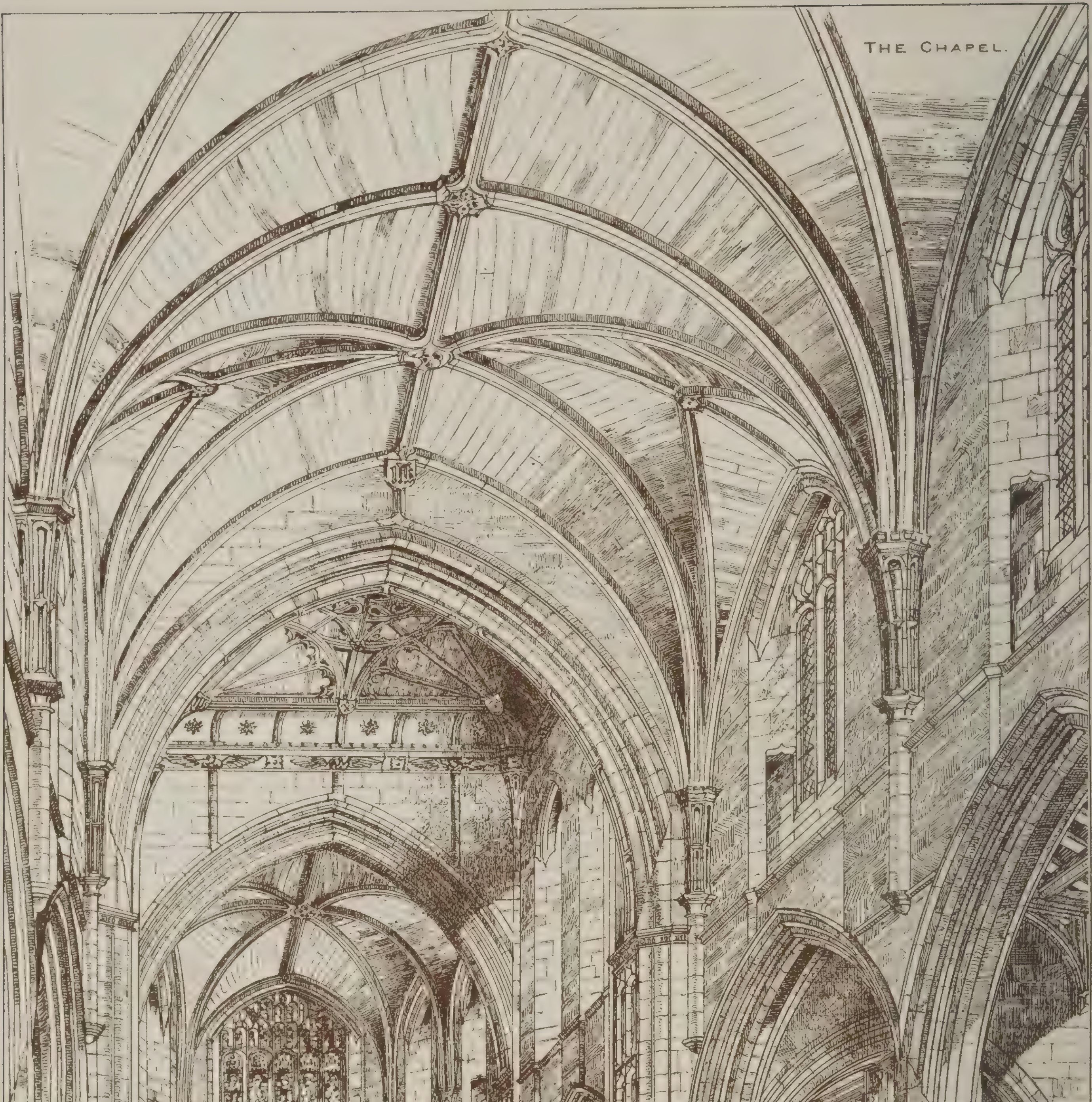
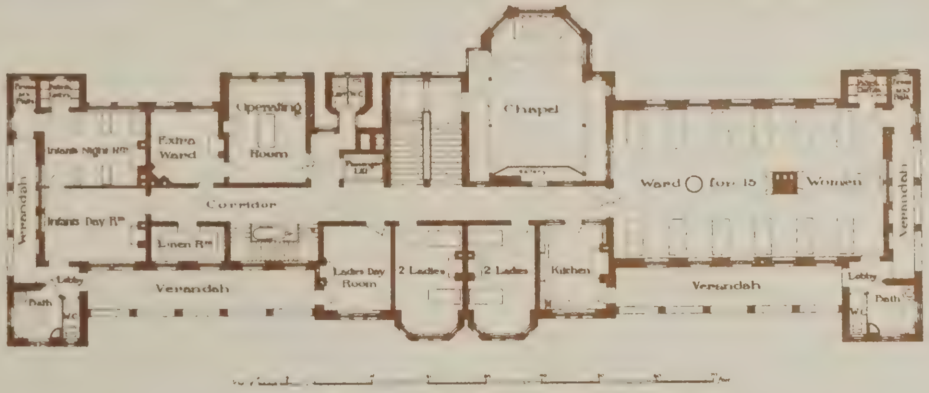

THE CHAPEL.
Benedicite Dominum omnes virtutes ejus

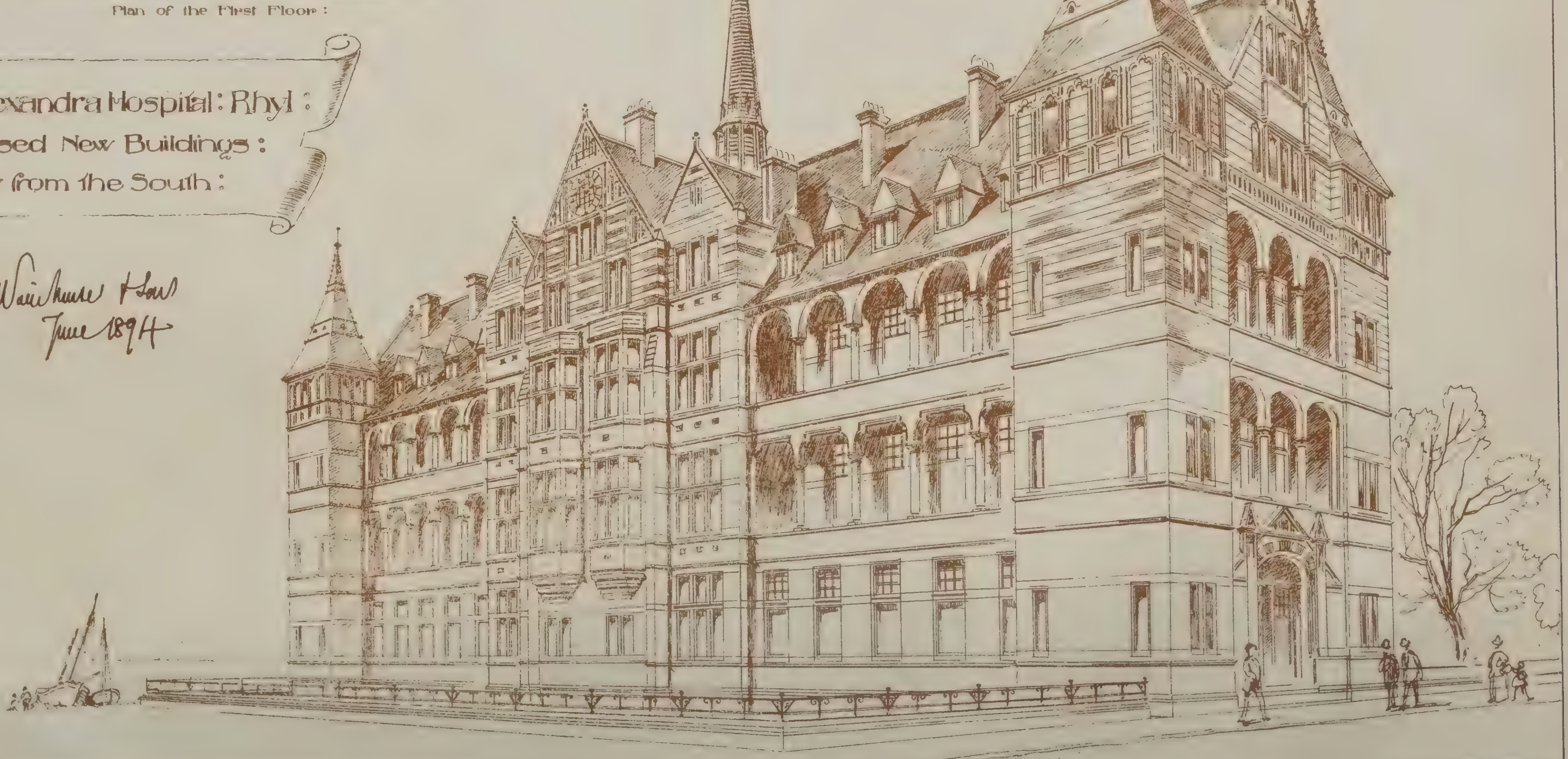
CHRIST'S HOSPITAL - NEW BOARDING SCHOOLS AT HORSHAM, SUSSEX.

DESIGN BY MESSRS PALEY, AUSTIN & PALEY, ARCHTS.



Plan of the First Floor :

Royal Alexandra Hospital : Rhyl :
Proposed New Buildings :
View from the South :



A Waterhouse & Son
June 1894

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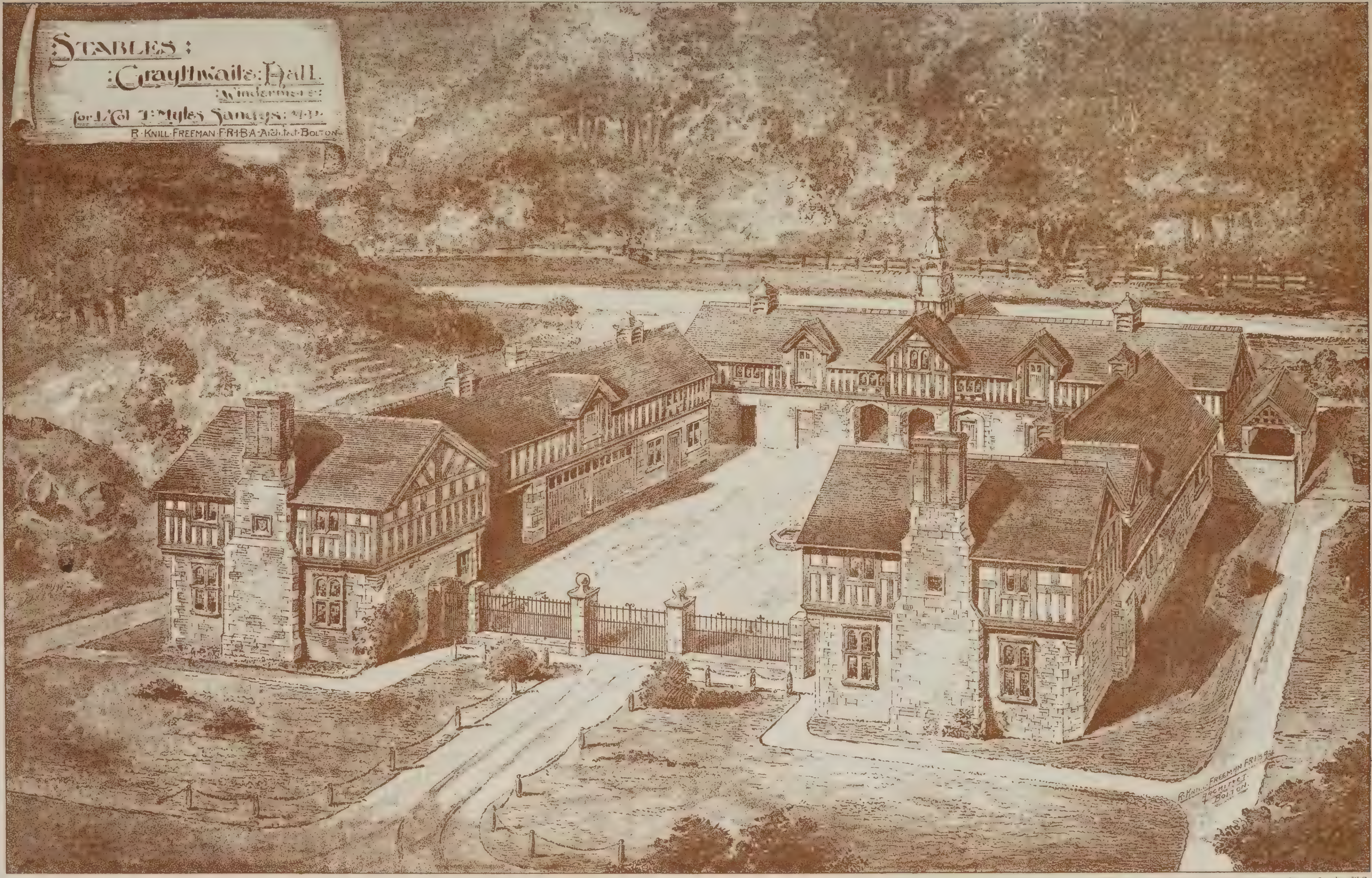
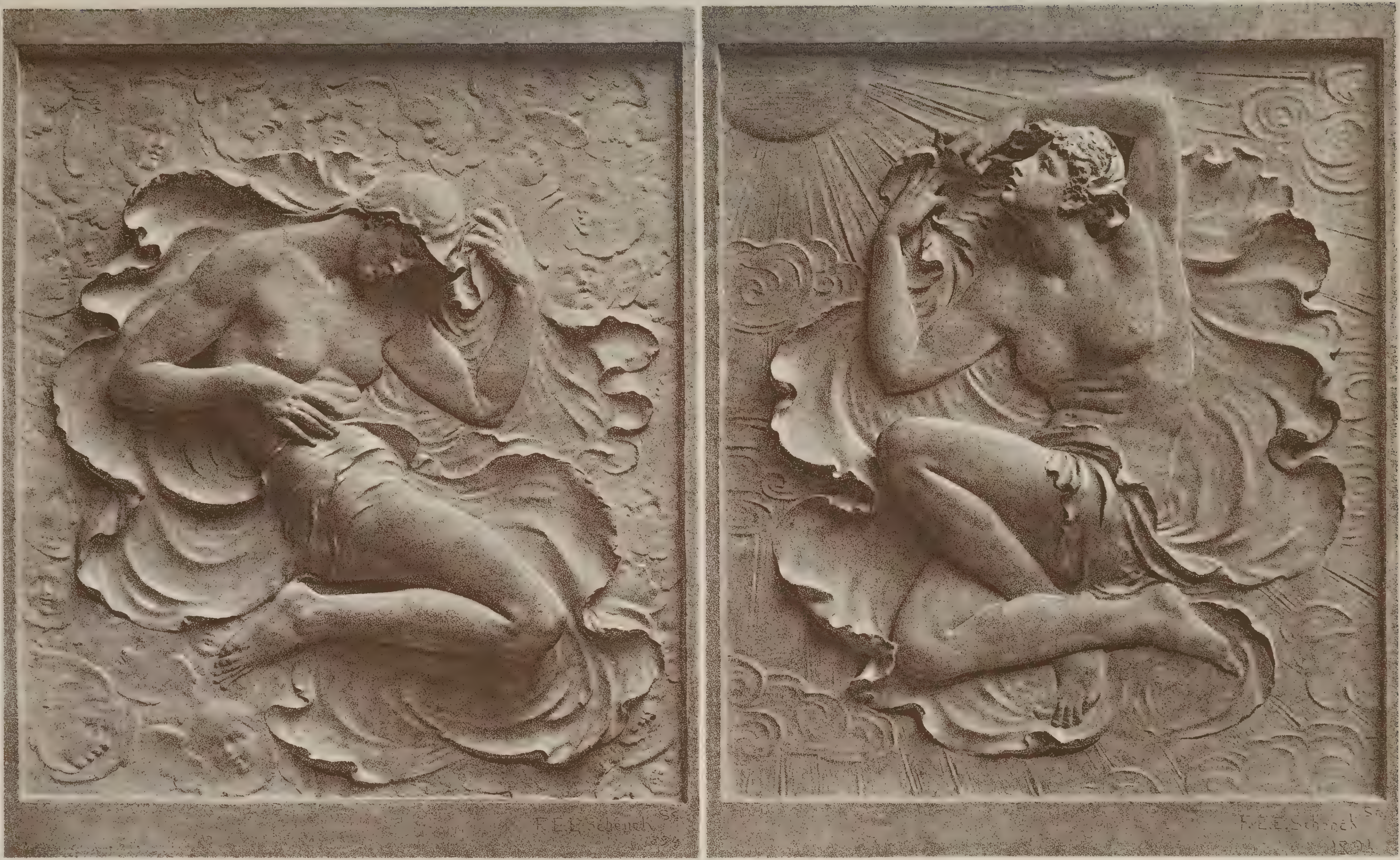

Stables:
:Graythwaite: Hall.
:Windermere:
for L^t Col T: Myles Sandys: M.P.
R. Knill. Freeman. F.R.I.B.A. Architect. Bolton.
R. Knill Freeman F.R.I.B.A. 94
Architect
Bolton.

"PHOTO-TINT," by James Akerman, 6 Queen Square London, W.C.



"O MYSTERIOUS NIGHT! THOU ART NOT SILENT; MANY TONGUES HAST THOU".

"THE·MORN·IS·UP·AGAIN THE·DEWY·MORN; WITH·BREATH·ALL·INCENSE, AND·WITH·CHEEK·ALL·BLOOM".

SCULPTURE·AT THE·ROYAL·ACADEMY·1894 NIGHT·AND·MORNING·BY FREDERICK·E·E·SCHENCK·

"PHOTO-TINT", by J. Akerman, 6, Queen Square, W.C.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
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FRIDAY, JULY 20, 1894.

REPLICAS.

IT is a fortunate thing for architecture, and those who follow the profession of designing buildings, that sites, conditions, aspects, requirements, and other circumstances vary as much as they do, for if they did not, we take it it would be a very serious thing for architects. We could imagine the municipal building assuming more or less the same arrangement of plan if the site was always a rectangle and the main streets in the same position, the public library or polytechnic institute to be repeated in its general design, and, in fact, every sort of building would more or less follow a model or type in the course of time, from the sheer uselessness of trying to improve on the previous attempt. The general tendency to fall into a groove of thought is seen in buildings of a commonplace kind, as the ordinary dwelling-house, or the residential block and workman's cottage, wherever the conditions do not vary much. The ordinary builder likes to minimise divergences. Repetition approves itself to the public mind; people get accustomed to a certain order in their houses—a particular position of the entrance and stairs—and get attached to a particular kind of exterior; and when this is the case, the demand for a certain kind of residence is sure to be met. And it is the demand for buildings of a certain type that creates the speculative builder. He multiplies accordingly hundreds—aye, thousands — of a dwelling which satisfies everybody, and which may be seen in every suburb by the mile. One is annoyed at this wearisome repetition of the street dwelling. Why should street after street be monopolised by a miserable multiplication of one unit —the irrepressible porch and bay window, and flat, unbroken roof which everybody is content to dwell in? The answer is, Because the builder has found out a dwelling that satisfies the mass of the people, and rather than entail extra expense, has multiplied it wholesale. One sees, it is true, an attempt in some of the West-end suburbs to mitigate the evil of repetition by changing the elevation. The changes are rung by differences of gable and bay and other features, but the plan is very little altered. In a few of our roads we see a row of new shops built in red brick, all having ornamental gables, a little variety being given by alternating the terracotta ornament; but a row of equal-sized gables is almost as monotonous as a row of roofs of the same height and description. There is really no more excuse for making a number of street houses the same in plan and elevation, than there is in expecting every person who lives in a street to wear the same style and colour of garments, &c., or to conform to the same habits of life. The idea of uniformity is simply an economical mode of building, and is done to save labour and cost. One design can be repeated, and the architect's commission saved. The leaseholder of the land, who wishes to make large profits, benefits by the arrangement at the cost of the tenants. These are the only reasons for repeating a plan which, though fairly comfortable, is not the best in every situation. A monopoly would be made of all building if opportunity permitted—wherever, in fact, money could be made by repetition. What is it that makes so many of our West-end streets and squares so dismal and depressing, but this monopoly of the large building speculator of former days? We have only to look at Belgravia and Bloomsbury to see the result of building by the mile, street upon street, and square upon square of houses practically the same. But what the late Thomas Cubitt did in the building of Belgrave and Eaton squares was a boon, as he converted an unhealthy, clayey swamp, known as "The Five Fields" in 1824, and once the terror of foot-passengers, into one of the most healthy neighbourhoods. Far less can be said for the modern mania of multiplying one-plan dwellings. They cannot compare with the structures reared by Cubitt, such as those which are to be found in any of the above localities, or in Tavistock, Woburn, or Bedford-squares, and adjoining streets. These are at least substantially and well built; the modern ground landlords and their tools are content to put up flimsy imitations without the aid of the architect. Men like George Basevi, Hardwick, and Kendall were employed to design the houses and squares of those parts; but, except in a few favoured neighbourhoods, the architect is not now called into requisition. The result is a class of stereotyped building which has scarcely any claim as architecture. The great shortcoming of the street house built on this plan is that no variety is shown to suit different individual wants and circumstances. Every house is exactly like its neighbour, of the same size, and with the same number of rooms. A man with a large family has precisely the same number of rooms as the tenant without a family. It is extraordinary so little foresight is exhibited in new buildings — that the builder does not see that a little variety of accommodation, say two or three different arrangements and sizes of rooms, would be far more likely to let than a row of houses of precisely the same pattern. When will builders, and architects, too, believe in the diversity of human nature, its many idiosyncrasies and motives; that there are no two men or women alike, either in mind, inclination, or stature, and try and conform their buildings to their wants? Instead of which, there are some men who are always trying to make people believe and do as they themselves; who are always laying down a hard-and-fast rule, in politics, religion, amusements, and teaching, as in everything else; who are never so happy as when they are attempting to enforce a Procrustean law upon everybody or thing, without seeing that human nature is infinitely varied, and will never submit to be forced into a certain mould without unhappy consequences. Least of all is it possible to make everyone's taste the same, or to adopt a single model of house to suit everybody. Architecture has always developed from differences of climate, habit, and thought, and unless we make our buildings conform to this great law of differentiation, we must not wonder if they assume more and more the form of replicas fatal to truthful design, but just in that proportion remunerative to the builder who trades on the stereotyped plan. This replication of design is observed mainly in our street and domestic architecture, for it is this branch that the ordinary builder has made his own. The repetition of parts of plan and detail saves labour, enables the speculator to put up a hundred houses at a saving of quite 30 per cent., enables him to get his joinery sent in ship-loads from Sweden and other foreign ports, and to engage unskilled labour to a large extent. A hundred windows or doors of the same description are infinitely more to the interest of the builder, than the satisfaction of obliging the vendee or tenant by varying the size and shape of his rooms. By repeating the same detail, it is easy to find out how to make the most of a given quantity of material. For instance, two stone door-heads may be cut out of a block of stone; a circular shaft can be sawn in two, each half serving as a pilaster; two capitals or keystones be cut out of one block, and so on. Our commercial buildings do not follow this replication to the same degree as residential buildings; but there are signs in many of our new premises of the same repetition, especially when an opening occurs for a builder to erect a row of new shops. In Piccadilly or Oxford-street opportunities do not often occur for a considerable frontage of old premises to be rebuilt, and therefore the architect has a chance of being employed when single premises are dealt with. It would be lamentable to think what would be the fate if such streets as these were entirely rebuilt. Who would not prefer to see our Cheapside, Fleet-street and Strand as they are, than lined by buildings on the replica system? We can now distinguish differences of trade and business in many of our old thoroughfares—the quiet and steady tradesmen from the noisy, pushing advertiser; the wholesale from the retail shop; the bank from the newspaper office; the hotel from the restaurant or buffet. These dissimilarities of object find expression in the external architecture, and in the plan; and we have, therefore, variety of the old and new to regale the eye. The modern system is to stereotype, to reduce the differences into a few types, and to get these manufactured as cheaply as possible. There is very "much of a muchness" about many new buildings that have been erected in recently-developed neighbourhoods—a repetition of shopfronts, windows, and gables, as if the architect's design had been repeated with few variations. The building-owner knows how to do without a professional architect. He employs an architect to design a new shop, which is executed at the usual commission; the other plots are let to a builder, who follows the same design. A flat, tasteless front of red brick and panel ornament is copied again and again. The tenant who desires any alteration can have it done after the outer carcase is finished, and in several cases of recently-built shops and business premises this plan of putting up a number of fronts with mere skeletons of timber behind is resorted to, any "particular arrangements to suit tenants" being boldly stated on a board outside.

A true and genuine architecture can only be developed by accentuation of differences—just those points, in fact, which the mere builder dislikes. These may be taken under such general heads as (1) aspect, (2) surroundings, (3) requirements, (4) individual habits, which things are ignored by the specious builder. It is for the architect to prove the advantages of his craft or profession by making his designs embodiments of these conditions. The more he does so the greater will be the public estimate of his services; whereas by ignoring them, he allows the builder to take advantage of his position. In domestic building few things betray the want of a studied plan more than placing the main rooms and windows in the wrong position, as regards sunlight and prospect. The architect is careful about placing them on the most desirable side for prospect, even if the symmetry of his elevation is spoilt thereby. The doorway need certainly not be central, as our friend the builder generally puts it, but in the most convenient position for access from the main streets, and the style of the surrounding buildings is consulted. Again, the "up-to-date" designer works from his plan outwards; he looks upon it as something rather to be exhibited than concealed, a principle which the popular mind has not been quite able to understand, and probably will not so long as the public prefer outside appearance or elevations to real comfort and convenience. So long as the ready-made or "slop shop" garment idea prevails in building matters, we shall get houses built for the million without the least reference to individual wants. Ought we not rather to see dwellings made for individuals suitable to their tastes and habits in life? To accentuate these various conditions, not to minimise them—to try and make the most of environment, of aspect, of the requirements of the building, are the chief means by which the architect can prove both the vitality of his art and the fertility of his own resources, and are the only ways of lifting design from that dead-level to which the builder and the copyist have brought it in some branches by the process of repetition.

ARCHITECT'S CERTIFICATE: ITS BINDING NATURE.

CAN a building committee restrain a contractor from suing on a certificate which has been given by the architect who is alleged to have exercised his duty in a partial and biased manner, or can they check the architect from certifying for a much larger amount than actually due to the contractor? The recent case of "Stanton v. Straub," in the Equity Court of New South Wales, is of much interest as showing the legal view, and we may briefly refer to the material facts as they are given in the judgment of Mr. Justice Owen in March last. An interlocutory application was made for an injunction to restrain the defendant, the contractor for the Anglican Cathedral at Newcastle, from proceeding with an action against the building committee. The defendant sued the committee for a sum of £3,762, certified by Mr. Horbury Hunt, the architect. It was alleged in the pleadings by the plaintiffs, the Bishop of Newcastle, N.S.W., and the dean, that the architect was unfit to exercise the duties of architect in an impartial and unbiased manner, and that he had been guilty of charging a much larger amount to the committee than the amount actually due to Straub, and that, out of anger for not having the honour of finishing the building, he had increased the certificate to a large amount; and, therefore, it was pleaded the Court ought to interfere to restrain the contractor from suing on that certificate. Here was a charge of misconduct and incapacity against the architect which, if it could be substantiated, was a ground for setting aside the certificate. The plaintiffs pleaded collusion between architect and contractor, inasmuch as they allege the latter knew that such certificate was given *malâ fide.* The judge said, "This is a distinct charge of fraud against both contractor and architect, and it appears to me that I ought not to deal with this case merely on a question of pleading where a charge of that kind has been made, but that I ought to express my opinion of the merits as disclosed in the affidavits. Whatever may be said of the argument that Mr. Hunt acted improperly under feelings of irritation and anger, the question of the Court is: What are the facts which are proved? Mr. Hunt has produced affidavits of eleven architects and contractors, all of them men of high standing—Mr. Mansfield, Mr. Rowe, Mr. Wardell, &c.—and a great number of contractors, and every one of them says the certificate is absolutely fair. These eleven witnesses swear that the certificate given by Mr. Hunt for the work is perfectly fair and justified." On the other side there was only the evidence of one contractor. The judge further observed that the certificate was not a final one, but a mere "progress certificate," and, according to the law and evidence, they are nothing more than "advance notes," and are subject to adjustment from time to time. He ruled that the certificate given by the architect was a progress certificate, and did not purport to be absolutely correct. Under these circumstances, he thought that the whole ground was cut from under plaintiffs' feet. If the certificate is a *bonâ fide* and fair estimate of the amount of work then done, what becomes of the theory that Mr. Hunt may have been biased? Upon these grounds the judge dismissed the application, with costs. Whatever ill-feeling existed between the architect and members of the committee, it had not influenced Mr. Hunt to give an improper certificate. Since this decision, we believe the building committee and Mr. Horbury Hunt have come to a friendly understanding, and the work has been resumed under his direction.

The decision places the relation of the architect and building committee or owner in reference to the question of certificates in a clear light. The plea of collusion between architect and contractor is a legal one, and has in some instances carried weight, as when it can be proved there is justifiable ground for an action. In this instance, as well as in others, it failed, and it is at least a warning to building owners generally to be more careful before they bring charges of this sort against their architect. It is very improbable that any architect of position would be guilty of misconduct of the sort imputed—in other words, of having certified for a larger amount than the builder was entitled to. If such charges of bias or fraud were allowed to go unchallenged, every progress certificate made in the ordinary course would be questioned, and a very undesirable precedent established. Whenever an owner or committee thought the amount was in excess of what was due, however ill-founded their opinion might be, they would try to repudiate the certificate of the architect, and serious interruptions would take place if clients could allege bias or collusion on the part of their architect and contractor. These charges of bias practically take away from the architect his right to arbitrate on matters of this kind, and places in the hands of any litigious owner or building committee a right to interfere when any certificate is given.

The distinction between interim or progress certificates and final certificates ought to be understood; the former are more or less approximate, and are merely advance notes, while the latter are binding and conditions precedent to payment. The latter bind both parties, the contractor as well as owner. The owner cannot go behind it, and in the absence of proof of fraud or collusion he is bound to pay the amount stated, even should the architect make a mistake. The decision in "Goodyear v. Mayor of Weymouth" is conclusive on this point. One case which bears more directly on the decision of the Equity Court in New South Wales is that of "Laidlaw v. the Hastings Pier Company," where the plaintiff contractors sued the company for the balance of money due to them, shown by the engineer's final certificate. The defendant company resisted the claim on the ground, amongst other things, that the engineer had allowed for works claimed for as extras by the plaintiffs, but which had not been duly authorised. The decision was in favour of the plaintiffs. The engineer, it was decided, had power to extend the time of completion, and the certificate precluded the defendants from raising the question whether extras had been done. The judgment of Lord Chief Justice Coleridge is an exhaustive and conclusive decision as to the binding nature of an engineer's certificate when the contract gives him power to decide in all matters of dispute between the parties. In the New South Wales case the certificate was simply a progress certificate, and did not claim to be absolutely correct, and therefore it was not in the power of the building committee to question their architect on an amount that was subject to adjustment at the final certificate.

THEATRES.—XXXIX.

By Ernest A. E. Woodrow, A.R.I.B.A.

A GREAT deal remains to be done in order to add to the comfort of the pit and gallery seats as at present found in many theatres; the bard wooden form cannot commend itself as the most desirable place to occupy for four hours at a stretch; stuffed seats, however, are not good in these parts of the theatre, where the people who frequent them are not always as careful as they might be, and where the wear and tear is very great. A hard surface, that can be constantly washed, is certainly desirable; the coverings of leather and cloth sometimes used are not altogether satisfactory, as the one does not stands the wear and the other holds the dust. In one or more of the London theatres the pit is seated with very comfortable bent-wood benches, which appear most suitable for the purpose; they are clean, cool, and easy.

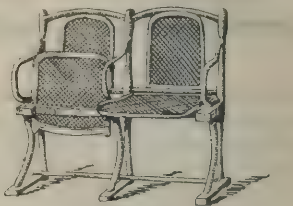


Fig. 1.

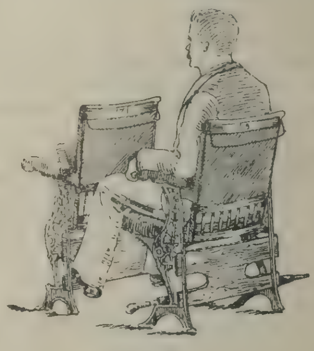


Fig. 2.

Tip-up bent-wood chairs are made for theatres, and Fig. 1 is an illustration of a seat suitable for the upper circle. The upper parts of a theatre are frequently much warmer to sit in than the lower, on account of the rising heat from the gas and bodies below. The consequence is that a stuffed and velvet-covered chair is often anything but comfortable or desirable for those occupying seats at a height above the ground-floor level. The confined space between the floor and ceilings of an upper tier also tends to make the heat oppressive, and a cool seat is, therefore, one to be wished for.

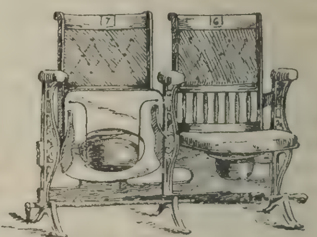


Fig. 3.

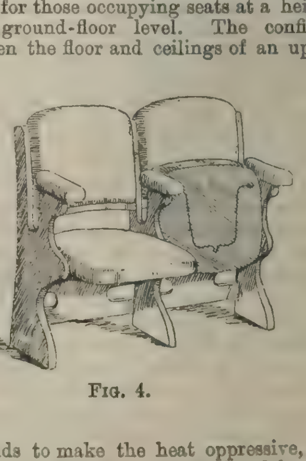


Fig. 4.

In Figs. 2, 3, and 4 are illustrated different forms of tip-up seated chairs, where the convenience of the audience is thought of, for in them it will be found that a place has been made to lodge the umbrella, a rest given for the feet, and a receptacle for the hat below the seat and the overcoat at the back.

The finishing and fittings of seats for music-halls, where drinking and smoking are permitted in the auditorium, call for a ledge at the back of the seats to hold glasses, matches, and ash-trays; otherwise the seats may be of similar arrangements to those in an ordinary theatre.

Spring seats or automatic flap seats in intermediate gangways must never be allowed; no half-measures should ever be allowed. It is advisable, where the width between the rows from back to back is small, to have the ordinary seats of the chairs rise automatically with a spring or weight.

There is, however, a legitimate use for spring seats in theatres. Checktakers, who collect tickets and give "pass-out" checks during the evening, often have to stand at their post for four or five hours at a time; this is almost too much to expect of any man, and at odd times when they are not watched they are apt to take a loose chair, box, or anything that is handy to obtain a resting-place. This chair is then placed in some passage-way or on some staircase where the public have to pass, and should persons leave the auditorium in a rush or panic, it is more than likely that someone would stumble over the chair and fall, and that others would fall over the prostrate body. It is in this way that the frightful crushes occur on staircases, and theatre panics are attended with such dire disaster. It will be remembered that the fatal crush on the gallery staircase of one of the theatre fires which have occurred in this country in recent years was started by one man falling over a small box placed at the top of the staircase, in which the tickets were placed as they were collected. To avoid this, these ticket boxes should be let into the thickness of the walls without any projection. In the same way the architect can provide for the comfort of the checktaker and safety of the audience by having fitted at such points where the manager requires checktakers to be stationed, flap-seats, counter-balanced to rise automatically flush with the wall, when the occupant of the seat gets up.

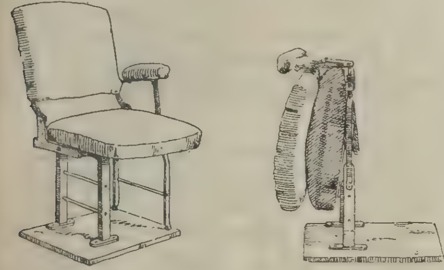


Fig. 5.

Several patent contrivances have from time to time been brought out for folding up the chair and reducing the space occupied by theatre seats. These contrivances have not found favour with manager or architect; in some cases on account of the prohibitive cost, in others on account of the complexity of the arrangement. I have not, therefore, seen any of the seats which I now give sketches of in actual use in a place of public entertainment. I give the diagrams, however, as matters of interest, showing that efforts are being made to obtain some advancement in theatre seating; whether those efforts have yet resulted in improvements has not yet been determined.

Fig. 5 is a chair invented by Mr. Farini. The sketch explains how the back is pulled down on to the seat, and the whole then tipped over one side. The object is, of course, to form gangways at right angles as well as parallel with the stage. The arrangement is not automatic, and it is very doubtful if any uninitiated occupier of the seat would know how to fold it up. The same firm make the patent chair shown in Figs. 6 and 7. Here, as will be seen, the back is hinged like a door to a post on one side; by pulling the back towards you round to the arm, the seat, which is counterweighted at one end, rises; the seat and back being then packed up to the side of the arm, and give gangways at right angles between each seat.

Fig. 8 is a German invention; the seat rises automatically when vacated, and the back falls simultaneously. I had hoped to add other foreign and Continental inventions to this list, but up to the present I have been unable to obtain the illustrations. Other patents, no doubt, exist, which may or may not be an advancement on those which I have illustrated.

All seats must be fixed to the floor to prevent them being overturned and becoming stumbling-blocks. Loose chairs, additional seats or camp-stools are never allowed in rightly-managed theatres; where they are seen they are signs of greed and disregard for the safety of the public on the part of the manager.

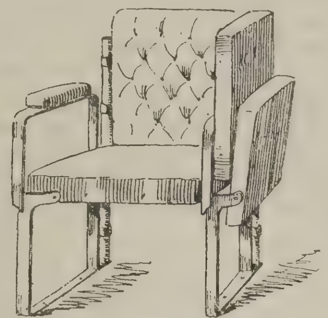


Fig. 6.

In order to minimise the inflammable contents of a theatre, it is, perhaps, well, where possible, to have the frames of the seats made of iron, instead of wood. From an artistic standpoint the coverings of the chairs should harmonise with the decorations of the house, for it must be remembered that they form a large mass of colour, especially on the floor of the house.

There is one small matter which it would be, perhaps, well to remind the architect that he must not overlook. In most theatres the number of seats in the stalls varies with the popularity of the play. As the managers object to see and the actors object to play to empty stalls; the number of seats in the stalls is reduced when a play flags and increased when the booking is large. To meet the exigencies of this case, the front rows are removed; but when more seats are required the pit has to suffer, and the barrier dividing the pit and the stalls is moved back and the space filled up with stall seats. The alteration in the width between the rows means a fresh fixing on the floors, and, where concrete floors are laid, the architect must allow for the distances on the floor in this space for both pit seats and stall seats, and also make provision for the refixing of the dwarf partition between the pit and the stalls.

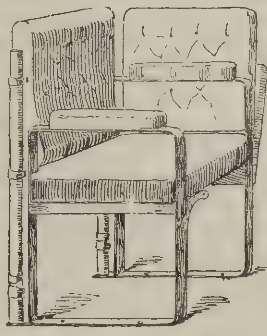


Fig. 7.

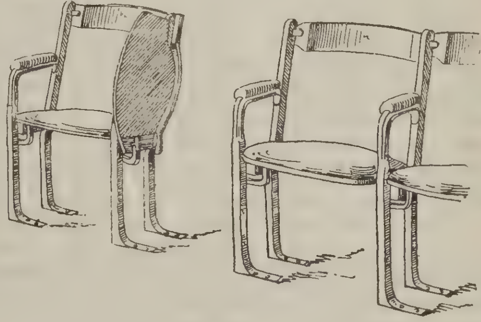


Fig. 8.

As the occupants of the seats on the floor of the house have to look up to the stage, the inclination of the backs of the seats in the pit and the stalls should be more than that of those in the parts of the house where the audience look down on to the scenes.

"BUILDING NEWS" DESIGNING CLUB.

A PAIR OF LABOURERS' COTTAGES.

THIS is the eighth and last subject given for this season's Club work, and we illustrate the two chosen designs to-day. The seventh subject, a Cocoa Tavern, is held over because of the pressure on our lithographic space just at the present moment, and as we have devoted two plates to the illustration of the selected plans for that subject, their publication must wait for a week or two longer. To avoid delay, however, with the designs for Cottages, we have reproduced them by the block process herewith. The following is a copy of the instructions issued for competitors:—"H.—A pair of Labourers' Cottages, to be built in stone, covered with rough-cast plaster, and roofed with slates, suitable for a hillside country. The accommodation to comprise a living-room 14ft. by 12ft., a suitable kitchen and scullery combined, and a roomy larder. Three bedrooms upstairs. Adjacent a washhouse, about 15ft. by 10ft., common to both cottages, is to be provided, with oven and copper; also furnish two earth closets and a pair of pigsties. Over this building a loft, divided into two, is to be arranged for storage of roots, and to be reached by a permanent wooden step-ladder with handrail. Economy and simplicity to be rigidly observed, coupled with convenience, adapted to workpeople's requirements. Scale, 8ft. to the inch. A set of drawings, including a good view." The foremost designs were very equal in point of merit, and we had no little difficulty in determining which should obtain the leading places. "Nitor" comes first, "Boomerang" secures the second position, and "Scottana" ranks third. The absence of a break in the plan last named is a great point overlooked by both the other designs, neither of which is as simple as it might with advantage have been. "Nitor" keeps clear of ornamentation rightly enough, and his rooms are square and well contrived, though it is not certain whether the kitchen and living-room should not open one out of the other, and so avoid all semblance to anything like a villa type of dwelling. The staircase runs the doorway at the entrance uncommonly hard, and the third bedroom is not any too large. The roof is not exactly a cheap one, hipped as it is and broken into by the dormers. The chimney runs up through the centre of the block, and the treatment of the cottages externally is decidedly pretty, even if it does not betoken the rugged simplicity and stern outline which would look at home in a stone-scattered hillside district. "Boomerang" in some ways treats his houses more in accord with the requirements of a cottager's wants, though the bay windows and gables would run into money. The washhouse, too, is not so good in this design, the head room in the upstairs rooms is more limited, and the little landing is uncomfortably small. "Scottana's" elevations seem more suitable in their bald, primitive picturesqueness, one roof running from end to end of the block and mansard-like handled gables. The first slopes, starting from the first-floor level, however, seriously curtail the bedroom areas. The bedrooms are also cut up on plan, and the fireplaces are not so well contrived for inexpensiveness and stability. The author, however, avoids anything like the bothersome little slip of tiling which occurs along the façade of "Boomerang's" design over the bay windows. So small a piece of tiled surface as this would be needlessly expensive to execute, and likely to get out of order. "Kelso" sends a good plan and simple elevation, having the merit of quietness and suitability, though the bedrooms are also cut down too much by the roof slopes, of which an undue feature is made. "Ant" errs still more in this respect, spanning his two houses both ways with big and tall gables. The effect is eminently picturesque, of course, and the planning is fairly good. The washhouse, common to both cottages, was, however, not intended to be thus incorporated in the cottage building itself, as a reference to the instructions will show. "Diomed" contributes a more ordinary gabled front following a familiar type enough, which always looks well with long, low windows, and plain barge-boards to the gables. The plan is not a convenient one, with the ugly lobby off the stairs. "Cyclist" puts his doorways at the sides, and makes a feature in an unpretentious way, with mullioned windows placed at the external angles of his living-rooms. His plan is a good one, speaking generally, and his elevations show a great improvement upon much of his previous work. The roof would be expensive for such a class of building as a labourer's cottage. "Black Griffin," in a sort of Yorkshire-like style, employs sprawling curved-shaped dormer gables with a flat pitch for the main roof of the houses. The wash and bakehouse would have been better placed more away from the cottages, and the loft should have been shown over. The plan, otherwise, is quite one of the best. So many fail because they assume too much the character of middle-class homes, while some are treated like ornate lodges or villas. "Youngster" is one of these, sending a plan which is at once expensive and inconvenient. "Swan," too, is another contributor who takes cost to be a matter of no moment, and consequently he fails, in spite of his neatness and care, which we have duly noted. "Waterloo" makes it necessary to pass through the living-room to reach the staircase—an unobjectionable provision if all the parts of the house corresponded, which is by no means the case in this instance, conceived as it is on the villa type. "L'inconnu" plans well, makes the most of space, and sends in a pretty design which is diversified by alternating the façade and front entrances. We hardly like the end gables, and the cost would not be economical. The bedrooms spoil these houses. "Betterment" is just as coarse in his drawing as the last-named competitor is too fine. This design is a long way behind the other, though the three plastered gables over the front are quaint-looking, masking the windows below. "Q. E. F." gives us a timbered gabled block nicely managed, and the living-rooms are really worthy of the name. The bedrooms are good, too, but the style adopted does not, in our opinion, seem suitable for the purpose. "May" draws very poorly, and his design is not very original or strikingly good. The enriched porch is quite out of place. "Schemer" incorporates his washhouse in the main block, which is spoiled by shockingly poor bedrooms, only 7ft. and 6ft. 6in. wide. "Nil Desperandum" is clever in a way, and strikes out after originality with some success, though we cannot say his design looks much like a pair of labourers' cottages, and we cannot admire his drawings. The lettering goes far to spoil them. "Seer" comes next with a poor design, and plans which waste space in passages. "Ivy" is neat, and with a knowing sort of air plans the stairway out of the living-room. This design is rendered impossible for our purpose by its dark landing and wretched bedrooms, without going into matters more in detail. "Photographer" might be more at home with the camera. His plans are not a success, in spite of the splendid arched recess for a garden seat in front of the cottages, which seems to have governed all else. "H. I. G. S." sends a pair of villas, and poor at that. "Gargoyle" contributes a design which is severe enough, and ugly. This we should not mind if his plans were convenient, which they are not. "Dessinateur" fails to understand the problem, and has done his best to ape a style more adapted for suburban retreats, where city clerks rejoice in semi-detachments. "Petrel" breaks the rules as to the size of the paper he uses for his poor plans and scribbly drawings. "Lily" should take a few lessons in perspective. His elevations are very simple, for which we give good credit.

OF CHURCH EMBROIDERY.—XI.

By MAY MORRIS.

ANIMALS AND SYMBOLS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

IN my last appearance in the BUILDING NEWS, from whose pages I have been so long absent, I had a few words to say about design. They were, indeed, very few, very scant, and impoverished, and by no means worthy of the dignity of my theme. But on glancing over what I said then, I am reminded of a host of pretty and interesting things to talk about, and should less easily tire of writing them down than you would of reading. I have been a wanderer on the face of the earth of late, and fate or inclination took me to many queer old towns, as dead as ditchwater as regards modern arts and industries, and living merely on their past reputation. Personally I prefer London, as less humiliating to the humble decorative artist trying to do his honest best. On the whole, a November morning in Hammersmith is more inspiring than a glorious June sunset over the Italian mountains seen through a network of sturdy figleaves and clustered vinebowers. Work! Why should one? The Italian peasant may rise before dawn and labour on through the burning day till after twilight (indeed, I know he does); but he and I live from day to day, indolently careless about to-morrow, and I listen to his strange rhythmic chant in the ricefields, and watch the girls and boys in the cherry-trees, making love as they tear off great branches laden with fruit, and I laugh with a contempt that is perfectly unseemly to think of all you people in London, in the height of the season, working and playing and voting and, generally speaking, keeping the world going. But, having come back to London and to a decent and respectable frame of mind, I find there is literally nothing to tempt one into looking out of the window, and I feel a certain sedate satisfaction in keeping hard at work—either writing or making a mosaic of colour with silks and shining gold. The inspiration of despair! I commend this apology for dulness and squalor and the coming November fogs to your attention. I am really not so far off the subject of design and the rest of it as would appear, for the passage in my last article that struck me had some reference to animal life in design, and I have come back literally steeped in the influence of Early Christian art, in which birds and beasts play a very large part indeed.

Though I should like to insist again on the fact that there never was formerly the hard-and-fast line between secular and religious ornamental art that we have to-day, there always were certain recognised symbols used for shortly telling the stories and legends grown up round the Christian religion. How many of such emblems and symbols were unconsciously adopted from earlier religious beliefs it is not in my province to discuss here. The myth that grew up round the world-old ritual, explaining the same by some legends of the doings of a heroic or supernatural being, occurs no less in the Christian than in polytheistic beliefs, and the study of symbolism brings one face to face with anthropological problems of the deepest interest. It would be strange if different tribes and nations of simple life, always face to face with the struggle with Nature, should not invent similar means of expressing their similar beliefs in the supernatural powers of Nature herself, beliefs which personified the life-giving sun, the trees and plants, the beasts and birds around, worshipping the principle of Life under some strange form or other, and jumbling up the Godhead with his attributes, or his symbols, or his sacrificial victim.

Thus we are not surprised to find the most occult signs and emblems of a far-away nature-worship occurring in the Christian faith of modern civilisation, the significance given to them by religious teachers sometimes being far removed from their origin, and sometimes directly or indirectly resembling it. Byzantine art at Ravenna, and at Venice, is notably full, not only of symbolic animal-life, but of animals merely beautifully and delightfully decorative. In the marvellous dome-mosaic of St. Appollinare in Classe fuori, a few miles out of the city of Ravenna, the first thing that struck my eye, after the first feeling of bewildered delight at the radiance of gold and colour, was the procession of animals spotted all over the brilliant green of that earthly paradise of the old masters in mosaic. Just imagine a border of white lambs and lilies alternately, bounding in the mass of the green world, all beflowered and planted with fruitful trees; and then imagine the great globe of Heaven in the centre, intensely blue and sprinkled with gold stars and surrounded by a jewelled border; imagine this hanging in luminous gold flecked with clouds, from which the hand of the unseen Deity is stretched, threatening, soothing, blessing and dooming worshipping humanity. A strange splendour to come upon in that empty, deserted building, that stands out in the solitary marsh, with its sunken pavements and pillar-bases lost in the soft, treacherous soil! The symbols of the Evangelists—the Man, the Bull, the Lion, and the Eagle—presenting the books of their gospels, are over the dome, winged and haloed, and vaguely rising above the clouds. I have seen nothing more beautiful than this simple scheme of design. In it, by the bye, the animals are entirely dignified and devotional—on their good behaviour, as it were; whereas sometimes we meet with them playful and a little wicked, full of humour and light grace. Such as the illustration of my present paper, in which the little dog, in a very life-like attitude, is barking at the pelican or stork seated on her nest in a shady island, the mother-bird hissing at the mischievous creature, and an eagle above ready to swoop upon the young birds as soon as she can be driven off the nest. Quite a drama of the open air. In another very handsome piece of brocade, which I should dearly have liked to reproduce, a lady is at a fountain drawing water in a bucket, with two rabbits slung on a wand over her shoulder, and holding a leash of dogs, two spotted and two plain, who lap water in the pond below the fountain. She has been hunting in the oak-forest, symbolised by one delightfully-designed oak-tree with very fine acorns. In another figured silk the designer has let his humour run riot on monkeys riding queer beasts; the stuff is monochrome, except for the monkeys' caps, which are bright blue, and produce a truly ludicrous effect. A passion these Mediæval fellows had for hunts and life in the wild woods, familiar with all animal life that flies and leaps and crawls in hole, with the habits of the beasts, their good and evil qualities, cunningly expressed in a few swift lines.

Having, in one of my previous articles, given a crude and primitive rendering of the ancient symbol of life or immortality—the two birds or beasts facing each side of the fountain or tree of life—I feel I owe them some reparation, and give you here a sketch made from a capital in S. Vitale at Ravenna. It is one of the great types of ornament in nearly all periods, but in this Byzantine city predominant in many simple, beautiful forms. On one old bishop's tomb, the birds peck at the tree between them, and below the four rivers of the universe flow; on another, it is two lambs with the Monogram, and Alpha and Omega. I give here a rough sketch of this monogram, which is typical, and, to my mind, far more rich and beautiful than anything we can do now. In another extremely charming picturing of the same idea, the two birds stand in rose foliage and flowers between the chalice of the Eucharist, on which is poised the cross, above which, again, the dove descends.

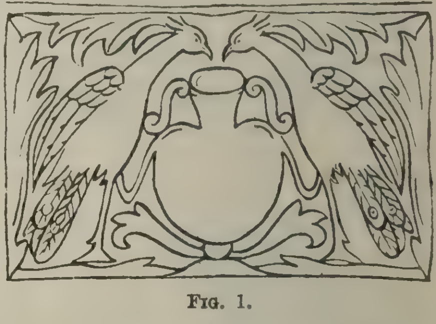


FIG. 1.

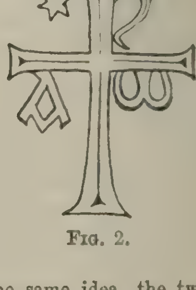


FIG. 2.

It doesn't concern us here whether the Early Christians borrowed Pagan symbols consciously or unconsciously in pressing the new faith upon the world, or how far the curious jumble of new and old went; nor does it concern us whether such signs represent a far earlier life than that preceding Christianity, beyond the reach of modern history; and if I have been tempted to touch on the subject in passing, it is because of the enormous interest I take in such glimpses afforded by early or traditional art into archaic life. But in so far as I have hitherto written on the pessimistic assumption that gone and past design is more interesting and vivid than modern design, and more useful to the student, it is perhaps worth while to consider how far this universal animation and the personification of nature influenced the best art of a nation directly or through tradition, and to note how far it induced the graphic and symbolic element in decorative work. To modern eyes there is a strain of impiety in confusing sacerdotal with secular ornament; but really the mediæval mind was innocent of this in the way he mixed religious ideas with his daily life. Just as a priest could with decency wear a vestment covered with mundane coat-armour that recalled more the splendours of a knight's banqueting-hall than the serious stateliness of God's temple, so the layman would cheerfully don a doublet woven or embroidered with a sacred motto or emblems of immortality. Church and Court, moreover, were nearly drawn together by the traditional union of kingly and priestly office. The influence of this union on early art is a very widespread and noteworthy one, and examples of it will readily occur to you. One need go no further than the Carlovingian kings and their sacerdotal vestments, rich with pictured symbols of their sacred authority and with holy mottoes, as well as with their own personal attributes and devices. A mantle or cope of the Emperor Otto (13th century) is powdered with golden lions, and with the imperial eagle which is among the many symbols of Christ as the Lord of Heaven, the bird that flies proudly into the blaze of heaven's sunlight.

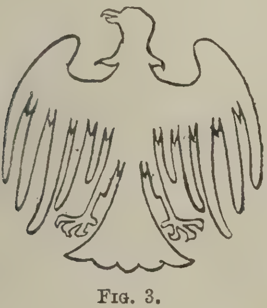


FIG. 3.

Of merely secular dresses, ornamented with birds and beasts, with madrigals and playful legends, our romancers, chroniclers, and inventory-writers (blessings on the latter, with their loving and careful detail, counting each ruby in a jewel, each pearl on the border of a gown!) give us plentiful record. If you have patience for it, read this pretty and fanciful description of a lady's gown in an early metrical remance:—

> In a robe ryght ryall bowne,
> Of a red syclatowne,
>   Be hur fadur side;
> A coronell on hur hedd sett,
> Hur clothys wyth bestes and byrdes wer bete
>   All abowte fer pryde.

This story-telling passion, which spreads gay and serious fancies over everything that is susceptible of ornament, giving us the story of the Creation over a cathedral-porch, an amorous legend round a woman's girdle, a mystic emblem beflowering the cloak of a king, is the very essential and kernel of Mediæval design. The draughtsman of the 12th, 13th, and 14th centuries assimilated the childlike symbolism of earlier times, clothing the crude legend with his characteristic grace and dignity, and with his equally characteristic humour, to miss the significance of which is not to appreciate the Mediæval type with its virility, its gaiety, and simple directness. Like the artist who is sure of himself and dares anything, he spares nothing that will emphasise and animate his story, and indulges himself with comicalities and with a frankness in describing all facts of life which, in a time that is both reticent and hypocritical (every virtue having its own defect), shocks as trivial or coarse. Just fancy the gaiety of mind that produced some of the illuminated MSS., books of Hours, Psalms, Bibles, with borders covered with hunting scenes and all sorts of mundane subjects, and constantly recurring fancies that I can only characterise as screaming jokes. I had in my hand yesterday a Book of Hours of the 13th Century, and among the exquisite little heads and miniature pictures drawn with incomparable sweetness and subtlety, I came upon one joke after another, funny puppies biting their tails off, little men in grotesque attitudes, and finally, a little brown bear standing inanely on his head on a green hill and grinning at me! Who will say that the accomplished monk who worked away at this charming book in those "dark ages" did not enjoy his own jokes immensely, and did not lead, on the whole, a gay and pleasant life?

NEW PICTURES AT THE NATIONAL GALLERY.

DURING the past fortnight seven fresh canvases have been hung on the walls of the National Gallery. Of these two are by British artists, two are Dutch, one is by an unknown artist of the Flemish school, one Tuscan, and one Venetian.

Taking the additions in numerical order, the first is No. 1412, a "Virgin and Child with the Infant St. John," from the Eastlake collection, where it was regarded as a Botticelli; but the ascription is now corrected to his pupil, Filippino Lippi, 1457-1509, of the Tuscan school. It is hung on the north wall of Room III., and is an upright panel, 22in. high by 17in. wide. The Virgin, arrayed in her traditional red robe, with blue mantle, holds in her arms the Infant Christ, who is also clad in blue, and is toying with a burst pomegranate. To the left St. John the Baptist, attired in red, is looking up at his Divine Cousin. In the foreground an open book lies on a shelf, and in the background is an Italian landscape.

Nos. 1413 and 1414 are portraits of Mr. Philip Sansom, as a child and as an elderly man, bequeathed by Miss Ellen Sansom, and are hung on the south wall of Room XX. Each canvas measures about 60in. in height by 42in. in width. No. 1414 is by Richard Westall, R.A., 1765-1836, and is the first example of this artist's work in the Trafalgar-square collection. It represents at full length a chubby boy of two and a half years, dressed in close-fitting white bonnet and white frock, and carrying some flowers; the background is a tree stem and some flowering shrubs. In the second portrait, No. 1413, by Sir Thomas Lawrence, P.R.A., 1769-1830, one subject is shown in three-quarter length as an elderly man with thin grey hair and bold forehead; he is seated, snuffbox in hand, beside an open window commanding a sea-view, and is dressed in the black coat, large cravat, and close-fitting buff knee-breeches of the Regency period.

No. 1418 is a "St. Jerome in his Study," by Antonello da Messina, 1445-1493, who introduced the Flemish style of painting into North Italy, and is hung on a screen in Room VII. It is a vigorous and architecturalesque treatment of the subject, and although undoubtedly low in tone of colouring, is a decided acquisition to the representations of the Venetian school. Framed within a portrayal of masonry crowned by a four-centred archway, is seen in section the interior of the saint's cell and other portions of the monastery on either side. The aged saint, who is habited in monastic robes, and is tonsured, but wears a full beard, is seated before a desk studying a thick volume. On the four wide shelves above are other open books, and above, a two-light Early 14th-century window. A cat is dozing near his feet, and below, in the foreground, are a peacock and red partridge. Beyond the cell to the right we look down a vaulted arcade carried by columns so slender as to suggest the use of cast iron in the artist's day. The attendant lion is on guard in this outer hall, while on the left the mullioned lights in a similar but unvaulted apartment reveal a hilly landscape.

No. 1419 is a "Legend of St. Giles," by an unknown 15th-century painter of the Flemish school, and is hung on the eastern screen under the central dome. It measures 24in. high by 17in. wide, and contains a number of large-scale figures; the composition is divided by an elm tree, beyond which are seen mountains, and on the left a Mediæval fortified city. To the right is the venerable St. Giles receiving into his arms the wounded hind, from whose neck he is extracting the arrow. To the left are a civilian, richly attired in black velvet and gold embroidery, and a priest, while behind are the archer with his bow and arrow, a man riding away on a white horse, and other figures.

No. 1420 is a "View in Haarlem," by Gerrit Berkheyden, 1638-90, and is signed and dated 1674. It is the only work by this well-known Dutch artist in the collection, and is hung on the third screen in Room X. The picture, which measures 21in. by 26in., shows the open market-place of Haarlem to the right, and the west front of the Great Church of St. Bavon, with its lofty central lantern towering over the roofs, and on either side the crow-stepped gables of the merchants' houses, the end of the Stadhuis, which fronts St. Bavon's, and which was built a few years before Berkheyden's birth, being prominent in the foreground.

This picture and the last to be noticed, No. 1421, "Scene on a Terrace with Figures," by Jan Steen, 1626-79, were purchased at the Adrian Hope sale. The latter measures 17in. by 23in., and depicts a terrace in a garden, paved with large squares of black and white marble. A lady in yellow skirt, brown bodice, and black head-dress is seated, and is singing from a book; to her left is a musician, accompanying her on a guitar, and to her right a gaily-attired man is delaying to drink a glass of wine while he listens to her song. He has set a basket of fruit on the terrace, and beyond are seen a little garden walled around, and a wide stretch of open country. The painting is signed "Jan Steen," and is the fourth example of that artist's work at the Gallery.

Other pictures have, we believe, been recently acquired for the National Gallery, and will shortly be on view; while, under the will of the late Sir Austen Layard, the most valuable pictures in his collection will eventually come to the Gallery. These works will include Gentile Bellini's portrait of the Sultan Mehemet, and other works by Ercole Grandi, Montagna, Moretto, Salvoldo, Cima and Del Piombo.

YORKSHIRE SANITARY INSPECTORS' ASSOCIATION.

ABOUT forty members of the Sanitary Inspectors' Association (Yorkshire branch) visited Ripon and Fountains Abbey on Saturday. The urban and rural districts represented were Leeds, Bradford, Halifax, Middlesbrough, Wakefield, York, Ripon, Batley, Wharfedale, Idle, Altofts, Rothwell, Linthwaite, Harrogate, Tadcaster, Hebden Bridge, Morley, Stokesley, Cleckheaton, Warley, Featherstone, Pateley Bridge, and Eccleshill. On arrival at Ripon, the members drove to Studley Park, where they were met by Mr. T. S. Mason, Lord Ripon's agent, with whom they visited Fountains Abbey and the Skeledale Dairy. On returning to Ripon, they were shown over the cathedral. The general meeting was held in the Council Chamber, Mr. T. Pridgin Teale, president of the association, in the chair. Mr. Joseph Lindley, Batley, hon. secretary of the association, read a paper on "Overcrowding." In the rural districts, he said, a medical officer had stated that the housing of the poor was very often worse in those villages where the property was cut up and in the hands of small owners. The difficulty was that thousands of houses were pulled down and not replaced, while the people were driven from rural lanes to the larger villages, where they crowded together. Substantial stone dwellings had been erected in some of the poorest and wildest districts of Ireland under the Labourers' Act. Since 1883 6,463 houses had been built under that Act, and loans sanctioned to the extent of £1,098,000. Such houses would make the village life of England cheerful, bright, and healthy, and would check the influx of the labouring classes into the large towns. The sanitary authorities should, under the statutory powers they possess, provide adequate dwellings, and let them at such a rent as the people could afford to pay. Mr. H. Denham, Tadcaster, condemned the erection of back-to-back houses, and all houses without through ventilation. He advised his authority not to permit rooms to be built of less than 600 cubic feet space. Mr. W. Holmes, Wakefield, compared the non-county boroughs as to single-room houses. Harrogate stood highest on the list, having only one single-room house out of 2,744, and 62 two-room houses, the highest number of residents being six persons in two rooms. Ripon came next with two one-room houses, and 13 two-room houses. Mr. G. Anderson, Middlesbrough, Mr. T. Sutcliffe, Featherstone, and Mr. F. Rothery, Sowerby Bridge, took part in the discussion, upon which Mr. Lindley replied.

BRITISH BUILDING STONES.—X.

A DESCRIPTIVE LIST OF SOME OF THE MOST IMPORTANT STONE QUARRIES IN ENGLAND AND WALES, IRELAND, AND SCOTLAND.

The weights per cube foot are calculated from the specific gravity of each stone, taken specially by the Author for this table. All the stones examined—hand specimens of nearly equal size—were oven-dried for twenty-four hours for the dry weight, and subsequently submerged in water for the saturated weight. The crushing strain, where given, is always in tons per foot super., and the authorities are indicated by letters, thus: (B), Professor Beare; (K), Kirkcaldy, &c.

The local terms in use in the various quarries are retained in this list.

SCOTLAND.

No.	Quarry.	County.	Geological Formation.	Description.	Colour.	Weight of a Cube Foot. Dry.	Weight of a Cube Foot. Wet.	Water Absorbed per Cube Foot.	No. of Cube Feet to 1 ton. Dry.	No. of Cube Feet to 1 ton. Wet.	Remarks. Where used, analysis, crushing strain in tons per ft. super., cost per cube foot.
						lb. oz.	lb. oz.	Pints.	ft. in.	ft. in.	
349	Ardovie ...... Brechin.	Forfar ...	Old Red sandstone. *Devonian.*	Fine sandstone, micaceous, rubs to a smooth surface, bedding discernible.	Bluish grey.	142 6	149 3¼	5½	15 8¾	15 0	Public Library, Municipal Buildings, Cathornel Hall, and principal villas in Brechin, and also in Montrose and Arbroath. Stones not above 4ft. long or 10ft. cube, 1s. 1d. per foot. Stones for oven soles, 1s. 1d. Flat Rybats, 2ft. long, 12in. to 14in. high, 8in. to 10in. on head, 1s. 4d. Flat "ashlar," 7in. to 8in. in bed, 8d. per super. foot. Started Rybats, 2ft. long, 12in. to 14in. high, 6in. to 8in. on head, 10d. Started "ashlar," 7in. on bed, 7d. per super. foot. Coursers, 6in. to 8in. high, 4d. per lineal foot. Putt stones, 1s. per cube foot; Crub, 15in. by 5in., 5½in. per lineal foot; Garling, 10in. broad, 3in. to 4in. thick, 4d. per lineal foot; "ruble," 15d. per ton; foundation stones, 3s. per load. Long stones, cope stones, flat "lentals," and broad stone also sent out quarry-worked. Prices quoted at quarry. This rock is stated to be "the finest to cut, and freest from "calm" of any in Forfarshire."
350	Arns .... Alloa.	Clackmannan	Coal measures. *Carboniferous.*	Fine-grained crystalline sandstone, silicious matrix. No bedding observable.	White, with a grey tinge.	145 7½	151 4½	4⅜	15 4½	14 9½	"A street of houses" in Alloa, Haymarket Station, Edinburgh; and several buildings in Perth, Dundee, and Cowlairs. Cube stones, under 5ft. cube and 5ft. long, 1s.; up to stones under 30ft. cube and 10ft. long, at 4s. per cube foot. Long stones, 6in. thick, and under 5ft. long, 8d.; up to 11in. thick and 10ft. long, at 2s. 7d. per super. foot. Rybats, 20in. by 12in. by 12in. heads, 1s. 2d. each: corners, 20in. by 12in. by 10in., 10d. each. Ashlar, 12in. by 6in., 6d. per lineal foot; coursers, 7in. by 6in., 3d. per lineal foot. Scuntions, 9d.; backs, 6d. each. Founds, common, 3s. per ton; dressed, 8in. thick, 5d. per super. foot. Length not to exceed twice the breadth, nor breadth twice the thickness. All parapet stones charged 10 per cent. extra. Stones under 12in. broad charged as 12in. All prices at quarries.
351	Auchenlodment... Johnstone.	Renfrew..	Lower *Carboniferous.*	Fine-grained sandstone. No mica bedding may be traced.	White, with light-brown stripes parallel to bedding.	134 0½	141 7½	5⅞	16 7½	15 10	This quarry is not worked by the owner; it is let to any builder and contractor to get stone as it may be required.
352	Auchinlea ... Cleland, Motherwell.	Lanark ...	Coal measures. *Carboniferous.*	Fine-grained sandstone. Glassy grains in silicious matrix. A trace of mica. No apparent bedding.	White, with a shade of grey.	131 6¾	139 12½	6¾	17 0½	16 0¾	Tenements in South Buchanan-street, Edinburgh, 1878; Roseburn-terrace, Altbridge, 1882; Carlisle Railway Station, Western Infirmary, Glasgow, and extensively in Lanarkshire. Not suitable for fine carvings. Cube stones, under 15ft., 4d.; up to stones under 60ft., at 4s. 3d.; the length of any stone not to exceed twice the breadth, nor breadth twice the thickness. Broad stones, under 6in. thick and 6ft. super, 8d. per super foot; up to stones 14in. thick and 35ft. super, at 4s. 3d. Long stones, 4ft. by 12in. by 7in., 3s. each; up to 12ft. by 24in. by 11in., £3 14s. 9d. each. Columns, 6ft. long, 15in. by 15in., 18s. 11d. each; up to 15ft. long, 24in. by 24in. each, £16 5s. 10d. each. Wheeling steps, 3ft. 6in. long by 18in. by 7in. thick, 2s. 11d. each; up to 7ft. 6in. long by 32in. by 9in. thick, 18s. 5d. each. The quarry supplies common founds, "scunions," common and natural ashlar, and common and natural rybats. All prices are for stone in quarry. Crushes with 189·8 to 230·5 tons (B). Soft, and gets hard by exposure. Craig stated at meeting of the Edinburgh Geological Society, May 5, 1892, that Auchinlea is considered a poor stone.
353	Auldbar ...... Arbroath.	Forfar ...	Old red sandstone, *Devonian.*	Fine-grained compact sandstone. Little mica, takes a polish; bedding obvious.	Dark greenish grey.	153 14¼	155 14	1¾	14 7	14 3½	Auldbar Castle. Dressed pavement, 8ft. to 10ft. super., 2in. to 2½in. thick, 6½d.; 3in., 7d.; 4in., 8d. Second-class pavement, 2in. to 2½in. thick, 5½d. per foot super. Polishing, ¾d. extra. Sawn, jointed, 2in. to 3in. thick, 1d.; 4in. thick, 1½d. extra. Sized stone, not containing more than 10ft., 3in. thick, 8d.; 9in. thick, 1s. 9d.; not more than 62ft. super. and 3in. thick, 2s. 10d.; 9in. thick, 3s. 11d. Steps, sent out (1) dressed on tread only; (2) dressed on tread and sawn in breast; (3) dressed on tread and plain breasted; and (4) dressed on tread and "bottled." Wheel steps, 1d. per foot extra. Step covers and Platts also worked and sent out sawn, planed, or bottled. Crushed with 512·5 to 628·3 tons (B). Price on rail-truck at quarry.
354	Balgavies..... Arbroath.	Forfar ...	Old Red sandstone. *Devonian.*	Fine-grained compact sandstone, rubs to smooth surface. Little mica, bedding not distinct.	Bluish grey.	155 12	157 4	1¼	14 3¾	14 2½	Worked by same owners as No. 353. Quarry prices same.
355	Ballochmyle Mauchline.	Ayr.........	Permian. New Red sandstone.	Fine-grained sandstone, rubs to a rough surface; bedding observable.	Brownish red.	123 0¾	133 7	8⅞	18 2½	16 9¼	Hyndland Church, Glasgow, 1885; Spier's School, Beith, near Glasgow, 1887; Burns's monument, Kilmarnock, 1881; Railway station and hotel, Ayr, 1884; Lyndoch railway station, Greenock, 1894; Crescent's Church, Belfast, 1885. Quarries worked for 70 years. Proprietor says of the stone: "Its weather qualities are of an exceptionally high order. It is produced and sold cheaply, and although it stands a high pressure test, it is very easily chiselled." Dressed and sawn by hand or machinery.
356	Ben Cruachan.	Argyle ...	Granite.	Quartz hornblende and orthoclase; no mica.	Dark mottled grey.	170 4¾	170 10½	¼	13 1¾	13 1½	Crushes with 766·8 to 1008·0 tons (B).
357	Binny........... Uphall.	Linlithgow..	Sandstone. Oil Shale series. *Lower Carboniferous.*	Fine-grained sandstone; micaceous bedding may be traced, rubs smooth.	Dark slate grey, black when wet.	138 13	140 1¾	1	16 1½	15 11¾	Bank of Scotland, 1806; Scott Monument, 1840-6; Donaldson Hospital, 1842-51; National Gallery, 1850-9; Post Office, 1866; Assembly Hall and Spire, 1842; Edinburgh fountain in front of Holyrood Palace. Cube stones under 5ft. cube and 5ft. long, 3s.; under 20ft. cube and 30ft. long, 5s. 6d. per cube foot. Random ashlar up to 12in. by 6in., and under 5ft. long, 1s. per lineal foot; ashlar, 12in. to 15in. broad, charged superficial, rybats, 2s. 6d. each. Broad stones, not exceeding 5ft. super., and under 5ft. long and 6in. thick, 2s. per super. foot. On truck, Uphall Station, or on carts at quarry.
358	Bonhill ...... Alexandria.	Dumbarton.	Old red sandstone. *Devonian.*	Fine-grained sandstone, with mica in planes of bedding.	Dull red.	134 6	142 5½	6⅜	16 8	15 8¾	Parish Church, Jamestown; Parish Church, Reuter; Scottish Girls' Friendly Institute, Ewing-Gilmour Institute, Public Schools, Public Hall, and Free Church, Alexandria. Cube stone under 15ft., 1s.; 30ft., 1s. 8d.; 40ft., 2s. 3d.; 50ft., 3s. 1d.; 60ft., 4s. Length not to exceed twice the breadth, ner breadth twice the thickness. Broad stones under 6ft. and 6in. thick, 8d.; up to 35ft. and 14in. thick, at 4s. 3d. per super. foot. Copes 12in. by 6in., 8½d.; 12in. by 14in., 1s. 7d.; 26in. by 6in., 2s. 1d.; 26in. by 14in., 4s. 2d. Cope and cornice, when the breadth exceeds three times the thickness, the thickness will be charged at one-third the breadth. Long stones 4ft. by 12in. by 7, 2s. 10d.; up to 12ft. by 24in. by 11in., 74s. 7d. each. Columns and wheeling steps supplied. Carting to station, 1s. 6d. per cart. Beds up to 4ft. thick .

No.	Quarry.	County.	Geological Formation.	Description.	Colour.	Weight of a Cube Foot.		Water Absorbed per Cube Foot.	No. of Cube Feet to 1 ton.		Remarks. Where used, analysis, crushing strain in tons per ft. super., cost per cube foot.
						Dry.	Wet.		Dry.	Wet.	
						lb. oz	lb. oz.	Pints.	ft. in.	ft. in.	
359	Blebo .... Cupar.	Fife........	Old Red sandstone. *Devonian.*	Fine-grained sandstone, ochrey spots in matrix; bedding not distinct.	Dark cream.	126 1½	136 10¾	8⅜	17 9¼	16 4½	Cube stones, not above 15ft. in each stone, 10d. per cube foot, on rails at Dairsie Station; Lathallan House, near Edinburgh; Seggie House, Guardbridge; also used in Perth, Broughty Ferry, and Dundee. The quarries are old-established. "The stone is a good wearing one, and no risk would be run in using it.
360	Bothwell Park Bothwell.	Lanark....	Coal measures. *Devonian.*	Moderately fine-grained sandstone, little mica; bedding may be discerned.	Purplish brown.	132 12¾	140 7½	6⅜	16 10¼	15 11¼	Cube stones under 15ft., 1s. 2d.; 30ft., 1s. 10d.; 40ft., 2s. 5d.; 50ft., 3s. 3d.; 60ft., 4s. 3d. Rubble 1s. 8d. per ton, 2s. 3d. per cart. Rybats, common, 1s. 4d.; natural, 1s. 6d. each. Ashlar 12in. high: common, 7d.; natural, 8d. Common courses 4d. per cubic foot. Scuntions, 1s. each; backs, 9d. each. Jambs, broad stones, long stones, copes, columns, and wheeling-steps prepared in the quarry.
361	Brax .... Arbroath.	Forfar ...	Old red sandstone. *Devonian.*	Moderately fine grain, micaceous sandstone; bedding not observable.	Light liver-brown.	140 7¼	147 5½	5½	15 11¼	15 2½	Tyvie Castle, Aberdeen. Blocks, 1s. 2d. per foot; flat stones, 9in. thick, 10d. per foot super. Sills and lintels, 4ft. long, 3s. 6d. each; 4ft. 6in. long, 4s. each. Rybats and corners, 1s. each. Courses, 3½d. per line foot. Ashlar, 12in. by 7in., 7d. per foot, on rail at Colliston Station. The two public schools, St. Margaret's Church, Eltrie and Colliston Castles (additions to), and about one half the town of Arbroath. Quarry beds from 3ft. to 9ft. thick.
362	Bridgend...... Brechin.	Forfar ...	Old red sandstone. *Devonian.*	Hard, fine grained, compact sandstone, glassy quartz grains, mica; bedding not discernible.	Purplish grey.	144 15	149 15¼	4	15 5½	14 11	New Board Schools, Arbroath; new Municipal Buildings and Clydesdale Bank, Brechin. Stones not above 4ft. long, and not more than 10ft. cube, 1s. Flat Rybats, 2ft. long, 12in. to 14in. high, 8in. to 10in. on head, 10d.; flat "ashler," 7in. to 8in. on bed, per super. foot, 8d.; started rybats, 2ft. long, 12in. to 14in. high, 6in. to 8in. on head, 10d.; started "ashler," 7in. on bed, per superficial foot, 7d.; coursers, 6in. to 8in. high, per lineal foot, 4½d. Extra sized rybats, "ashlers," and putt stones, 1s. per cube foot; crub, 18in. by 6in., 8d. per lineal foot; garling, 10in. broad, 3in. to 4in. thick, per lineal foot, 5d.; "ruble," 1s. 9d. per ton. Long-stones, broad stones, and drain covers worked in this quarry. 10d. per ton for delivery to Brechin Station.
363	Broomhill ... Larkhall.	Lanark....	Coal measures. *Carboniferous.*	Compact, moderately fine-grained sandstone, rubs smooth; bedding not distinct.	Dark brownish grey	132 5½	139 9⅝	5¾	16 11	16 0½	
364	Broomwell... Monickie. Dundee.	Forfar ...	Old red sandstone. *Devonian.*	Coarse-grained sandstone, with angular quartz pebbles, highly crystalline. No bedding observable.	Grey, with a greenish tinge	136 4	144 0½	6¼	16 5¼	15 6½	Sailors' Home, Mather's Hotel, Whitehall-street, ex-Provost Mathewson's property, St. Andrew-street, Dundee; Grove Schools, Broughty Ferry, near Dundee. 1s. 2d. per cube foot sawn and faced; 1s. 3d. sawn on two edges, free on rail at quarry.
365	Caithness ... Thurso.	Caithness	Middle Old Red sandstone. *Devonian.*	Very hard, compact slaty sandstone, fine-grained, mica in bedding, which is very distinct, bituminous.	Dark-blue, slate grey.	166 14½	167 0½	⅜	13 5	13 5	There are several quarries in the "Caithness flags" in this county. The stone is used for paving. Mr. Buchanan, in a paper read before the Scottish Society of Arts, gave the following as the relative transverse strengths of this and other stones:—Caithness, 1,500; Arbroath, 821; Craigleith, 510; Hails, 353 (used as lintels). It is estimated that the old red sandstone series in Caithness is 16,000ft. thick. The Caithness flags were placed in the "Middle" old red sandstone by Murchison and other geologists—a division peculiar to this county; but Geikie maintains they really belong to the "Lower" old red of the English counties, and that there is no evidence of any middle division. Flagging, natural face, with sawn edge, 2in. thick, 3s. 4d.; 3in. thick, 4s. 5½d. per super. yard. Polished, 2in., 4s. 4d.; 3in., 6s. 2½d.; on rail Thurso.
366	Cambus O'May... Ballater.	Aberdeen.	Granite.	Quartz, orthoclase and biotite.	Grey.	161 11½	162 2	¼	13 10¼	13 9½	This quarry is known as Tomnikiest. This stone is sold at 1s. 6d. per cube foot on rail at Cambus O'May Station.
367	Camperdown . Lochee, Dundee.	Forfar ...	Old Red sandstone. *Devonian.*	Moderately fine-grained micaceous sandstone, bedding not distinct. A "Liver" rock.	Brownish grey.	148 10½	153 7¼	3⅞	15 8	14 7	Restoration of old steeple, Dundee, 20 years ago; St. John's Church, Perth; a number of public buildings, mills, offices, and factories at Dundee. Stones not less than 12in. thick, and not containing more than 10 cube feet, 1s. 6d. per cube foot; containing more than 10ft. and not over 20ft., 1s. 9d. All quarry-dressed, and delivered at Lochee or Dundee stations.
368	Carmyllie ... Arbroath (6)	Forfar ...	Old Red sandstone. *Devonian.*	Fine-grained, close-textured, micaceous sandstone. Bedding not distinct.	Dark grey.	153 14¾	157 8	2⅞	14 6¾	14 2½	Mainly used for pavement, steps, landings, sills, lintels, &c.; Glasgow, Inverness, Edinburgh, and other post offices; Hartwood, Hawkhead, and Gartloch asylum; Sized stones, not containing more than 10ft. super., 2½in. thick, 7d.; up to 9in. thick, 1s. 9d. per foot; containing not more than 6ft. 2in. thick, 2s. 10d.; up to 9in. thick, 3s. 11d.; double facing up to 25ft. 2d., above 25ft. 3d. per foot extra. Steps *dressed*, per superficial foot, on tread only, 3ft. long and 6in. thick, 8d.; on tread and sawn on breast, 10d.; on tread and planed on breast, 1s.; on tread and "bottled," 1s. 6d. Free on rail. Crushes with 512·5 to 533·6 tons (B). Beds 2½in. to 20in. thick.
369	Clunievar ... Dunfermline	Fife.........	Roslin sandstone, millstone grit. *Carboniferous.*	Very fine-grained sandstone, micaceous bedding may be traced.	Light grey.	132 4¾	140 1⅝	6¼	16 11	15 11¾	Tenements at 38, March Mount-crescent, Edinburgh, 1881; 42, Roseburn-terrace, Coltbridge; North Junction-street, Leith, 1891. Cube stones, not exceeding 10ft. cube, 10d.; 15ft., 1s. 1d.; 20ft. 1s. 4d. Ling stone, not exceeding 5ft. long and 6in. thick, 6½d.; up to 11in. thick, 11d.; up to 10ft. long and 11in. thick, 1s. 11d. per super. foot. Ashlar, 12in. by 6in., 5½d. per linl. foot; Rybats, common, 11d., with 12in. heads, 1s. 1d.; scuntions, 7d.; coursers, 3d. per foot; "ruble," 1s. per ton; square "ruble," 3s. 6d. per ton. Prices at quarry.
370	Corennie ...... Alford (6).	Aberdeen.	Granite.	Glassy quartz, and pink orthoclase.	Pinkish red.	162 14¾	162 14⅝	—	13 9¾	13 9¾	New Municipal Buildings, Glasgow. Crushes with 1098 to 1,449 tons (B).
371	Corncockle...	Dumfries	Permian.	Moderately fine-grained sandstone. with mica. Coarser grit, and more highly crystalline than Corsehill stone.	Brownish red.	127 0	139 12⅝	7⅞	17 7½	16 4¼	Lochend-road School, 1886; Milton House School, 1886; Castle Hill School, Edinburgh, 1886; Jardine Hall, 1800; Hydropathic Establishment, Peebles. Extensively in Lockerbie, Moffatt, and neighbourhood. *Hard rock:* Common rubble, 2s.; large ditto, 3s. 6d. Rippers 4s. 6d. per ton. Foundations up to 6in. thick, self-bedded and squared 4d. per foot super. All above 8in. thick at 7d. per cube foot. Self-bedded flags, 3in. thick, 2s. 3d. per yard; polished for hearths 1s. per yard extra. *Soft rock:* Common rubble, 2s. per ton; scuntions and corners, or "cant," averaging 12in. in height and 18in. to 20in. long, 6d. each. Rybats and quoins, coursers, lintels, sills, mullions, and jambs quoted for in quarry list. Dimension block, 20 to 30ft. cube, 9d.; up to 80ft. cube, 2s. 6d. Random blocks up to 30ft. cube, 8d.; up to 50ft. and averaging 25ft., 9d. per cube foot on rail at Nethercleugh Station. "A dark streak runs through this stone here and there; but it disappears in from six to twelve months." Crushes with 264·7 to 427·3 tons (B).

THE THRUSTS ON WALLS AND ARCHES.*

By G. A. T. MIDDLETON.

CHAPTER V.—RETAINING WALLS SUBJECT TO WATER PRESSURE.

WATER, being a fluid, has an angle of repose of zero, and cannot be surcharged. This is the essential difference between it and earth, while its weight varies so little according to its temperature and ingredients as to be for all practical purposes always 62·5lb. per cubic foot. Thus to calculate water pressures is easy to anyone who has mastered earth pressures, the same rules being applicable.

Reference to Fig. 15 will show that A B being the bottom, and D C the top, of the water in a reservoir, retained by a vertically-backed wall at D A, and the natural slope being horizontally along the line A B, the complementary angle is the whole angle B A D, and this being bisected by the line A C, according to the rules laid down in the last chapter, the triangular prism of water which is active to cause thrust is that shown in section by the triangle C A D. The weight of this is collected at its centre of gravity, whence it acts vertically downwards, impinging upon the line A C at E, where it is resolved into two forces, E H and E G, of which E H is the force tending to overturn the wall, to the scale to which the weight A F of the triangular prism C A D was set downwards from E.

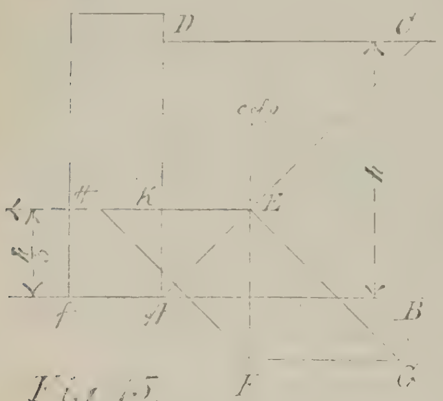


Fig. 15.

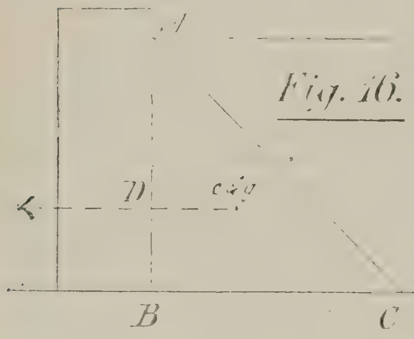


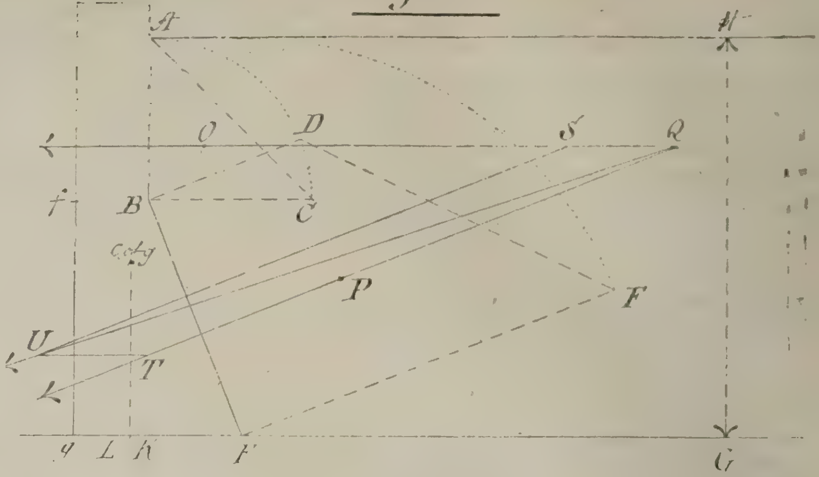
Fig. 16.

A little examination of the diagram will show that E F being vertical, H E horizontal, and E G at right angles to A G, which itself bisects the right angle D A B, therefore the angles E H F and E F H are both angles of 45°, and, therefore, that H E = E F. In other words, the force E H tending to overturn the wall is equal to the weight of the triangular prism of water, C A D.

It will further be seen that the distance A K at which this force acts from the base of wall is exactly one-third of the depth of the water A D, for the vertical line through the c.g. of the triangle C A D, being parallel to A D, and impinging upon A C at E, makes $A E = \frac{A C}{3}$ and, similarly. E K being parallel to C D, therefore A K : A D : : A E : A C, which proves the proposition.

It is more convenient, and quite as correct in practice, to reverse the prism, as shown in Fig. 16, and to say didactically that the pressure against the back of the wall A B is equal to the weight of the 45° triangular prism of water A B C, acting horizontally through its centre of gravity, and thus impinging upon A B at D, D B being equal to $\frac{A B}{3}$.

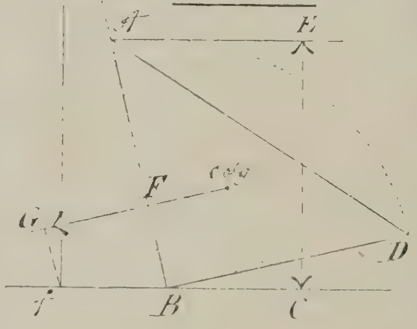
Fig. 18.



In one very marked respect, however, does water act in a different manner from earth. Being a fluid, it always presses perpendicularly against the surfaces opposed to it.

This is a most valuable property, and is largely taken advantage of in designing retaining walls by battering them internally. The effect of thus battering a simple wall is shown in Fig. 17. The triangular prism is formed by drawing B D at right angles to the battered face A B, and equal in length to the vertical depth C E. The c.g. of the triangle A B D thus formed is found, and the weight of the triangle acts through it, along the line F G, perpendicularly to the inclined side A B, forming the pressure which tends to overtake the wall, and acting at the distance fG round the point f of overturning.

Fig. 17.



It will thus be seen that, though the pressure of water against the side of the wall is slightly increased, A B being greater than the vertical depth C E, the moment of overturning is largely diminished, fG being much less than $\frac{C E}{3}$.

It is not altogether unusual to build a wall as shown in Fig. 18, with the upper portion vertical, and the lower battered. In such an instance, two calculations are necessary—for the upper portion only, as rotating about f; and for the whole wall, upper and lower portions combined, as rotating about g. The upper portion A B may be considered to be pressed against by the weight of the triangular prism of water A B C acting horizontally through its centre of gravity, O. The lower sloped portion B E has a curiously-shaped prism of water acting against it, represented by the polygon B E F D, of which B D is drawn at right angles to B E, and is equal to the depth B A of the point B from the surface of the water; while the line E F is also drawn at right angles to B E, and is equal to the depth H G of the point E from the surface of the water. The weight of this prism, B E F D, is collected at its centre of gravity, P, and acts perpendicularly to the inclined surface B E.

To obtain the resultant pressure against the whole wall, it is necessary to combine the pressure of the triangular prism A B C passing horizontally through O, and the pressure of the irregular prism B E F D passing through P, by continuing their directions back till they meet in Q, and there setting up a parallelogram of forces, Q S U T, of which Q S represents the action of the triangular prism in magnitude and direction, and Q T similarly represents the action of the irregular prism, and of which Q U is the resultant.

This, of course, has to be combined with the weight of wall acting through its centre of gravity vertically downwards to obtain the eventual resultant, which must pass within the base of the wall as against actual overturning. As already said, however, it should pass well within the base of the wall to secure anything like uniform variance of pressure, but how far within is not always easy to determine. In practice, however, it may be said that if the vertical line through the centre of gravity of the wall cut the base at K, the final resultant should pass between K and L, the line K L being one-third of the line Kg.

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CHIPS.

Mr. H. Cartwright Reid, civil engineer, Admiralty Works Department, is about to proceed to Nova Scotia, to take charge at the Government dockyards of Halifax, Jamaica, and Antigua.

The tender of Messrs. Nicks Brothers, builders, of Bradninch, has been accepted for the restoration of Blackborough Church. The work will be commenced forthwith.

New National schools were opened at Wharton last week. The infant schoolroom is 48ft. by 24ft.; the classroom 28ft. by 20ft.; and the cloakroom 24ft. by 12ft. The rooms are 19ft. high. The architect was Mr. J. Waring, and the builder Mr. Sergeant.

The remains of Mr. William Jackson, a well-known Leicester architect, residing in Stoneygate, have been discovered under extraordinary circumstances. For two weeks deceased, an elderly man and rather eccentric, residing alone, has not been seen; and it was thought that he was away for a holiday, until the neighbours' suspicion was aroused by an offensive smell emanating from the premises. They were broken into on Wednesday week, when Jackson was found dead in bed. The cause of death is unknown.

Mr. H. Gilbert Whyatt, A.M.Inst.C.E., M.S.I., deputy borough engineer, Salford, has received an invitation to deliver a course of twenty evening lectures on Sanitary Engineering, at Owens College, during the coming winter. The lectures form a portion of the whole course in connection with the certificate of proficiency in hygiene and sanitary knowledge issued by the Victoria University to inspectors of nuisances.

The United Methodist Free Church at St. Just in Penwith, is to be renovated and enlarged, from plans prepared by Mr. J. W. Trounson, architect, of Penzance, and the work will be carried out under his superintendence.

The foundation stone of the new church of All Saints', Galley-hill, Swanscombe, Kent, was laid on Wednesday week. The building is estimated to cost nearly £6,000; it is being built in the Early Decorated style, from the design of Mr. R. Norman Shaw, R.A., of London. It will eventually consist of a nave, chancel, and north and south aisles; but the latter will not be built at present. The materials used are brick and flint, with Bath stone dressings.

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CHURCH EMBROIDERY: BY MAY MORRIS. — NEW PREMISES FOR THE CHESTER BOAT COMPANY. — DESIGNS FOR CHRIST'S HOSPITAL NEW SCHOOLS AT HORSHAM.—HOUSE AT BARNT GREEN.—DESIGNS FOR A PAIR OF LABOURERS' COTTAGES.

Our Illustrations.

CHURCH EMBROIDERY.

(FOR May Morris's article and further sketches see p. 66.)

CHESTER BOAT COMPANY'S PREMISES.

THESE premises, illustrated to-day from the architects' drawings now on view at the Royal Academy, have been erected for the Chester Boat Co., whose pleasure boating business is so well known upon the banks of the Dee. The entrance block consists of manager's house and bar accommodation, all of which was remodelled from the old uninteresting premises, the outer face being recased and half-timbered, as shown in views. The entrance gateway, ladies' retiring-room, and manager's office are entirely new, and the works have been carried out by Messrs. George Forester and Sons, builders, of Chester, who were obliged to carry out the work in sections, so as not to interfere with the refreshment business. In the grounds there has been a large oar and scull-shed erected, over which is a gentleman's retiring-room, with baths, &c., and this portion has been carried out by Mr. W. W. Freeman, builder, of Chester, and both were under the superintendence of Messrs. Thos. M. Lockwood and Sons, architects, Chester. We shall illustrate the scull-shed and retiring-rooms block shortly.

CHRIST'S HOSPITAL BOARDING SCHOOLS, HORSHAM, SUSSEX.

TO-DAY we finish our series of plates illustrative of the designs of this competition.* The double-page view of Messrs. Paley, Austin, and Paley's design represents the buildings from the south, looking into the Cloister-court, with the College Chapel on the right, and the music-house, dining-hall, and first block of school residences on the left of the spectator. The statue of King Edward VI. occupies a central position as shown by the plan of the whole scheme, which we published in our issue for June 29th. The first single-page plate herewith furnishes an interior perspective of the great apsidal-ended assembly or schools' hall, the exterior of which, by the same architects, appeared on the same date as their general plan. The last sheet represents another view of Messrs. Carpenter and Ingelow's design, taking in the great hall and chapel, as well as their clock-tower seen from the great cloistered quadrangle which made the leading feature in this design.

HOUSE, BARNT GREEN.

THIS half-timber house, of local bricks and Madeley Wood tiles, was designed by the architect, M. T. W. F. Newton, 121, Colmore-row, Birmingham, for his own occupation. Builders Messrs. Huins and Sons, Redditch.

"BUILDING NEWS" DESIGNING CLUB: A PAIR OF LABOURERS' COTTAGES.

WE illustrate this week the designs for a pair of Labourers' Cottages we have placed first and second in our "Club" competition. Critical remarks of all the plans received will be found on p. 65.

ARCHÆOLOGICAL.

PREHISTORIC REMAINS AT MENTONE. — M. Adolphe Megret, a Paris sculptor, writes: On the 12th January last, M. Abbo, master quarryman, who is exploiting the massive rocks known under the name of Baoussé-Roussé, near Mentone, was informed by his son, at work in one of the caverns (the Barma Grande), of the presence of a human skeleton, which he had partly uncovered. On the two following days the exhumation of this prehistoric human skeleton was completed. The remains were found in what seemed to have been one of the last beds superposed, known under the name of "foyers," or layers. Mixed with the *débris* are bones of animals, some of which have been identified as belonging to primitive and extinct species, while others may have served as food for the early human inhabitants of the earth. Most of the bones seemed to have been broken for the purpose of extracting the marrow. The upper part of the beds was covered with charcoal, ashes, and flints, whilst amongst these were found all sorts of primitive implements, affording undeniable evidence of the direction in which prehistoric man's industry took shape. Specimens were discovered of rough, uncut flints, hammer-stones, shells, and fish-bones, some of the latter articles being pierced and otherwise treated as if they had been adapted for useful or ornamental purposes. It seems to the writer as if the skeleton under notice had been one of the last of his species, the body having been discovered in one of the last deposits in the cavern, about 40ft. above what appears to have been the original level of the grotto. The skeleton was lying only about 10ft. above three others, which were found in a group in the year 1892, and described by Mr. G. Evans in the *Anthropologist*, as well as by M. le Dr. Verneau, of Paris. The body lay on the right part of the wall of the cavern, the skull nearly touching it. The remains are comparatively well preserved, considering the ancient period of interment. The right arm and the carp and metacarp of the hand are perfect. The head was lying towards the north-east; the body was curved and receding to a backward position—the leg and feet being at an open angle towards the south-west. The left leg was slightly bent under the right one, the feet closed together. The right arm was folded first backward from the shoulder, the elbow touching the soil; while the forearm was extended at right angles, the hand being placed on the chest. The left hand supported the head under the jaw. Altogether the attitude of the body was that of a man who had been sound asleep and unconscious when he died. Although there are slight differences in the positions in which these remains of prehistoric man are found in these caves, all the bodies, in spite of the incalculable time which has elapsed since they breathed their last, present the appearance of a man asleep. At the side on the ground lay a very large stone, rough and thick, of a trapezoidal form. Near the right arm was another large stone, several others being found near the left. These stones appear to have been worked, and bear traces of the action of fire.

CHIPS.

Mr. Bromley has resigned the appointment he has held for many years of engineer and surveyor to the Heston and Isleworth local board.

The Leeds Corporation have purchased for their permanent gallery the picture entitled "Homewards," by Fred Hall.

A new schoolroom, accommodating 250 persons, has been added to Brynsion Chapel at Treignon, near Aberdare. Mr. D. Davies, of Aberdare, was the contractor.

The school board for Leith, after considerable discussion, have adopted revised plans prepared by Mr. Craig, architect, for the reconstruction of the Academy, estimated to cost about £18,000.

The death is announced of Mr. Robert Robertson, Claremont, Moffat, who for some twenty years was road surveyor in the Mid and Upper Annandale district of Dumfriesshire.

COMPETITIONS.

GOOLE.—At the adjourned meeting of the general purposes committee, held to determine the award in connection with the competition for new Market Hall plans, Goole, that body recommended the design marked No. 35 for adoption, and ultimately this decision was confirmed by the board, who awarded the first premium of £100 to Mr. W. J. Tennant, architect, Ropergate, Pontefract. With regard to the second prize of £50, the board resolved that the merits of the designs distinguished by Nos. 2 and 13 being nearly equal, the prize should be divided between the authors of these plans, and this was agreed to. No. 2 was sent in by Mr. H. B. Thorp, architect, of Goole, and the designer of No. 13 is Mr. Athron, architect, of Doncaster. The decision was made in secret, the Press being excluded; but from the debate as printed in the local papers, it seems that the advice of Mr. Brown, to whom reference has already been made as the expert builder or architect employed by the committee at a small fee to assist in the award, was not followed, and his report, whatever its merit, is not to be made public. This course has naturally led to some strong expressions in the Goole newspapers, and, anyway, it is always a matter of regret when competitions are not conducted without recourse to a secret conclave.

HEAMOOR, CORNWALL.—The trustees of the Wesleyan Methodist Chapel of Heamoor, Madron, have selected the plans for their new church submitted by Mr. J. Wm. Trounson, architect, of Penzance.

INVERNESS.—Ten sets of plans were submitted in competition for an extensive stabling and posting establishment for Messrs. MacRae and Dick, the well-known Northern horse hirers. Mr. W. C. Joass, architect, assisted as professional assessor, and the plans sent in by Mr. Duncan Cameron, architect, Inverness, were selected. The premises provide accommodation for about 160 horses, 135 carriages, 13 loose-boxes, and extensive storage for hay, straw, grain, &c. There are also large painting, blacksmith, and carpenter shops, offices, men's barracks, and boiler-houses. The central covered yard measures over 160ft. by 80ft. It is intended to light the buildings by electricity.

LIVERPOOL. — The Liverpool School Board, after a long and animated discussion, decided on Monday to invite four architects practising in the city—Messrs. George Bradbury, 14, Cook-street; C. E. Deacon, Central Buildings, North John-street; Edmund Kirby, 2, South John-street; and T. Mellard Reade, 2, South John-street—to send in competitive plans for the new offices of the board, proposed to be erected in St. Thomas-street. A proposal to throw the competition open to all Liverpool architects was rejected by seven votes to six.

MONMOUTH.—Under "Competitions" in our issue of the 6th inst. we gave John Parkin and Son, of Westminster, as winners of the second prize. This should have been John Parkin and Son, of Idridgehay, and 3, St. Mary's Gate, Derby.

STOCKPORT WORKHOUSE.—For some fourteen years past the Stockport board of guardians have intermittently discussed the question whether they should build an entirely new workhouse or reconstruct and enlarge the existing one. Recently a forward movement was made, and 25 acres of land were purchased as a site for a new building. Competitive plans were invited, and on the recommendation of Mr. W. H. Ward, architect, of Birmingham, the first premium of £300 was awarded to Messrs. Booth and Chadwick, of Manchester, and the second to Messrs. Mangnall and Littlewoods, of Manchester. At a subsequent meeting it was decided to send the plans placed first and second to the Local Government Board, in the hope that that body might possibly determine which should be carried out. The town councils of Stockport and Hyde then wrote to the Local Government Board protesting against the proposal to spend £40,000, and asked the authority to exercise its influence to prevent action being taken till after the election of a new board of guardians next November. The guardians have held another stormy meeting at which they appeared much divided in opinion, and in the end cheques for the premiums have been sent without note or comment to the successful competitors, thus discharging the mutual liabilities of architects and guardians so far as the competition is concerned.

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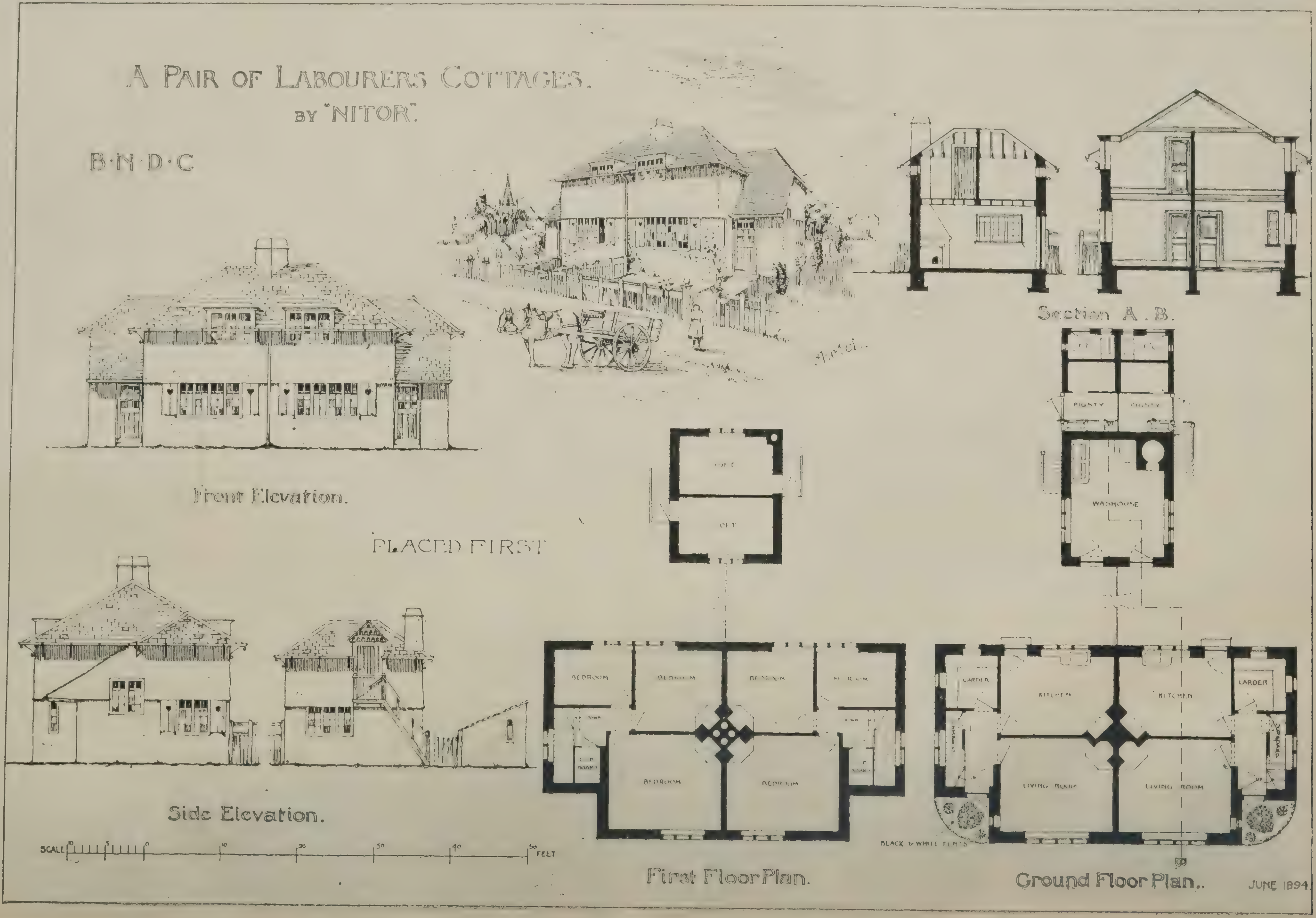
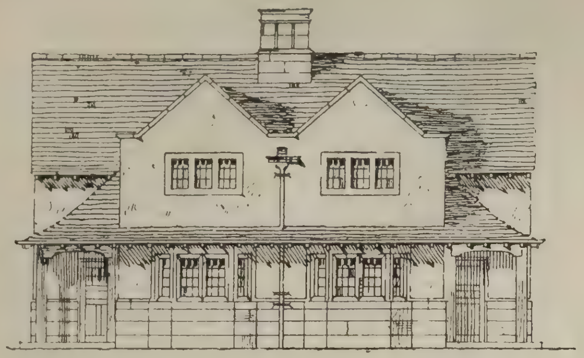
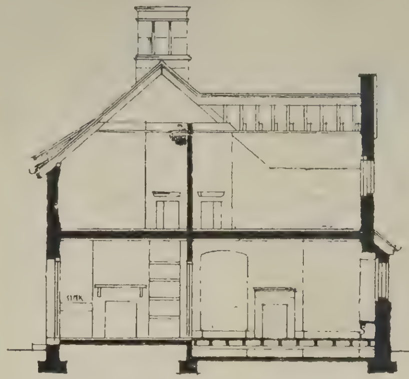
* See BUILDING NEWS of June 15th, 22nd, and 29th, July 6th and 13th.

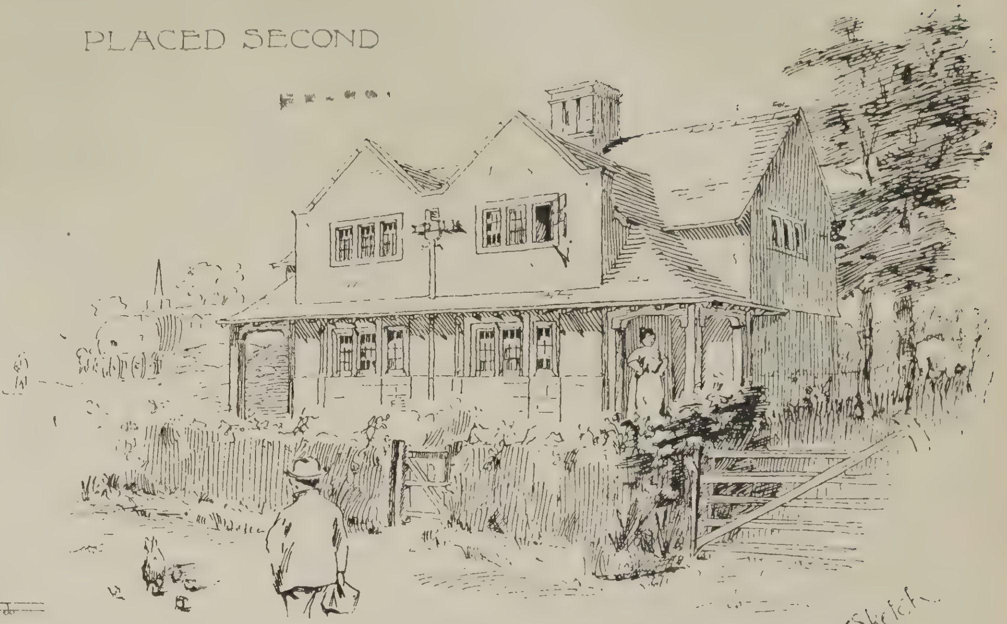

A PAIR OF LABOURERS COTTAGES.
BY "NITOR".
B·N·D·C
Front Elevation.
PLACED FIRST
Side Elevation.
SCALE 10 5 0 10 20 30 40 50 FEET
Section A.B.
PIGSTY
PIGSTY
WASHHOUSE
BEDROOM
BEDROOM
BEDROOM
BEDROOM
BEDROOM
BEDROOM
CUPBOARD
LARDER
KITCHEN
KITCHEN
LARDER
LIVING ROOM
LIVING ROOM
CUPBOARD
BLACK & WHITE FLATS
First Floor Plan.
Ground Floor Plan.
JUNE 1894

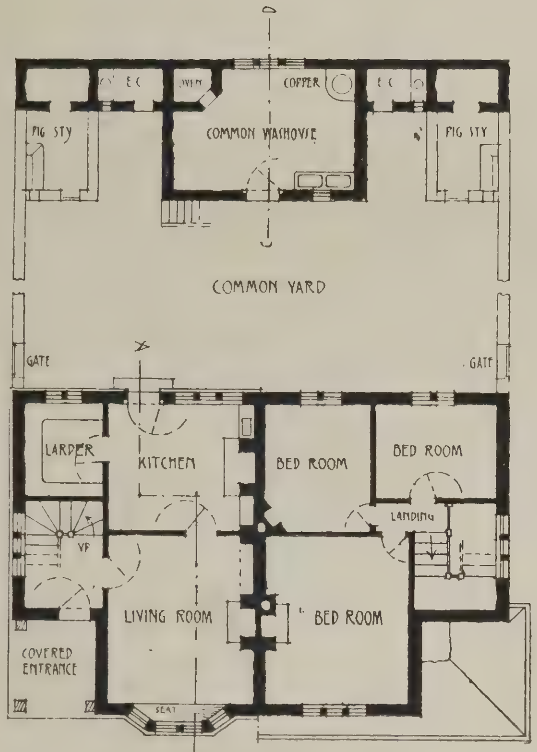
DESIGN FOR
A PAIR OF LABOURERS COTTAGES
BY "BOOMERANG"

PLACED SECOND

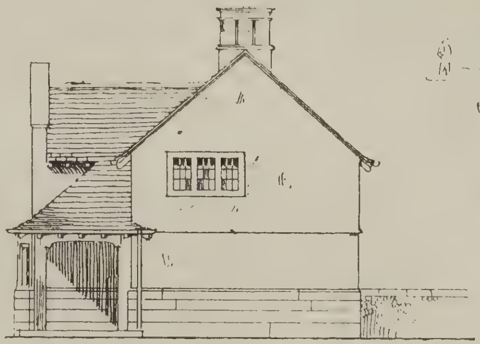

FRONT ELEVATION

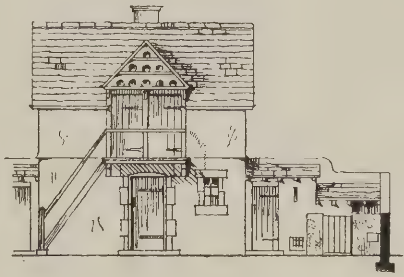

SECTION ON LINE A·B

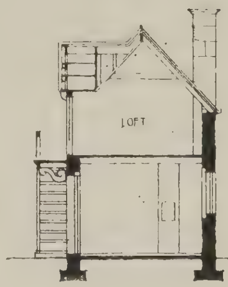

Sketch



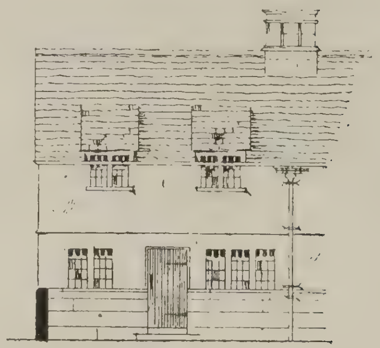
GROUND PLAN UPPER FLOOR PLAN

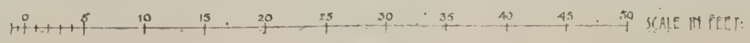

SIDE ELEVATION


ELEVATION OF WASHOUSE, &c.



SECTION ON C·D·


BACK ELEVATION OF COTTAGE



B·N·D·C
JUNE 94

WAYSIDE NOTES.

Mr. MOUNTFORD'S reasonable query, embodied in his letter printed in last Friday's Building News, directs attention to a matter of very considerable importance to all architects. The subject of the unusual terms laid down for the competition for the Cripplegate Institute was, I see, specially referred to in your pages as long since as September 29th last year, and the Building News once more ranks as the only professional journal which pointed out proceedings detrimental to the profession. Mr. Mountford, however, has avoided all reference to what, after all, is the most questionable part of the proceedings, and that is the semi-official connection with the undertaking of the late President of the Royal Institute of British Architects, Mr. MacVicar Anderson, who acted as professional referee. It was well known what the terms of the contest were, and so soon as these conditions were issued to the selected competitors, three at least of the invited architects (two of whom are conspicuous members of the Council of the R.I.B.A.) declined to have anything more to do with the proceedings, for they considered, as you did, that the commission of 4 per cent. was not a usual and adequate remuneration for capable services in designing and carrying out so complicated and elaborate a building as the Cripplegate Institute. This must also have been patent to the assessor, who, by continuing his connection with the competition, gave it an authoritative approval, seeing that he had been appointed as referee because he held the office of President of the R.I.B.A. It can be no excuse on his part if he should urge that, had he not consented to act as umpire, someone else would be found willing to undertake the somewhat invidious task and accept the fee consequent upon it. It is of small moment comparatively whether the actual competitors who accepted the terms offered are or are not correctly described as "well-known" architects, the detrimental factor calculated to permanently damage the interest of all architects, and particularly the less famous and less fortunate ones, is that Mr. MacVicar Anderson, as official representative of the oldest professional society, gave his countenance to these proceedings, which, in other respects, your correspondent, Mr. Mountford, has so adequately estimated.

A Cornish correspondent writes to me complaining that in a recent Wesleyan chapel competition one of the competitors, a F.R.I.B.A., sent a letter with his plans promising that if his design were selected he would give half his fees to the building fund—in other words, he was willing to undersell his fellow practitioners and carry out the work for 2½ per cent. The bait, I am glad to hear, did not take; some other design was selected, the chairman of the committee telling the members who hesitated at rejecting such a proposal, it would be neither right nor fair to choose the plan of a man who would offer such a bribe. If an architect is interested in a church or chapel, there is no reason why he should not send them a donation; but let it be done after the competition is decided, so that the purity of his motive may not be impugned. By the way, I would recommend the secretary of this building committee to write to the F.R.I.B.A. in question for some help towards the building fund, and to forward you Mr. ——'s reply, with a note as to the amount of the cheque that will, of course, accompany it.

The metropolitan valuation for assessment purposes takes place every five years, and the time for the revision of the valuation is again near at hand. In view of its approach, the County Council are taking measures for the examination of all the assessments in the metropolis, with a view to their being applied on one equitable principle all round. Many houses are greatly undervalued in consequence of the dishonesty of the landlords or the tenants, and some, no doubt, though probably few, are over-assessed. The richer districts especially are notoriously under-rated, and consequently they escape from the common burden in a double way, thereby increasing the infliction upon the poorer parts of London. The general result of a thorough examination of the assessments will be a considerable increase of assessment on an enormous number of houses tenanted by all classes. But it will, unfortunately, not stop with the ordinary public rates, for, as the water companies levy their assessment upon the rental, any increase in the assessable value adds to their already large gains!

The number of estates which have been brought to the hammer at Tokenhouse-yard lately has been unprecedentedly large, and the buyers have been unprecedentedly few. The estates have been scattered all over England and Scotland, with every temptation that romantic beauty or a picturesque and pleasant situation could give. Not even the Inverness-shire estate containing the famous Falls of Foyers commanded as much as a single offer, though, according to Christopher North, the Lower Fall is the most magnificent cataract in Great Britain. There was some bidding for several of the English estates exposed for sale, which lie in Hampshire, Hertfordshire, the Isle of Wight, and near Tunbridge Wells. None of the large properties changed hands, and only 200 acres in England found new proprietors. Investors are not merely afraid of the effect of the Budget upon landed possessions. If a man looks upon the graduated scale of estate duty as a mere thin end of the wedge, he will keep aloof from investments in land at present. Should the estate duty, as Tory landlords in the House have been arguing, compel owners to throw their estates, or portions of them, into the market, the effect will naturally be to pull down the average of value. But, besides this, there is gradually growing in the minds of men of all political opinions the conviction that the days of the private landowner in England are numbered.

The inhabitants of Toronto, I see, are boasting that they now possess the highest chimney in Canada, and one of the highest on the American continent. It has been built for the Toronto Street Railway Workshops, and has an elevation of 250 feet. But they have not the highest chimney in the world, nor, for the matter of that, has America. That honour, I believe, belongs to Scotland. The Townsend shaft at Port Dundas is said to be 468ft. high, and to be the highest in the world, the chimney of the St. Rollox Chemical Works being 12½ft. lower. The highest American chimney is at Brooklyn, and has an elevation of 300ft. America, it will be seen, is far behind the Old World in respect of these municipal decorations.

Electric lighting in Australia has received much attention. It is a good omen for the success of the movement that the New South Wales Parliament have thrown out every Bill promoted by private companies to light Sydney by electricity, because they think that such powers ought to belong solely to the corporation. The progress of the electric light in these cities of Australia is seen by reference to a report to the Adelaide City Council by Mr. George Anderson, C.E., of that city. According to that report, the corporation of Melbourne have an Act empowering them to light the streets; the necessary buildings are finished, and the plant has arrived. The gas-lamps will be extinguished. Several hundreds of pounds are expected to be saved out of the cost of the present lighting. In all the busy streets of the city electric lights are used, besides all the principal shops and many of the public buildings. In Sydney similar progress is recorded, where the main streets, wharves, railway stations, arcades, theatres, hotels, refreshment-rooms, and shops are all lighted by electricity. All the installations are in the hands of private individuals. Brisbane has also made a beginning now: Queen-street and its shops are lighted by a private firm.

The price charged in Victoria for an incandescent light varies from 6d. in some country towns to 1s. 6d. a week in Melbourne. In Sydney the price is 1s. per week, and in Brisbane, where there is no competition, the price is 1s. 9d. per week. On the average, the price is 1s. per week or 4s. per month. This price is about the same as gas at 5s. per 1,000, for the consumers are allowed to burn the light when and as long as they like. The incandescent light is equal to 20 candles, and the gas only between 17 and 18 candles. The report further states the plant at this price would soon (between four and five years) pay for itself. As the Swan patent runs out at the end of the year, the cost of incandescent lamps will be reduced from 5s. to 1s. 3d. each. It is stated that in Melbourne they are fitting up houses and business premises at from 16s. to 20s. per light, and the fittings are said to be handsome. For cooking purposes electricity is being also largely applied, and stewpans, frying-pans, ovens, &c., need only to be connected with a wire. As a motor for ventilating smoking-rooms, offices, &c., by revolving fans, electricity is much used.

Some disagreeable incidents have occurred in relation to the Health Congress to be opened next week by the British Institute of Public Health. This gathering was arranged under the auspices of the late Lord Mayor, Sir Stuart Knill, who attended last year a like meeting at Edinburgh. Sir Stuart Knill has, however, by a formal letter, withdrawn from all participation in the forthcoming Congress, as has also Mr. W. R. E. Coles. I see it is stated also that Mr. Ernest Hart, who had accepted the post of president of the Section of Municipal and Legislative Hygiene, has resigned, and declined to read his promised paper. A like course has been followed by Sir Spencer Wells, Sir Henry Thompson, Sir C. Cameron, Mr. Fletcher Moulton, M.P., Canon Barnett, Surgeon-General Ewart, the Mayor of Brighton, and other leading persons. The County Council of London, the Sanitary Institute, the National Health Society, the Royal College of Surgeons, and other public bodies invited to send official delegates have refused to do so. The Plumbers' Company of London, which had been announced as intending to give a banquet and reception, have passed a resolution refusing to do anything of the kind, and requesting that their repudiation of any such intention may be publicly announced.

I wonder whether the inhabitants of some of our West-end squares know what they sleep on? People talk about Mr. Buggins and his soft core foundations nowadays, but really I don't think he sins much more against the light than his respectable forbears who built the squares. Take Bedford-square, for instance. During some recent excavations for foundations in the rear of the houses on the south side, cesspools and pits have been discovered in joyous proximity, and whole cartloads of bullock's heads and horns have been unearthed. Was there a murrain, I wonder, in London in the days when Bloomsbury was unbuilt on, and were the condemned cattle buried *en masse* beneath the soil on which afterwards were erected the 18th-century mansions that our fathers not so long since vacated for South Kensington?

CHIPS.

Excavations are being made in the precincts of Peterborough Cathedral, by permission of the dean and chapter, with a view to tracing any existing remains of the original Saxon monastery which stood on the site of the present cathedral. A portion of the old Saxon church was discovered under the pavement of the south transept during the restoration of the centre tower of the cathedral.

At the meeting, on Monday, of the Halifax School Board, the plans prepared by Mr. F. J. Walsh, of that town, for the enlargement of the Mount School, at an estimated cost of £3,000, were adopted.

St. Thomas's Church, Stockport, was reopened on Saturday, after extensive alterations. The ceremony began with the dedication of a clock with four dials and a peal of bells, presented as a memorial, and this was followed by the dedication of a new baptistery, a memorial window to the late rector, and other new work.

The latest report by the Board of Trade states that, as a whole, the building trades are scarcely so well employed as before, and local disputes continue to disturb these trades. The percentage of unemployed members of Unions has risen from 3·3 to 3·5. The furnishing and wood-working trades show a decline in most branches, the returns of unemployed members from Unions connected with these trades giving the percentage as 4·4 compared with 3·3 for May.

The Lewis Trustees have offered to convey to the corporation of Manchester 19 acres of land at Barnes Green, Harpurhey—purchased by them at a cost of £8,000—on condition that it is laid out as a public recreation ground. The city council has accepted the gift.

A very large clock has just been erected at St. Thomas's Church, Stockport, as a memorial to the late Mr. Alderman William Smith. It has four illuminated dials, strikes the hours, and chimes the Cambridge quarters. The whole of the work has been carried out by Messrs. John Smith and Sons, Midland Clock Works, Derby.

Building Intelligence.

Ampleforth.—The foundation stone of the new monastic buildings for the community of Benedictines at Ampleforth was laid on Tuesday week. The portion of the present buildings dates from 1802. The plans provide for the complete reconstruction of the monastery, retaining only the present college buildings. The portion of which the foundation stone was now laid will contain cells for about twenty-four monks, together with the prior's rooms, calefactory and lecture rooms. In due course of time, as funds will permit, it is proposed to build the west wing at right angles to the section already commenced, and this is to contain libraries and additional cells. The probable cost of the section is estimated at about £10,000 or £11,000.

Berkhampsted.—The foundation-stone of a new chapel, a portion of the buildings now being added to Berkhampsted School, was recently laid by the Countess Brownlow. The extension will face Castle-street, and will include, besides the chapel, chemical and physical laboratories and a lecture hall. The chapel, which forms the centre feature of the new quadrangle, is to be Late Perpendicular in style. The walls are faced externally with Leverstock red bricks, with windows, doors, and arches of Bath stone. The roof will be covered with Staffordshire tiles. Internally the chapel will measure 100ft. by 25ft., and will provide accommodation for 320, in addition to a choir of 40. A feature of the building will be the great height of the chancel floor, which is approached by a flight of 12 steps, extending nearly the whole width of the chapel. This will afford space underneath for large vestries. At the south-east corner will be an octagonal stair turret, to give access to a western gallery, whenever that may be needed. There are two short double transepts, one built over the choir vestry, and the other over part of the western cloister. The chapel will be lighted by ranges of three-light traceried windows of varied design, by a large west window, and a seven-light window over the reredos. The roof will be open-timbered, with richly traceried principals over the chancel steps and sanctuary. The nave will be laid with wood block flooring, but for the sanctuary steps and floors Devonshire marbles will be used. The chapel and vestries will be heated by hot water. A flèche will rise over the intersection of the transepts and the chancel roofs. The cloister, on the western side, will extend to the new laboratories and lecture room now building, and give access, under cover, to the gymnasium. The lecture room, which stands between the chemical and physical laboratories, measures 36ft. by 24ft., and will have a raised gallery to accommodate 120 students. The physical and chemical laboratories are each 26ft. by 24ft. They are all lighted from the top by gable windows and dormers in the roof. The buildings are being executed from the designs and under the superintendence of Mr. Charles H. Rew, of Great Berkhampsted. The general work is being executed by Mr. David Osborn, of High-street, Berkhampsted. The masonry work is being done by Mr. F. Martin.

Central Foundation Schools of London.—The new wing which has been added to the Cowper-street Schools, City-road, was opened last week. The work has been carried out from the designs of Messrs. Chatfeild Clarke and Son, at a cost approaching £3,500. Towards the outlay on the fittings a grant was made by the London County Council. Sir Henry Roscoe, in declaring the new building open, said he had seen a great number of laboratories all over England and on the Continent, but he had never visited any better fitted for the purpose in view than theirs.

Coxlodge, Newcastle-on-Tyne.—A commencement has been made with the enlargement of the Newcastle City Lunatic Asylum at Coxlodge. When the extension has been completed, the accommodation at the asylum will be doubled. The work now in progress in connection with the enlargement consists in the formation of the foundations, the construction of which has been intrusted to Mr. Ferguson, contractor, of St. Mary's-place, Newcastle. The cost of the foundations alone is estimated at from £9,000 to £10,000, while the total cost of the new building will not run far short of from £80,000 to £100,000. The architect is Mr. Dyson, of Grainger-street, Newcastle, whose plans were selected in competition.

Holborn.—The Duke of Bedford laid on Tuesday the foundation stone of the new public library to be erected in High Holborn. The site is situate on the south side of High Holborn at its junction with New Oxford-street. It adjoins the offices of the Board of Works for the St. Giles district, from which authority the freehold was purchased for £3,000. The site has a frontage of 37ft. on all the floors except the ground floor, where the frontage is 27ft., with a uniform depth of 57ft. It abuts on a passage known as Green Dragon-yard, from which light can be obtained to the rear portion of the premises. The building will contain on the basement a boys' reading room, assistants' room, bookbinders' workshop, and storage; on the ground floor, a newspaper room, with a superficial area of about 820ft., and a lending and reference library. The elevation towards High Holborn will be faced with Ancaster stone. The cost is estimated at £6,440. Mr. W. Rushworth is the architect, and Mr. W. Boyce the contractor.

Kilkeel.—On Tuesday week the foundation-stone of a new Presbyterian church was laid at Kilkeel, Belfast. The style of the structure will be Gothic, and the entrance will be at the west end through a vestibule running along the front, pierced by three pointed arches forming an arcade. The tower rises from the north-west. The building will seat 200 persons, and the cost has been £2,000, including vestry and session-room at the east end. The architect is Mr. David C. Salmond, of Cardiff.

Metropolitan Asylums Board.—Messrs. A. and C. Harston, 5, Leadenhall-street, on the recommendation of the committee, have been appointed architects for the imbecile infirmary, to accommodate 1,320 patients, which it is proposed to erect on the Tooting Lodge Estate. It was also agreed to adopt the plans prepared by Messrs. Pennington and Son, architects, for the erection of five two-storied pavilions for fever and diphtheria patients, and one block for isolation cases at the North-Western Hospital. These six pavilions, which will accommodate 226 patients, at a cost of £43,500, will take the place of the existing temporary wards erected nearly twenty-five years ago, and now in a very dilapidated condition. The construction of the fifth or lowest ward will be deferred pending the settlement of the plans for the proposed ambulance station adjoining the hospital.

Newfoundland.—By a disastrous fire the fine cathedral at St. John's, Newfoundland, only erected eight or ten years before, was totally destroyed by fire in July, 1892. The building had a nave and aisles of six bays, Early English in style, and a square-ended choir of four bays, this portion being of fully-developed Decorated character. Both were designed by Sir Gilbert Scott, modified since his death under the direction of his son, Mr. Gilbert Scott. Great efforts are being made to rebuild it, but funds are low, and a debt of about £10,000 still exists upon the destroyed building. The rebuilding of the choir is so far complete, however, that it is hoped by the end of the present year it will again be ready for service. The re-erection is being superintended by Mr. J. W. Wills, originally of Totnes, who represented the late Sir Gilbert Scott, R.A., during the building of the original structure. An offering has just been made for the choir by Mr. John Withers, the organist of Newfoundland Cathedral. It is a large and massive eagle lectern, standing over 8ft. high, with a platform for the reader. All is carved in English oak, and is a replica of the original lectern designed by Sir Gilbert and consumed in the conflagration. The completed work left Exeter for its destination across the Atlantic last week, having been made in the studios of Messrs. Harry Hems and Sons, at Longbrook-street in that city. The original cathedral was illustrated in the Building News of September 18 and October 30, 1885.

Sheffield.—The members of the Sheffield Society of Architects and Surveyors met at the new Town Hall, on Monday, at the invitation of the architect (Mr. E. W. Mountford, of London), to be shown over the building. The plans and details were explained, as well as the materials and the manner of using them. There was a number of visitors, who were divided into parties and conducted over the building respectively by Mr. Mountford, the architect; Mr. Scales, the clerk of works; and Mr. Robson, the contractor's manager. Many questions were asked, and freely answered, and the various arrangements and details of the building were commended. A sample of one of the inside doors, which had been set up in oak, attracted considerable attention, and the hope was expressed on all hands that the City council would adopt it and the other items suggested for the permanent improvement of this building, which should be a credit to the city. It would be a source of regret afterwards to find that, for the sake of a false economy, this fine building had been spoilt for a comparatively insignificant saving. Mr. C. J. Innocent, hon. secretary, proposed, and Mr. Joseph Smith seconded, a vote of thanks to Mr. Mountford and his staff. Mr. Mountford, in responding, remarked that, with respect to the items which he had suggested for the internal finishing of the building, it had been stated as a reason for not adopting them, that to do so would be unfair to the other architects who competed; but he had to-day, from Mr. Gibbs and others, that such was not the view of the architects of Sheffield. The building was thoroughly British, from the steel of the joists to the marble decoration of the walls.—Operations are now proceeding rapidly. The Surrey and Norfolk-street portions of the building are nearly complete, so far as the outer work is concerned; satisfactory progress is being made with the Council Chamber section, and the erection of the front in Pinstone-street, where nothing has been done for a considerable time, is to be at once resumed. The contractor has now about 200 men engaged, and of these about 80 are masons. The work has been retarded in consequence of the scarcity of masons. At no time have the services of a sufficient number been obtainable, but the contractor now hopes that the Surrey-street part of the building will be finished by the end of the year.

CHIPS.

A new mission-room at Bridge-street, Tredegar, was opened on Sunday. The builder was Mr. David Morgan, of Tredegar.

Ford Madox Brown's cartoon of "The Body of Harold brought to the Conqueror," a canvas 15ft. by 13ft., which was submitted at the competition for the decoration of the Houses of Parliament in 1844, has been presented by a committee to the South London Fine Art Gallery in Peckham-road.

Herr Bruno Piglhein, the well-known German painter, died at Munich on Sunday. The deceased, who was born at Hamburg in 1848, studied sculpture in that town and at Dresden. He subsequently visited Italy.

Alterations are being made to the Fever Hospital, Neath, including the ventilation, which will now be carried out on the Boyle system, the latest patented improved form of self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

The Western Schools, North Shields, for the Tynemouth School Board, are being warmed and ventilated throughout by means of Shorland's patent Manchester stoves and patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester, the patent Manchester stoves previously supplied to these schools having proved very satisfactory.

The Bible Christian chapel trustees have appointed Mr. J. W. Trounson, of Penzance, their architect for the enlargement of the society's chapel premises, at Madron, Cornwall.

The Bill of the London, Brighton, and South Coast Railway for duplicating their line between Croydon and Redhill has passed through all stages in both Houses of Parliament.

The last of the important picture sales of this season took place on Saturday, at Christie's, when the collection of Caroline, Duchess of Montrose, was brought to the hammer. The prices realised did not range high, the most noteworthy ones being 4,400 guineas for Reynolds's portrait of Mrs. Mathew, the patroness of Flaxman, and 3,100 guineas for a portrait of Madame Le Brun, by Gainsborough. The pictures realised £15,422, and the porcelain and china a further sum of £1,283.

A new stained-glass window, which has been placed in the chancel of St. John's Church, West Bromwich, was dedicated on Sunday. The window forms one of a series representing the burial and resurrection of Christ. The work was executed by Mr. S. Evans, of West Smethwick.

The small prayer-book of Queen Elizabeth, bound in gold and enamelled, previously in the Barclay Field collection, has been acquired by Sir A. W. Franks, who has permanently lent it to the British Museum, to be placed in the Gold Room.

Correspondence.

THE TOWER BRIDGE.

To the Editor of the Building News.

Sir, — Your correspondent "A. R. I. B. A." may be a very eminent architect, and an equally eminent engineer; but, inasmuch as I have watched the construction of the Tower Bridge from the commencement, have most of the available literature and published drawings of the work, and also taken a deep interest in its progress and completion, his assumption that I am not at all conversant with my subject suggests an impertinence which perhaps he did not intend.

If, however, he will do me the justice to carefully re-read my letter, which from his remarks he does not appear to have done, and will then take the consensus of opinion of the Art section of the Institute under whose initials he shelters himself, I think he will find that the conclusion to which they will come is that the engineering spoils the architecture.

If this does not satisfy him, he may then go to Great George-street, and ascertain the views of the Civil Engineers, and I think he will find that their verdict will be that the architecture spoils the engineering.—I am, &c.,

Ellis Marsland, Hon. Sec.

Society of Architects, St. James's Hall,
Piccadilly, W., July 13.

PRESENT COMPETITIONS.

Sir,—I beg to draw attention to the two following competitions recently advertised in your columns. The conditions of the competition for a public hall and offices, &c., at Cleethorpes, state that the cost is not to exceed £2,000. The accommodation required, as set forth in the instructions, will necessitate a building containing at least 200,000c.ft., which, at 6d. a cubic foot—a very moderate estimate for this class of building—will amount to £5,000. The sum mentioned in the conditions does not allow quite 2½d. per cubic foot, a price at which it is obviously impossible to erect a building of the kind required.

The second case is that of the Weston-super-Mare market competition, the conditions of which state that the cost of the building is not to exceed £4,000, and the first premium of £30 will merge in the architect's commission, which is to be five per cent. on the amount of the contract, and to be payment in full for all the usual services, including travelling expenses, &c. The architect is also to provide a bill of quantities, for which no further remuneration is offered. The five per cent. commission would amount to £200, about one-third of which, say £60 to £70, would probably go in office expenses, a further £50 or £60 in travelling and hotel expenses (for a London architect, or one at any similar distance), and two per cent., or £80, in quantity surveyor's fees, leaving no profit whatever, nor means of livelihood for the successful (?) architect, to say nothing of the out-of-pocket cost, inevitable in all open competitions, to the profession generally, or those members of it who are misguided enough to complete under such conditions.

Can nothing be done to prevent such unfair treatment of the architectural profession, besides the obvious remedy one has in one's own hands of not going in for such competitions?—I am, &c.,

July 12. A Would-Be Competitor.

COMPETITION FOR THE LLANDUDNO MUNICIPAL BUILDINGS.

Sir,—On behalf of the architects who sent in designs for this proposed new building, may I ask you to insert this letter in your paper?

I suggest that some inquiry be made of the Improvement Commissioners as to what they propose to do in this matter. The designs were sent in on the 31st of May, and it is not unreasonable for the competitors to expect an assessor to be appointed and give his award within six weeks of the delivery of the designs.

If report is true, the several packages of designs are still at the offices of the Commissioners untouched, and, for the matter of that, unthought of. I think the Commissioners should be reminded of their duty towards the architects who have spent at least a month or six weeks of their time, probably with their staff, in preparing these designs, which is no small matter.

It is difficult for a competitor to take any steps personally, and, therefore, the only thing for him to do is to write to the Press.—I am, &c.,

A Competitor.

ASSISTANT SURVEYORS, WAR OFFICE.

Sir,—As an examination for the above has been officially announced, and you were good enough last year to allow assistant surveyors to air their grievances, I trust you will permit me to again warn intending candidates, perhaps more precisely, of what they must expect in the service.

The clause, "each successful candidate will accept his appointment subject to the express condition that the staff of the Department is liable to reorganisation from time to time, as the interests of the public service may require, and that no claim for compensation on his behalf can be admitted if such reorganisation shall in effect reduce the number, or alter the conditions of superior appointments in the Department," was introduced in the year 1893, after numerous complaints from gentlemen who entered the service previous to that date with definite conditions held out to them concerning the reduction of the standard numbers of the upper classes from 11 for the first class and 22 for the second class to 9 and 18 respectively.

The insertion of this clause was tantamount to admitting a real grievance; but the authorities have persistently refused to recognise it, and have definitely taken away from the majority of these gentlemen the ultimate prospect, under the original strength of the staff, which was unreservedly held out to them, of reaching £500 a year. Such conduct in an individual employer would be questionable; but the military authorities are aware how Quixotic it would be for individuals to go to law with the Crown. Military officers are bound by the legal decision laid down in the Manual of Military Law that "every officer in the army is subject to the will of the Crown, and can be removed and put on half-pay or dealt with as the Crown, with a view to public convenience, thinks best"; but these gentlemen, as civil servants, did not thus place themselves unreservedly at the mercy of the Crown; the new clause cannot be retrospective in their case, and I doubt whether it can be legally applied to any civil servants. It is, therefore, the duty of the civil authorities, who are paramount, to take a proper legal opinion in the matter as to whether these gentlemen should not be compensated for their very substantial losses. Such a serious matter should not be decided by the military authorities, who, as military men, are prejudiced by their own military law, which is not applicable to civilians. I hinted last year that appeals do not always reach the Secretary of State for War, so that the public Press is the only medium through which these gentlemen can obtain a hearing and place the matter before public opinion.

Presuming no further reduction of the superior appointments takes place, under the present conditions an assistant surveyor would take about 18 years to rise from the bottom of his class into second class, and another 12 to reach the first class, or 30 years in all to reach the ultimate prospect of £500 a year. If he enters at 25 years of age he will never reach that prospect, and if at 21 years of age he may enjoy it for four years.

The reduction of the staff is due to the fact that the R.E.'s created quartermasters—who do not perform the duties of quartermasters—for the Department, with the object of ousting surveyors; and to satisfy the Treasury it could be done without expense, they do it at the expense of the surveyors. The cutting down has not ended, as this year's estimates only provide for 17 second-class surveyors as against 18 for last year. The dawn of a better system is being suppressed, and the object of the Playfair Commission is about to be defeated; the R.E.'s, for their own ends, are endeavouring to drift back into the old system of nominating those who will suit them—the old system which has brought barracks into such a state of discredit that it is now necessary to expend £4,000,000 to place them in a proper condition. The R.E.'s have shown the Government a cheap, but perhaps not a straightforward, way of getting a superior class of men to compete, and should it lose this class, and another 70 years of R.E. sway require another £4,000,000 for the same purpose, both they and their quartermasters will prove dear at the price.

Colonel Dawson Scott, R.E., said before the Commission of 1887 that a first-class surveyor was necessary for the Dublin district, and a second-class surveyor for the Cork district. Why does a second-class surveyor now work the former district, and an assistant surveyor the latter? Has the work grown less arduous in the face of the great expenditure on barracks in these districts?

Why are temporary men employed at a higher remuneration than those of the permanent staff? Have they proved satisfactory? I think not. An inquiry into the expenditure on barracks would reveal very strange matters.

Now that I have shown the drift of affairs, I revert to the treatment the successful candidates will have to undergo.

They must come prepared to find the officers under whom they are placed calmly appropriating their work and signing for it, without doing anything themselves. They must expect scarcely any leave of absence, as they will have to make up for work accumulating during that time; there is no reserve of surveyors to take their places for the time being. They will find themselves excluded from the society of gentlemen, and will be treated in the light of non-commissioned officers by commissioned officers, as they are influenced by the R.E.'s; the latter adopt this policy to prevent the true state of affairs from leaking out. They will not be able to repress the undue familiarity of non-commissioned officers. If they enter barrack rooms they will be subject to any remarks Tommy Atkins may think fit to make, and his language is not choice if he has first stood to attention, and then finds he has made a mistake in so doing. They will be subject to many moves from stations; some surveyors have been moved three times in one year. This is expensive for married men, who may lose £60 for one shift. When ordered on foreign service they must pay the passage of their families, which may see them £150 out of pocket. In the colonies their isolation will be complete, for in such places English society is influenced by military officers, who will not hesitate to traduce them to the civilian element. If married, their wives will be left severely alone. A more perfect system could not be invented to develop any inherent weakness of character, such as melancholia, drink, or general recklessness.

I endured the system for many years, and as candidates are not fully warned of the true state of affairs, I venture to do so with the hope of sparing some gentlemen a great deal of future pain and disappointment.—I am, &c.,

One Who Was In It.

VENTILATION OF SEWERS.

Sir,—Amid the many fallacies on sanitary matters which we read of from time to time, it is refreshing to see that at last some light is breaking into the theories of medical officers of health and of sanitary surveyors, as shown by Dr. F. W. Clark's report on the "Ventilation and Flushing of Sewers," noticed in the Building News of 13th inst. Dr. Clark appears to me perfectly correct when he maintains "that the less the movement of the air of sewers, the fewer disease germs that will be carried into the outer air." One might have thought that common sense would have suggested this years ago. How these germs get into the air of sewers is not so obvious.

Nägeli, of Munich, and Dr. Carnelly, of Dundee College, showed that micro-organisms do not quit water for the air above it, and there is not the smallest shadow of proof that they are carried up by bubbles of gas. It is by the assistance of dried particles of sewage, which hang to the sides of the sewer manholes and edges of surface-gratings, when detached by currents of air during the so-called ventilation, that the atmosphere is polluted.

It is a mistake to suppose that the air from sewer gratings or ventilating shafts is immediately dissipated on entering the atmosphere. It is not so until its specific gravity and velocity become nearly that of the air through which it is passing. During some London fogs, persons on the footpaths of the streets opposite ventilating gratings may be seen enveloped in a cloud of moist, warm air, which has escaped from the sewer, and which hangs about for a considerable time. The same, I have no doubt, occurs on the roofs of houses to which are attached ventilating pipes from the sewers. The sewer-air, charged with disease germs, would then find its way under the slates, and foul the water-cisterns usually placed under the roof.

It is now admitted by nearly all competent authorities that enteric—*i.e.*, typhoid—fever is caused by living organisms, chiefly located on the glands of Peyer in the intestines. Eberth and

Gaffkey have described what they considered the organisms causing enteric fever to be, and they are conveyed from the patient to other human bodies by the bowel discharges getting into the food, either solid or liquid, or possibly into the mouth directly from the atmosphere, and from thence into the alimentary canal. Is it not therefore common sense to suppose that the most effectual way to prevent infection is to seal up the bowel discharges after they have left the patient, or by destroying them directly in an incinerator; or, if passed into a sewer, that it shall be so closed as to prevent the possibility of any fæcal matter finding its way again into a human body? Unfortunately, the practice of most persons calling themselves sanitary engineers is directly the opposite to this, for with the assistance of the wind and induced currents of air, they do their best to evaporate the sewage into the atmosphere. A practice of over thirty years in sanitary engineering under the Government, and a study of bacteriology long before nine-tenths of the present medical officers of health knew even what the name meant, enable me to pronounce the system of ventilating sewers into the streets or by shafts up the sides of dwelling-houses as pernicious, and that it deserves severe condemnation, for, to my own knowledge, cases of enteric fever have been traced directly to this cause.—I am, &c., J. T. Hurst,

Late First-Class Surveyor, War Dept.

PARLIAMENTARY NOTES.

A Statue of Cromwell.—Mr. Everett asked the First Commissioner of Works whether he could arrange to add a statue of Oliver Cromwell to those of the other historical personages whose statues now enriched the precincts of the House.—Mr. H. Gladstone: The statues erected at the public expense in the Palace of Westminster were, generally speaking, selected in pursuance of recommendations by the Fine Arts Commissioners. In their fourth report is a list of distinguished men recommended for selection by a committee of that body, who included Cromwell in a separate schedule of names for which they were not unanimous. William III. was put in the same category; but his statue has since been placed in Westminster Hall. Probably hon. members would be glad to see a statue of Cromwell, equestrian or otherwise, within or in the neighbourhood of the House. There is no money at present available for this purpose, but I shall be glad to consider the matter.—Mr. Darling asked whether the statue of this eminent man was omitted from the list because he was an owner of racehorses.

Dyce's Frescoes.—Sir J. Goldsmid on Friday last asked the First Commissioner of Works whether he was aware that Dyce's frescoes in the Queen's robing room were in very bad condition, and that steps should be taken to prevent further decay, and whether he would appoint a small committee of experts to advise him upon the subject.—Mr. H. Gladstone said his attention had been called to the condition of the frescoes and other paintings in the Houses of Parliament, and he was now in communication with Sir F. Leighton on the subject.

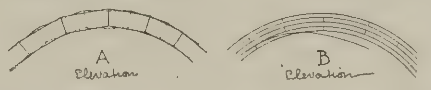
London Streets and Buildings Bill.—This Bill came before the House of Commons on Monday, when it stood for consideration after having been dealt with by a hybrid committee. Mr. Stuart moved that certain standing orders be suspended, and that the Bill be taken into consideration. Mr. Howell moved the rejection of the measure, on the ground that its subject matter ought to have been dealt with in a public rather than a private Bill. An exception to the general rule ought not, he considered, to be made in favour of the London County Council, if only for the reason that any who were prejudiced by this Bill could obtain redress only by the costly machinery of private Bill legislation. In the committee this Bill had been shorn of some of its worst features. As it was introduced, the Bill would have given the County Council power to make by-laws irrespective of the provisions of the Bill itself. Mr. Stuart Wortley and Mr. Cohen joined in the appeal that this Bill should not be further delayed. Mr. Shaw Lefevre thought it would be a great pity if this Bill, after all the labour devoted to it, were rejected. The amendment was negatived, and other amendments, proposed by Mr. Weir and Sir Charles Dilke, having been withdrawn, the Bill was read a third time.

A new hydropathic establishment is being provided at Askern, Yorks, where two large buildings, formerly used as schools, are being converted for the purpose, so as to accommodate between 50 and 60 visitors. Alderman B. Stocks, of New-street, Huddersfield, is the architect of the institution, which was formally opened by the Mayor of Huddersfield on Saturday.

Intercommunication.

QUESTIONS.

[11181.]—**Wood Beam.**—Which is the stronger method of constructing a wood beam, built up as at A or laminated as at B?—Lufia.



Legal.

COMPULSORY COMPENSATION.

THE Lands Clauses Acts provide for the payment of proper compensation to those parties whose property is taken from them under the compulsory powers of some statute and for public purposes. In a recent case (*Times*, June 19), the London School Board had taken over the house of a solicitor named Scard, living and practising at 48, Blackheath-road, Greenwich, of which premises he held a lease. In his claim he asked for £250, the value of the remainder of his lease, and a substantial sum for loss of business by removal, which, however, had been reduced as the claimant had been able to secure another house in the same street before his case came on before the Sheriff. He also put in a special item for loss of access to the river. The Under-Sheriff left as questions of value upon which the jury should give their verdict: the leasehold interest in the old premises; an agreed sum of £25 for removal and readjusting his office; then loss of business by being disturbed and having to go elsewhere; and, finally, loss of access to the river as one of the amenities of his old residence. In the result the jury found a verdict for £523 in one lump sum and without saying in any way how it was made up.

The School Board now came to a Divisional Court practically by way of appeal, but formally to set aside the whole inquisition, becauee there was no way of saying how far the verdict was wrong, as the amount was not divided. If any portion of it was erroneous, the whole finding must be quashed. The Court held that the sum allowed for the loss of the remainder of the lease of the premises included any compensation that could be claimed for loss of access to the river. This could not be allowed twice over. As to the lease, it was only for 14 years, 13 of which were unexpired, at a rental of £40. One side said this was its full value; the other that it was worth £50, so that there was a loss of £10. As to compensation for loss of business, there had been little evidence of that, and it could not be said to be very serious, as he had obtained another house in the same street. But on the ground that the Under-Sheriff was clearly wrong in leaving the item of loss of access to the river as a distinct head of damages instead of including it in the loss of the lease, the Court had to set aside the whole verdict, as the sum could not be divided. As a result, unless compromised, the inquiry must be heard over again, and all costs incurred so far are wasted. Fred. Wetherfield, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

J. W.—Agreement.—Validity.—The agreement is perfectly valid though continued on separate sheets of paper fastened at the corner. But if this course is adopted, it is better to initial each sheet when signing at the end to prevent subsequent dispute. Wills, even, are often engrossed in this way, and then each page should be signed.

The alterations at York Cottage, Sandringham, which include the addition of several new bedrooms and a complete set of nurseries, are now almost complete. Col. Edis met the Duke of York there on Wednesday for the purpose of advising as to the character of the furniture to be used.

Major-General Crozier, R.E., held an inquiry, at the Council House, Bristol, on Tuesday, into an application by the city authorities for power to borrow £37,500 for works of wood-paving in the principal streets of the city. Messrs. F. Ashmead and T. H. Yabbicom gave evidence in support of the proposal.

LEGAL INTELLIGENCE.

What is a New Street?—Bethnal Green Vestry v. Button.—Mr. Justice Mathew heard on Monday an action brought by the Vestry of St. Matthew, Bethnal Green, to recover £162 from an owner of property for the paving of Dagnall-place, E., under the provisions of 18 and 19 Vict. cap. 120, section 105, and 25 and 26 Vict. cap. 102, section 112. The defence was that Dagnall-place was not a "new street" within the latter Act, and that the vestry had taken it over by doing work. For plaintiffs, it was contended that in 1856 the street was sewered by the parish, who also did whatever was necessary to reinstate the street whenever the gas or water companies had occasion to open it up. The street was never paved; but in 1867 a Mr. Munday was appointed surveyor, and without any authority caused some cobbles to be laid down. It was submitted that this was not evidence—that the street had been "taken over before August, 1862." Mr. George Bainbridge, examined, said he was connected with the vestry from 1856 to 1866 as surveyor, and previously under his father, who was also surveyor. No work was ever done by the vestry in Dagnall-place, as it was always considered private property. Mr. Barratt, the present surveyor, William Stone, the road foreman, and Timothy Crawley, a paviour in the vestry's service since 1856, gave evidence. For the defendant, it was argued, first, that Dagnall-place was not a "new street," and secondly, that the vestry were estopped by Mr. Munday's act in 1867 from making any claim now. Mr. Reuben Button, the defendant, said he had known the place since 1846. He bought his property in 1861. It was a thoroughfare until 1862, when it was closed with the vestry's permission. As far back as 1856 he could remember the street being rough paved with cobbles. In 1861 the vestry paved the channel at their own expense. Mr. Justice Mathew, in giving judgment, said the defence had been made out, and there must be judgment for the defendant, with costs.

A Building Question.—The St. George's Local Board v. Ballard.—This case was tried before Mr. Justice Lawrance at Bristol, and on Saturday last he gave judgment in it. Mr. Justice Lawrance said that the defendant was the owner of some houses in Providence-place, Church-road, Bristol, in front of which was a footpath 8ft. wide, and in addition a plot of land which was formerly used as garden ground by the occupiers of the houses in Providence-place. The defendant proposed to build three houses upon this land, and for the plaintiffs an injunction was asked to restrain him from so doing, upon the ground that to do what he proposed to do would be to infringe the by-laws of the board. One of these said that any person who should make a new road of more than 100ft. long should be bound to provide a carriage road 33ft. in width. The question was whether what defendant proposed to do amounted to constructing a new road within the meaning of the by-law, and, upon the facts proved at the trial, he came to the conclusion that it did not, and, therefore, that the plaintiffs were not entitled to the injunction they asked for. Judgment for the defendant with costs.

In re James Smith, Bankrupt.—This was a sitting for public examination before Mr. Registrar Linklater on Tuesday, under the bankruptcy of James Smith, described as a potter, of 50 and 51, Lime-street, City, and also of the Canal Potteries, Old Kent-road, trading as "Thos. Smith and Co." The accounts showed gross liabilities £92,499, of which £52,310 were expected to rank, with assets estimated to produce £28,858. The debtor attributed his failure to want of capital from the beginning of his trading necessitating borrowing money at interest, but the Official Receiver states that it appears to be mainly due to losses and liabilities on accommodation bills, loss on trading, and to his drawings for household and personal expenditure. In the course of his examination the debtor stated that the business was originally established by his father, and was formerly carried on under the style of the "Original Lambeth Potteries" at an address then known as Princes-street, Lambeth. His father died in 1854, and some years subsequently he entered the business as manager on behalf of his mother. The premises were eventually taken over by the Board of Works, and the Thames Embankment was constructed on the site. About that time he entered into partnership with his brother, Thomas Smith, and they carried on business at the Canal Potteries, Old Kent-road. The capital of the firm was £10,300, comprising chiefly borrowed moneys, he introducing £1,200 only. The partnership continued until 1883, when it was dissolved, the debtor paying a certain amount to his brother's creditors, and agreeing to allow him £5 per week. He then took over the business as a going concern, and became liable for all the debts of the firm. No statement as to the position of the business was made out at the date of the dissolution, but the liabilities had all been discharged. No valuation of the business assets had been made since he first joined the concern, and no statement of affairs had been prepared. At the date of the dissolution it was estimated that he had a surplus of assets on paper of £6,500. He had never introduced any more money into the business; but from the time he commenced he experienced the want of further capital. Throughout his trading he had dealt with accommodation bills, and for many years past the business had been kept going by them; and during the past five or six years he had become very deeply involved in such dealings. The Assistant Official Receiver: Is it not a fact that your accommodation bill transactions during the 25 months preceding the date of the receiving order amount to no less a sum than £369,042? The debtor admitted that it was so. His accounts now showed £54,000 to be outstanding in respect of bills, of which only £4,154 represented bills accepted by himself. These transactions were carried on in connection with about twenty persons, who were mostly his customers. For the purpose of running these bills, he opened about five or six different banking accounts.—The Assistant Official Receiver: Did you inform the managers of the banks of the use you intended to make of the accounts?—The debtor said he gave them the list of his acceptors, and told them to make their own inquiries. He did not, in fact, tell them at the time the accounts were opened that the bills were accommodation bills.—The Assistant Official Receiver pointed out to the debtor that the bills included shillings and pence, and asked him whether these odd amounts were not inserted for the purpose of leading the banks to believe that they were all trade bills?—The debtor denied this to be the case, and explained that no doubt the shillings and pence were added because a particular sum had to be made up.—The Registrar: I thought that would be the answer. There is no doubt they were put in with a view to sharing the plunder.—The debtor objected to the word "plunder." — The Registrar: I call it "plunder" when you obtain money from banks upon bills without informing the managers that they are accommodation bills.—At this point the case was adjourned until Tuesday next.

District Surveyors' Powers —Mr. A. J. Hacks, builder, of Dalston-lane, was summoned at the North London Police-court on Wednesday, at the instance of the London County Council, as the owner of a temporary building and workshop abutting on Sylvester-road, Hackney, which the district surveyor had certified to be in a dangerous condition. Mr. Godfrey represented the Council. Mr. Legg, the district surveyor, said that the defendant was building in Sylvester-road, and a temporary erection he had put up as a workshop and store had been partially destroyed by fire. The remaining portion of the building was charred to such an extent that it might fall at any moment. The defendant, who seemed indignant at being summoned, said it was not a building, and Mr. Legg's "jurisdiction" did not extend to it.—Mr. Bros: Why?—Defendant: Because it is not in a public thoroughfare; it's in a private road.—Mr. Bros: I may tell you that his jurisdiction extends to a dangerous building anywhere. Defendant: I suppose, then, if I put up a clothes-prop which was three inches out of the perpendicular, he could compel me to take it down.—Mr. Bros: Don't make absurd remarks. This is a building.—Defendant: It's four props.—Mr. Legg: With a roof on them.—Mr. Bros: I shall make an order for you to take down the building, in accordance with Mr. Legg's directions, in three days.—Defendant: Then he will have to take it down himself.—Mr. Bros: And you will have to pay what it costs.

STATUES, MEMORIALS, &c.

Bristol —The statue of Edmund Burke, presented to the city of Bristol by Sir W. H. Wills, Bart., will be unveiled by Lord Rosebery on September 19. Its location will be on the north side of St. Augustine's Bridge, where the foundation has already been constructed, and the contract for the pedestal has been let to Messrs. W. H. Cowlin and Son, of Bristol. The statue is of bronze, and has been executed by Mr. Havard Thomas on the island of Capri, and cast by the cire perdue process at Naples. It is between 9ft. and 10ft. in height, and represents Burke in the act of addressing an audience, with the right arm raised, and the hand open. The head is uncovered, and the hair is worn long.

WATER SUPPLY AND SANITARY MATTERS.

Redruth Waterworks.—Formal sanction has been given by the Local Government Board to the loan of £9,500 for improving the water supply to the town of Redruth. A provisional order has been obtained for the acquisition of the necessary land for the storage reservoir. The engineer to the scheme is Mr. H. Bertram Nichols, C.E., of Birmingham, who is engaged by the local board to carry out the works.

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M. Jules Sainton, the Parisian portrait painter, died on Sunday, aged 64 years.

Our Office Table.

The foundations of the New National British Gallery, in the Grosvenor-road, Millbank, are now level with the roadway. Much difficulty was experienced in getting out the concrete foundations of the old penitentiary, on the site of which the gallery is being built; but now that this has been surmounted, there is nothing that is likely to retard the future progress. A broad flight of steps will lead to the main entrance, the treatment of which will be brought out in strong relief by pavilions at each end of the building. Over the central sculpture hall will be a massive dome. The gallery will be practically finished in about two years, but sufficient ground has been acquired at the rear of the building to carry out a great extension if the trustees think it necessary. The gallery will have practically only one floor, so that top-lights can be secured in all the rooms, but a basement floor will be constructed for storage purposes. One of the principal features of the interior will be the huge central hall, to be devoted to sculpture, and its architectural appointments are likely to make it one of the finest specimens of its kind in London. It is just possible that the galleries will not be provided with any system of artificial lighting, as it is not thought desirable to open them of an evening.

The second annual meeting of the National Society for Checking the Abuses of Public Advertising was held last Friday, Mr. Alfred Waterhouse in the chair. Sir F. Leighton, who was unable to be present, wrote sympathising with the spirit which animated the Society. Mr. Bryce, Professor Foxwell, Sir Henry Thompson, and others had also written expressing sympathy with the objects of the society. The annual report, read by Mr. J. Richmond, one of the hon. secretaries, admitted that one class of disfigurement which the society desired to abate had in reality increased. Nevertheless, the council believed that progress of a substantial kind been made towards the ultimate accomplishment of the desired reform. Their efforts had at least made the regulation of spectacular advertising a public question. They did not, of course, take any credit for the welcome and most valuable declaration made by Lord Rosebery at the Academy banquet regarding the growing danger to English landscape, but it was hardly presumptuous to believe that the Prime Minister would not have made a public profession of his faith and his fears if they had not done something to prepare the atmosphere for the discussion of the topic as one of great urgency. Mr. Wyndham, M.P., moved the adoption of the report, and strongly supported the attitude of the society, which was one of attack against a growing evil. Mr. Fawcett seconded the motion, remarking that unless a check were put upon the growing evil, they might expect to see a sky-sign on Skiddaw and advertisements of pills on the dome of St. Paul's.

A proposed national trust for places of historic interest or natural beauty was discussed at a meeting held in Grosvenor House on Monday. Resolutions were carried deelaring it desirable to form a body which could hold such places on behalf of the nation, and authorising steps to be taken for its legal incorporation. A provisional council has already been formed, and a board will be constituted, consisting of councillors nominated by various bodies representative of the universities, the trustees of the National Gallery, the Royal Academy, and other councillors elected by the members of the association. Among those present were Sir Robert Hunt, Sir Frederick Pollock, Lord Carlisle, Lord Stanford, Mr. Watts, R.A., Mr. Poynter, R.A., and Miss Octavia Hill.

The terms of the Budget Bill have been revised, under pressure from Sir John Lubbock and others, so as to permit the Treasury to remit the Estate duty or any other duty in respect of any pictures, prints, books, manuscripts, antiquities, or scientific collections as appear to the Treasury to be of national or historic interest, and have been bequeathed for national purposes or to any university, county council, or municipal corporation. This modification of the duties is in accordance with common sense.

The town council of Dumbarton have under consideration the desirability of applying to the War Department for the custody of Dumbarton Castle. The matter is causing considerable commotion in the old burgh, and opinions differ as to whether or not the council would gain very much suppose they were owners of the rock and castle, while members of the county council of Dumbartonshire, at their meeting this week, frankly expressed their conviction that, negligent custodians as the Government have proved to be, the burgh authorities would prove even less amenable to public opinion. Most of the buildings are said to be in a dilapidated condition, and unfit for habitation, and that the expense of repair would be more than they are worth. This is said to be the real reason why the Government do not make further use of the castle.

The congress of the British Institute of Public Health begins on the 26th inst. The congress will be divided into five sections. In the first, "Preventive Medicine," there will be discussions on the spread of diphtheria; the dissemination of disease by river water, on which Professor Frankland, Dr. Shirley Murphy, Dr. Louis Parkes, and others will speak; the aërial diffusion of smallpox; school sanitation and hygiene; and workshop inspection, on which Mr. J. B. Lakeman will give an address. In Section B, "Chemistry and Climatology," there will be an exhibition of meteorological instruments and the apparatus used in food analysis, and discussions on air pollution, the bacteriological examination of water, adulteration, and sewage purification; and Section C will be "Municipal and Parliamentary," and among the speakers will be the Earl of Meath, Cardinal Vaughan, and the Hon. Auberon Herbert on "Municipalities and Popular Recreation," while the Chief Rabbi, Dr. Adler, will explain "Jewish Methods of Meat Inspection." Section D will deal with "Engineering and Building Construction," among the subjects being electric lighting, refuse and sewage disposal, and the construction of hospitals and artisans' dwellings. Section E will discuss "Naval and Military Hygiene." The opening meeting will be held in the Guildhall, when the Lord Mayor will attend, and Professor Smith, of King's College, medical officer of the School Board for London, will be inducted as president for the year. The sections will afterwards meet at King's College. Among the features of the congress will be the laying of the foundation-stone of the new hospital at Shooter's-hill, which is to be the largest fever hospital in the world; an inspection of the drainage and ventilation arrangements of the Houses of Parliament; and an exhibition of the work of the London School Board, including the instruction of the blind, dumb, and mentally defective.

The battle of the necessary dimensions for the projected reservoir on the Nile is proceeding merrily. Mr. W. Willcocks, the Director-General of reservoirs under the Egyptian Government, has written a long letter in reply to Mr. Hamilton Lang's strictures on the Assouan scheme, in which he gives details and figures to prove that his estimate of the irrigation requirements of Egypt were not exaggerated. He argues that to meet the needs of Lower Egypt at least a million and a half centimètres of water per day would be necessary, and that the quarter of a million centimètres of water suggested by Mr. Lang as adequate would simply be lost in the river between Assouan and Cairo, and never reach the Delta. He contends that according to the estimates of Mr. Brown and Mr. Foster, the Inspectors-general for Upper and Lower Egypt respectively, the annual yield of the land in Egypt will be increased by £12,000,000 if the full quantity of the water required is stored.

The library and museum of the archæological section of the Midland Institute, at Birmingham, have recently acquired some valuable local works. A collection of sketches and water-colour drawings, chiefly of local subjects, has been bequeathed by the artist, the late Mr. Allen E. Everitt. Miss Elizabeth Lines, of Worcester, has recently presented a unique and highly interesting collection of plans and drawings of earthworks, camps, and prehistoric stone monuments illustrating the early settlements in Wales, and the conquest of the western portion of this island by the Romans. These are the original sketches made by the late Mr. H. H. Lines, the donor's father. Mr. Wright Wilson, F.R.C.S., has enriched the library with some of the early volumes of "Archæologia," and the museum with proof impressions of Westley's engravings of Birmingham, six pieces of ancient Dutch stained glass, formerly in one of the windows of a Warwickshire church; and a series of forty medal dies, which cost upwards of £10,000, and are chiefly the work of Birmingham artists. They were prepared for the medals struck in 1820 by Sir Edward Thomason for James Mudie, of London, in commemoration of the chief British achievements from the settlement at Bombay in 1662 to the placing of the Ionian Islands under British protection in 1817.

It has often been suggested that public bodies should endeavour to arrange to have the internal painting of the buildings under their charge executed in the winter time, so as to provide employment for workmen during the months when work is usually slack. Nothing could be more desirable, provided reasonable precautions were taken to maintain a fair temperature in the rooms, and that the interests of the ratepayers did not suffer, as the members of this and other building trades are in excessive demand during a few months, followed by a long dull season of inactivity. The chairman of the Salford School Board stated, however, on Monday, that they had tried to make such an arrangement; but an inspection of the tenders sent in had, however, disclosed the fact that for the winter work the tenders were from 5 to 10 per cent. higher than the summer prices. Consequently, the Board have decided to adhere to the usual practice of having the work at all the schools done during the summer holidays.

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The local board of Farsley have finally adopted plans by Mr. Walker, C.E., for the sewering of the district.

The Estates Committee of the Birmingham City Council have resolved to recommend the council to take over the closed churchyard of St. Paul's, Birmingham, for the purpose of a public recreation ground. The cost of fencing and laying-out the ground is estimated at about £2,600.

One of the subjects of competition at the recent Eisteddfod at Carnarvon was the best design for a workman's cottage and outbuildings, suitable for an allotment of three acres, the cost of the buildings not to exceed £180. The successful competitor was Mr. H. Williams, of Liverpool.

Trade News.

WAGES MOVEMENTS.

Building and Allied Trades.—According to the *Labour Gazette* for July, the engineering and metal trades, owing largely to their unsettled condition on the north-east coast, show a decline, the percentage of unemployed in unions connected with these trades having risen from 8·3 to 9·0. The shipbuilding trades have remained practically stationary, the percentage of unemployed in the unions concerned having only fallen from 13·3 to 13·2. On the whole, the building trades are scarcely so well employed, and local disputes continue to disturb these trades. The percentage of unemployed members of unions has risen from 3·3 to 3·5. The furnishing and wood-working trades show a decline in most branches, the returns of unemployed members from unions connected with these trades giving the percentage as 4·4, compared with 3·3 for May.

Edinburgh and Leith Slaters' Wages.—A request having been made by the operative slaters of Edinburgh and Leith to the employers for an advance of ½d. per hour on the present rate of wages, the employers have unanimously agreed to grant it, the advance to take place on August 1. The standard wage will then be 8½d. per hour.

Huddersfield.—The strike and lock-out in the building trade at Huddersfield terminated last Friday. On the previous Wednesday, the General Builders' Association suggested that if possible an arrangement should be come to, and on the Thursday the Masters' Association determined to open their yards next day. This was assented to by Messrs. Radcliffe and Sons, as the Doncaster Operative Masons had agreed that the worked stone there and that in Messrs. Radcliffe's yard at Huddersfield should be used in the buildings being erected by the firm at Doncaster, and that the remainder of the stone might be machined at Huddersfield. Messrs. John Radcliffe and Sons also agreed that the hand labour should be done at Doncaster. These terms the Operative Masters' Lodge decided to accept, and work was begun in the afternoon of Friday last in the various yards. The Operative Masons' Lodge intend to use their influence to get the rule which prohibits the importation into one town of stone worked in another town expunged; but this cannot be done until next year at the meeting of the Revision Committee of the Operative Stonemasons' Society of England, Ireland, and Wales.

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CHIPS.

The annual meeting of the Guild and School of Handicraft will be held at Essex House, Mile End-road, E., to-morrow (Saturday) afternoon. Sir Albert Rollit, M.P., will preside and deliver an address. The report will be presented by Mr. Walter Crane.

The half-yearly report of the Manchester, Sheffield, and Lincolnshire Railway Company states that arrangements have already been made for the acquisition of a large portion of the requisite land for the London Extension Line, and the contracts in connection with this important undertaking will be let at an early date, after which the works will be immediately proceeded with and prosecuted as rapidly as possible.

The memorial-stones have been laid of a new chapel which is being built in New-street, Bloxwich. The chapel is designed to accommodate about 300 worshippers, and is estimated to cost about £700. It is designed by Mr. H. E. Lavender, Walsall, is being built by Mr. S. Wootton, and will be a solid and substantial structure of brick, with stone dressings in front.

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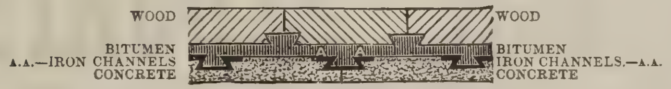

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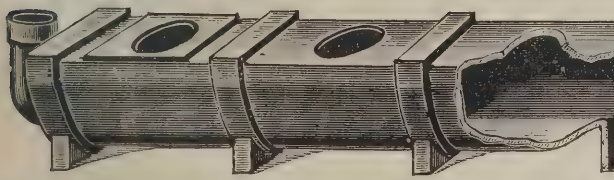
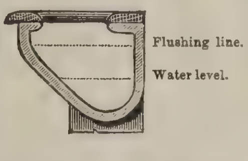

Section of Trough.


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TENDERS.

₊ Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

ABERCARNE.—For works of scavenging during one year, for the Abercarne local board:—

Abercarne district—	
Lewis, R., Abercarne (accepted) ...	£550 0 0
Newbridge district—	
Powell, Evan (accepted)	399 0 0

ACTON, W.—For repairing and painting at the Priory Board Schools, for the Acton School Board. Mr. Edward Monson, jun., F.R.I.B.A., Acton Vale, W., architect:—

Hooper, G., Acton, W. (accepted) ...	£27 10 0

ACTON, W.—For alterations to latrines, &c., at the St. Mary's Board School and All Saints' Board School, for the School Board for Acton. Mr. Edward Monson, Jun., F.R.I.B.A., Acton Vale, W., architect:—

	St. Mary's.	All Saints'.
Bray, F., Acton ...	£78 10 0 ...	—
Hooper, G., Acton ...	54 0 0 ...	£48 0 0
Ferris Bros., Acton* ...	45 0 0 ...	40 0 0

* Accepted.

BRISTOL.—For alterations to Nos. 41, 42, and 43, College-green, Bristol, for Messrs. Jolly and Son. Mr. R. Milverton Drake, Bristol, architect:—

Cowlin and Son (accepted)... ...	£1,500 0 0

BROCKLEY.—For erecting and completing the boundary wall of the Brockley Cemetery, for the St. Paul's Deptford Burial Board. Mr. John Jas. Downes, 11, The Parade, Lewisham High-road, architect:—

		A.
Oldman	£298 0 0 ...	—
Frampton	274 0 0 ...	£0 15 0
Holloway	270 0 0 ...	0 16 6
Soper	259 16 6 ...	0 15 6
Ling	252 0 0 ...	—
Schofield	240 0 0 ...	0 14 4
Hubble	240 0 0 ...	0 14 0
Johnson (accepted) ...	238 0 0 ...	0 13 6

A.—For the extension of the wall, price per foot run.
All of Deptford.

BUCKHURST HILL.—For building two cottages at Buckhurst Hill, for Mr. John Appleby. Mr. E. Brown, Fleur de Lys-street, Norton Folgate, architect:—

Kiddle, J. V., and Son	£515 0 0
Salt, S	471 0 0
Wells, W.	450 0 0
Arber, A. H.	399 0 0
Cannon, D.	357 0 0
Daniells, W.	255 0 9

BURHAM, KENT.—For alterations to the girls' and infants' departments at the board schools:—

George, R., Burham	£134 6 0
Naylor and Son, Rochester	113 0 0
Willford, of Snodland (accepted) ...	99 9 6

CAMBERLEY, SURREY.—For house, for Mr. A. E. Sidford, M.S.A., Wokingham, architect. No quantities. Part materials supplied:—

Spear and King, Crowthorne ...	£1,499 10 0
Seward, J. B., Wokingham ...	1,450 0 0
Murrell, G., Blackwater, near Camberley (accepted)	1,219 15 6

CARNBREA.—For erection of Sunday school at Pool, Carnbrea, R.S.O., for the United Methodist Free Church. Mr. Sampson Hill, Redruth, architect and surveyor:—

Roberts, J., Pool	£226 0 0
Stoneman, J., Pool	220 0 0
Nicholls, A., and Son, Redruth ...	208 0 0
Pooley, E., Pool (accepted)	196 0 0

CLAPHAM.—For the erection of the Clapham Common branch of the London and South-Western Bank, for the directors. Mr. E. Gabriel, 42, Old Broad-street, E.C., architect. Quantities by Messrs. G. R. Tasker and Sons, 38, John-street, Bedford-row, W.C.:—

Prior, W. A.	£6,350 0 0
Garrett and Sons	6,325 0 0
Higgs, F. and H. F.	6,296 0 0
Scharien and Co.	6,296 0 0
Gould and Brand	6,292 0 0
Smith and Sons	6,275 0 0
Carmichael, J.	6,118 0 0
Tennant and Co.	6,094 0 0
Young and Lonsdale	6,071 0 0
Godson and Sons	5,956 0 0
Shepherd, W....	5,948 0 0

CLAPHAM.—For the erection of three shops in High-street, Clapham, S.W., for Mr. S. G. Budd. Mr. E. Gabriel, 42, Old Broad-street, E.C., architect. Quantities by Messrs. G. R. Tasker and Sons, 38, John-street, Bedford-row, W.C.:—

Scharien and Co.	£5,056 0 0
Tennant and Co.	4,962 0 0
Smith and Sons	4,905 0 0
Gould and Brand	4,814 0 0
Godson and Sons	4,807 0 0
Garrett and Co.	4,800 0 0
Prior, W. A.	4,700 0 0
Higgs, F. and H. F....	4,680 0 0
Carmichael, J.	4,645 0 0
Shepherd, W....	4,619 0 0
Young and Lonsdale	4,442 0 0

CUBERT.—For erection of board school at Cubert, for the Cubert School Board. Mr. Sampson Hill, Redruth, architect and surveyor:—

Julian, J., Truro	£743 0 0
Rodliff, T., Cubert (accepted) ...	628 0 0

DORSET.—For the erection of a police-court at Kinson for the Dorsetshire county council:—

Huxtable and Co., Bournemouth (accepted) ...	£1,641

EDINBURGH.—For the erection of Broughton School, for the city school board. Mr. Wilson, architect:—

Gerard, W. (accepted)	£20,146 0 0

EDINBURGH.—For the enlargement of Causewayside School, for the city school board. Mr. Wilson, architect:

Currie, Adam (accepted)	£778 0 0

GOWERTON.—For the erection of intermediate schools, for 70 boys and 50 girls:—

Thomas and Watkins (accepted) ..	£3,000 0 0

[Lowest tender received.]

HENGRAVE.—For erecting a laundry at Hengrave, Bury St. Edmund's, Suffolk, for Mr. John Lysaght. Mr. R. Milverton Drake, 24, College-green, Bristol, architect:—

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Linzell, H. J., Newmarket	£559 0 0
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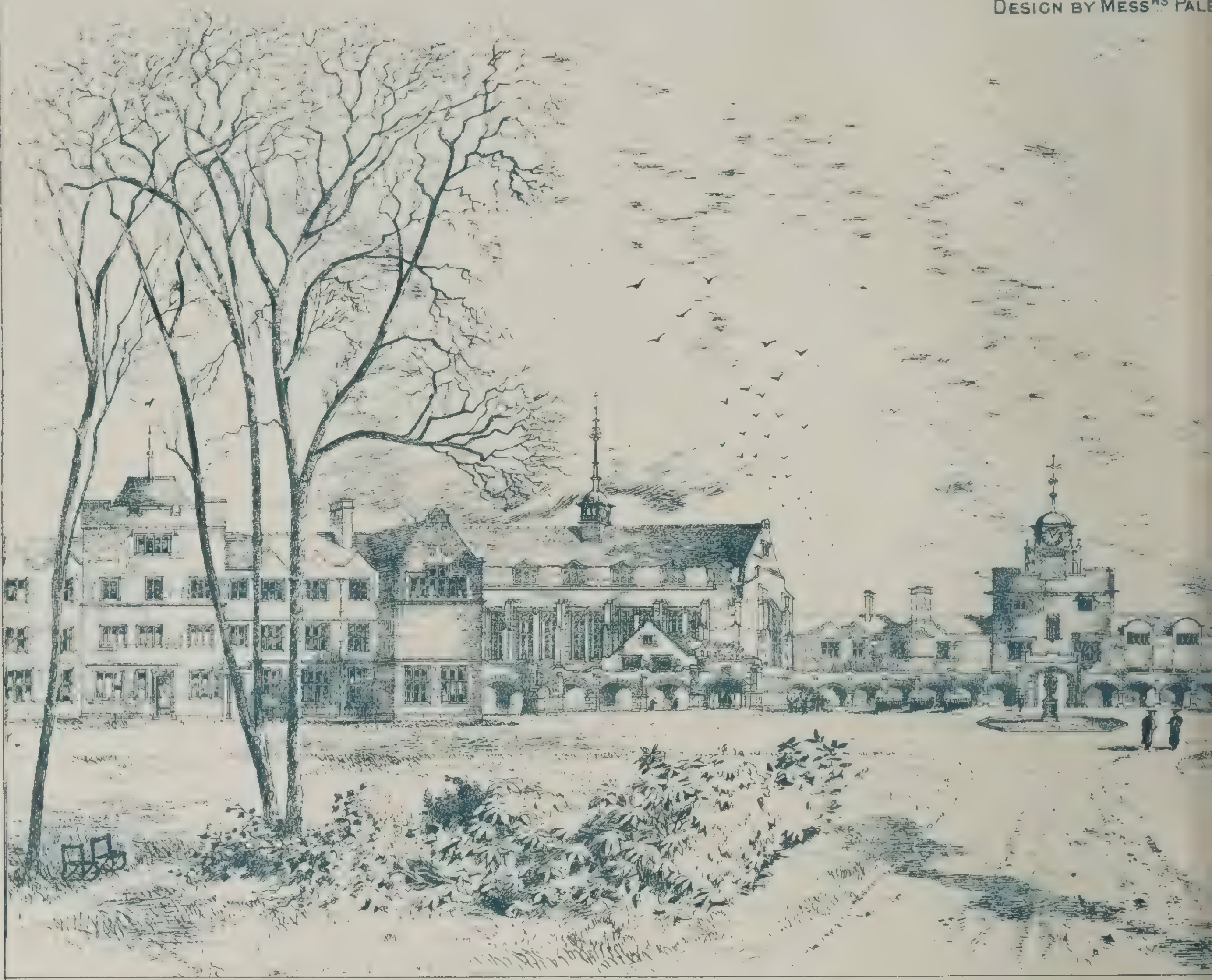

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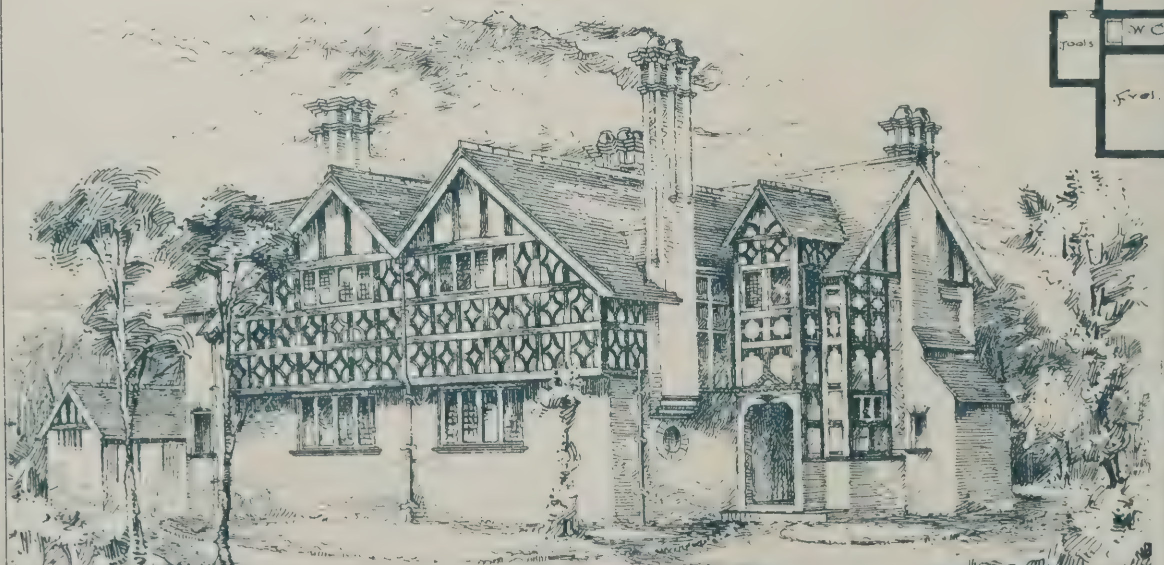

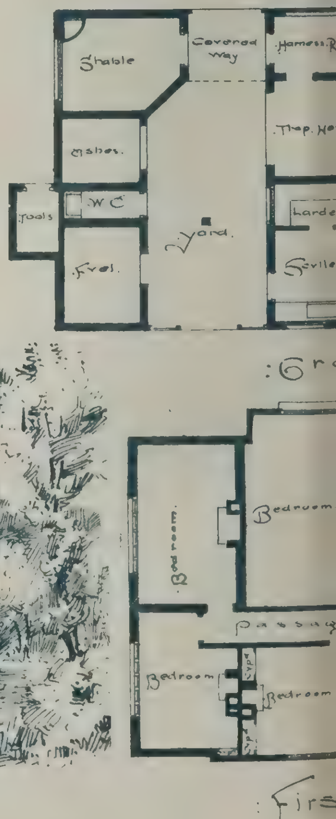

SCHOOLS AT HORSHAM, SUSSEX.

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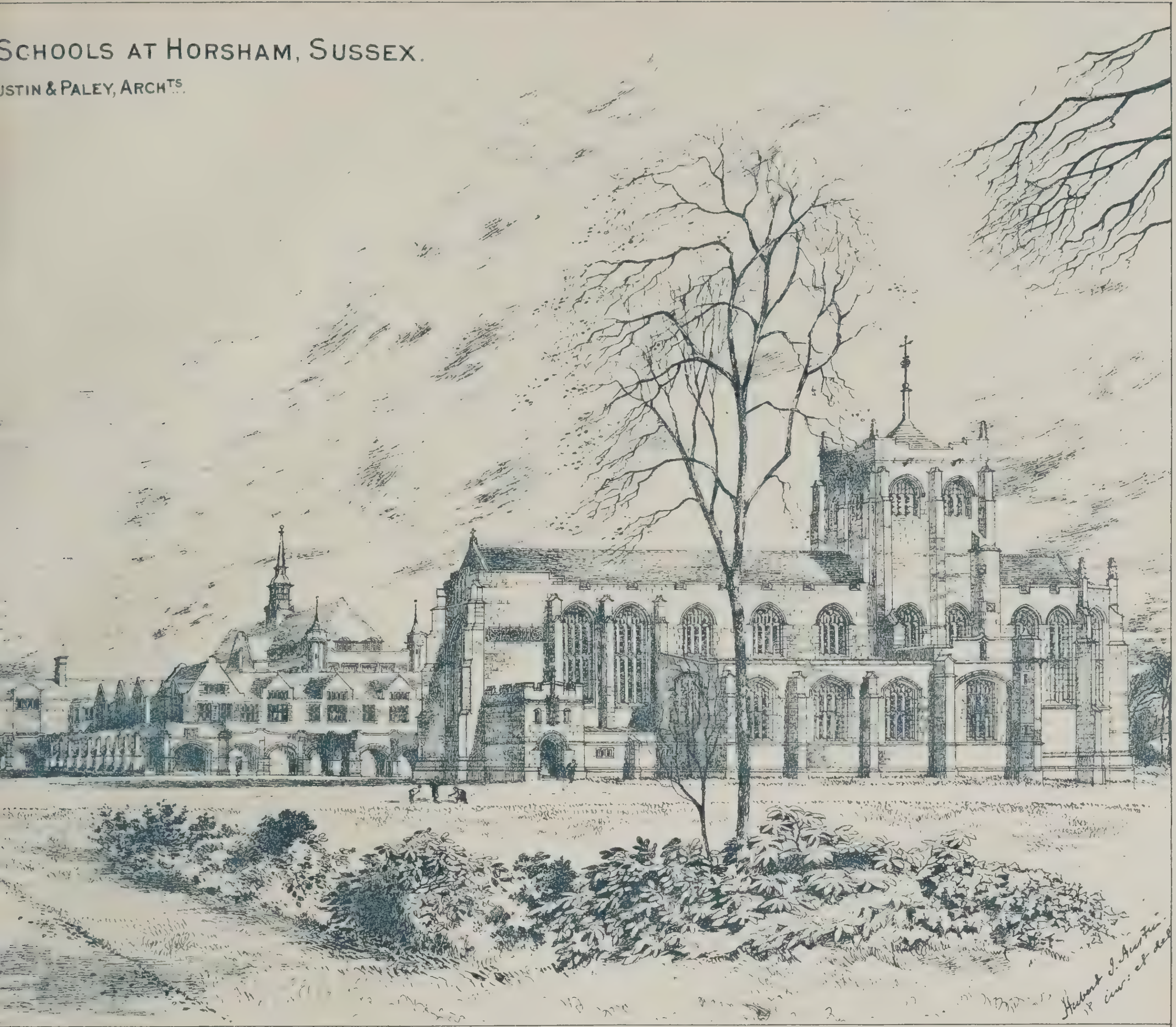
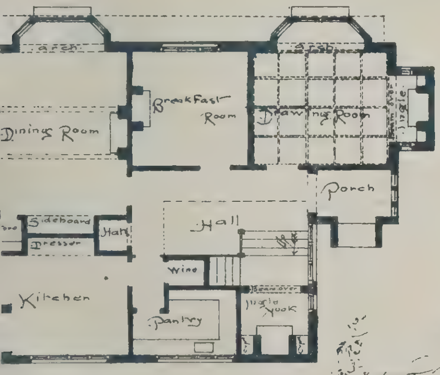


for T. W. F. Newton.



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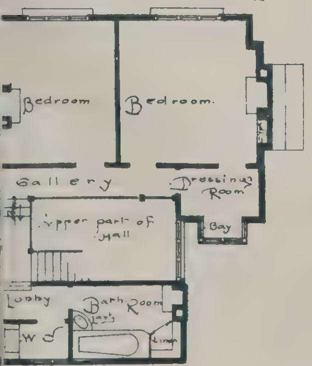

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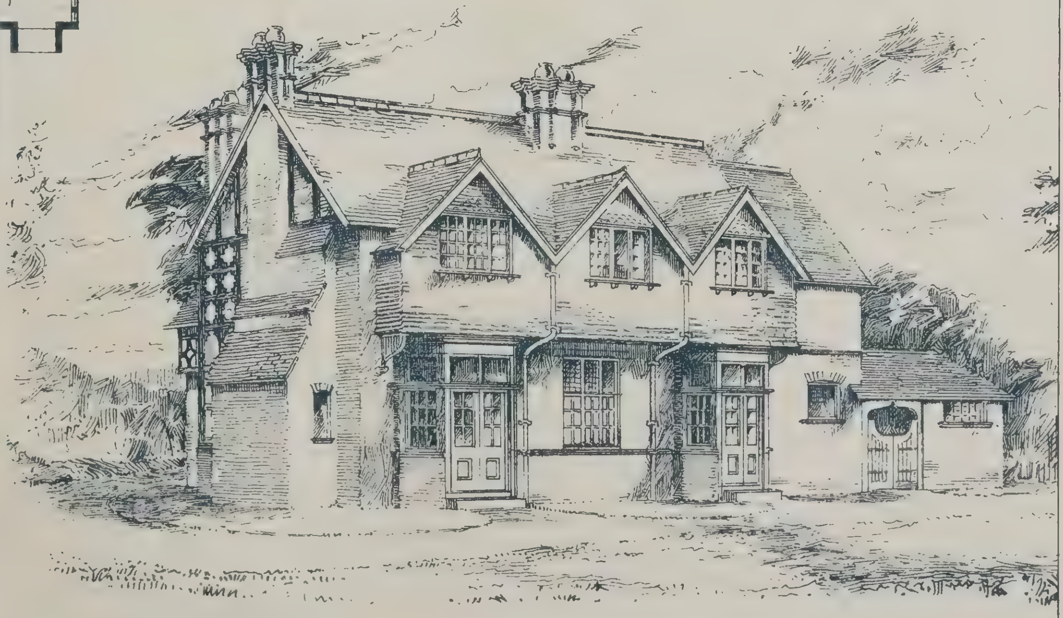

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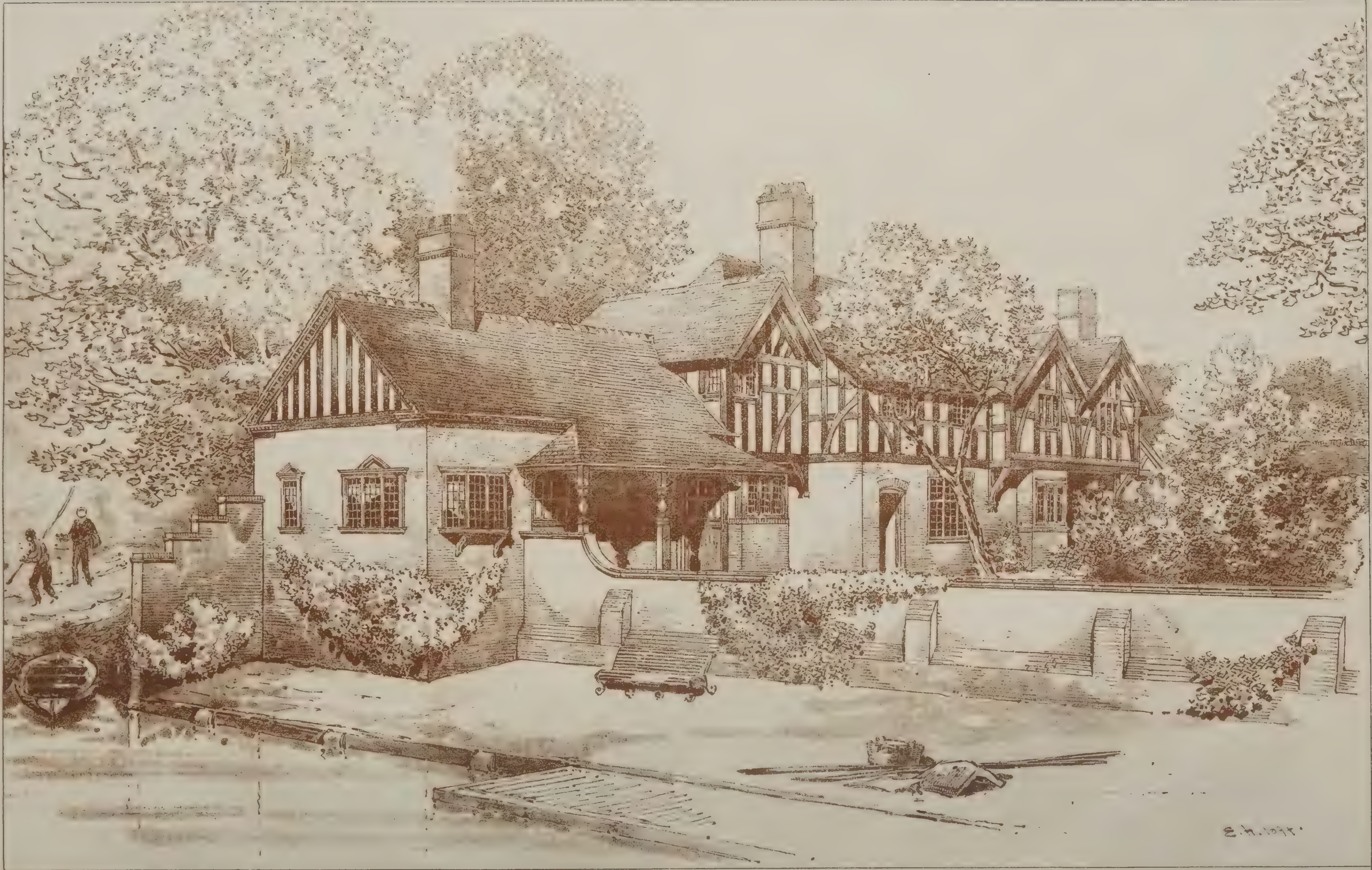
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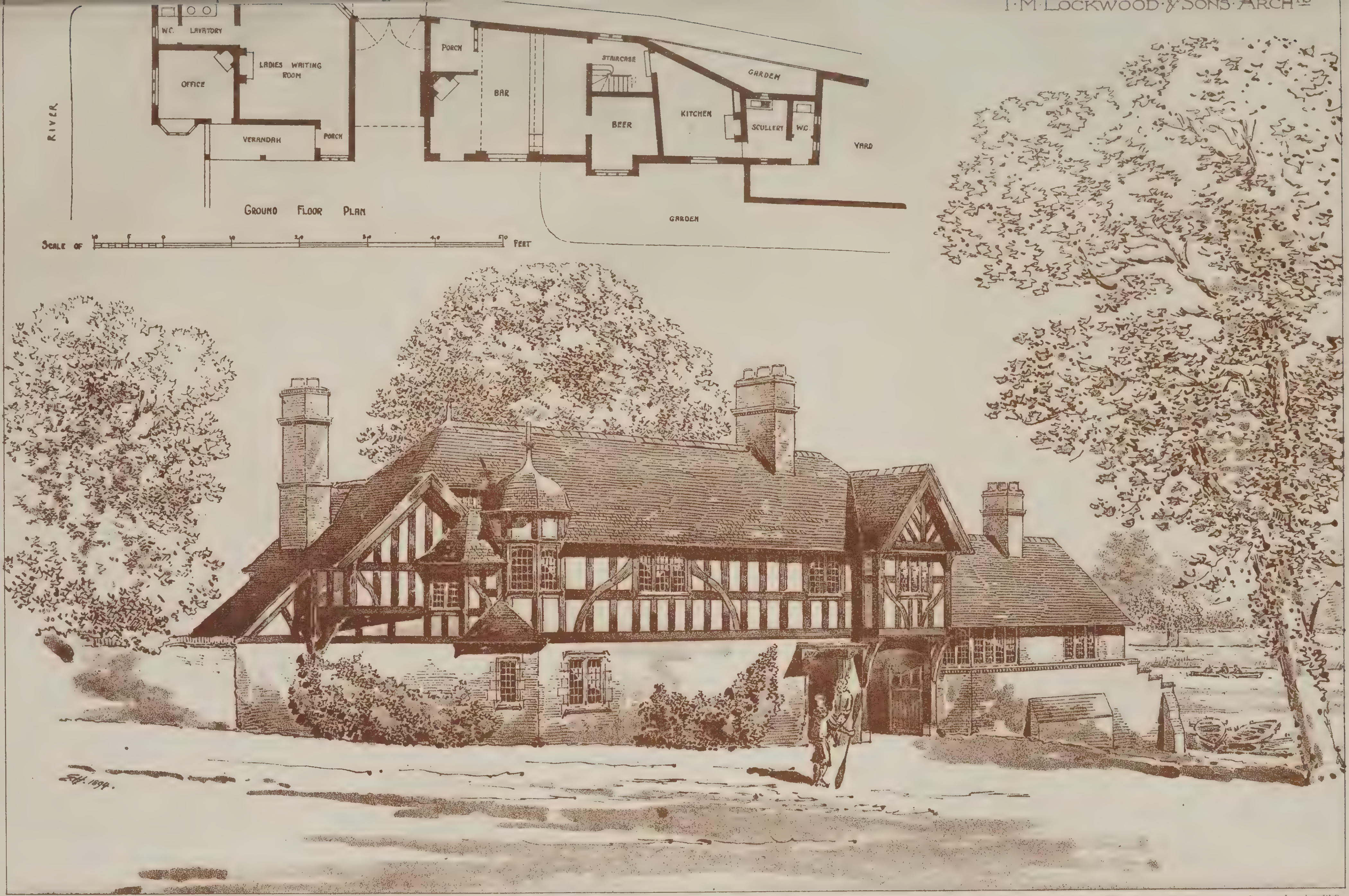

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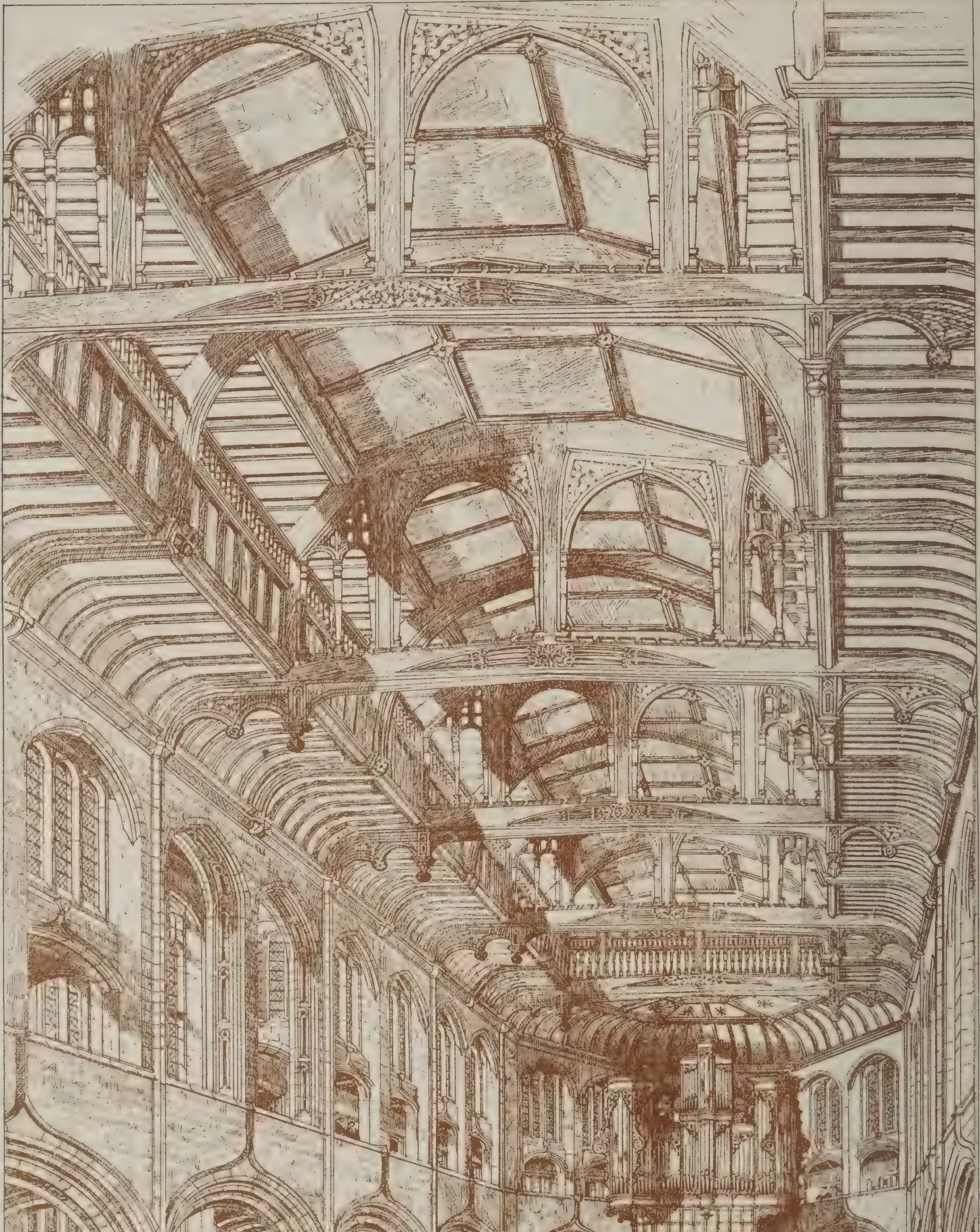
THE SCHOOL HALL.

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CHRIST'S HOSPITAL - NEW BOARDING SCHOOLS AT HORSHAM, SUSSEX.

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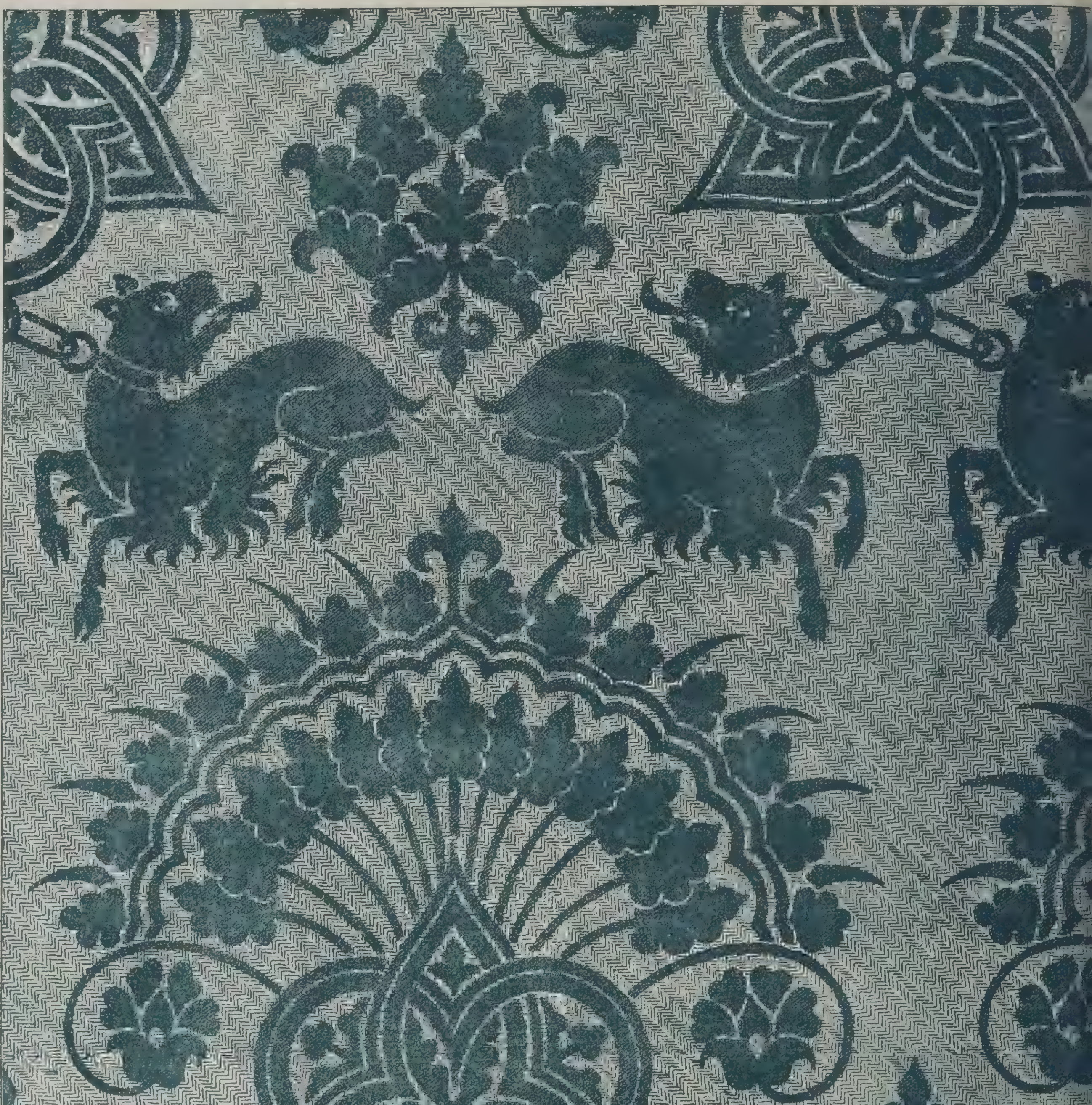

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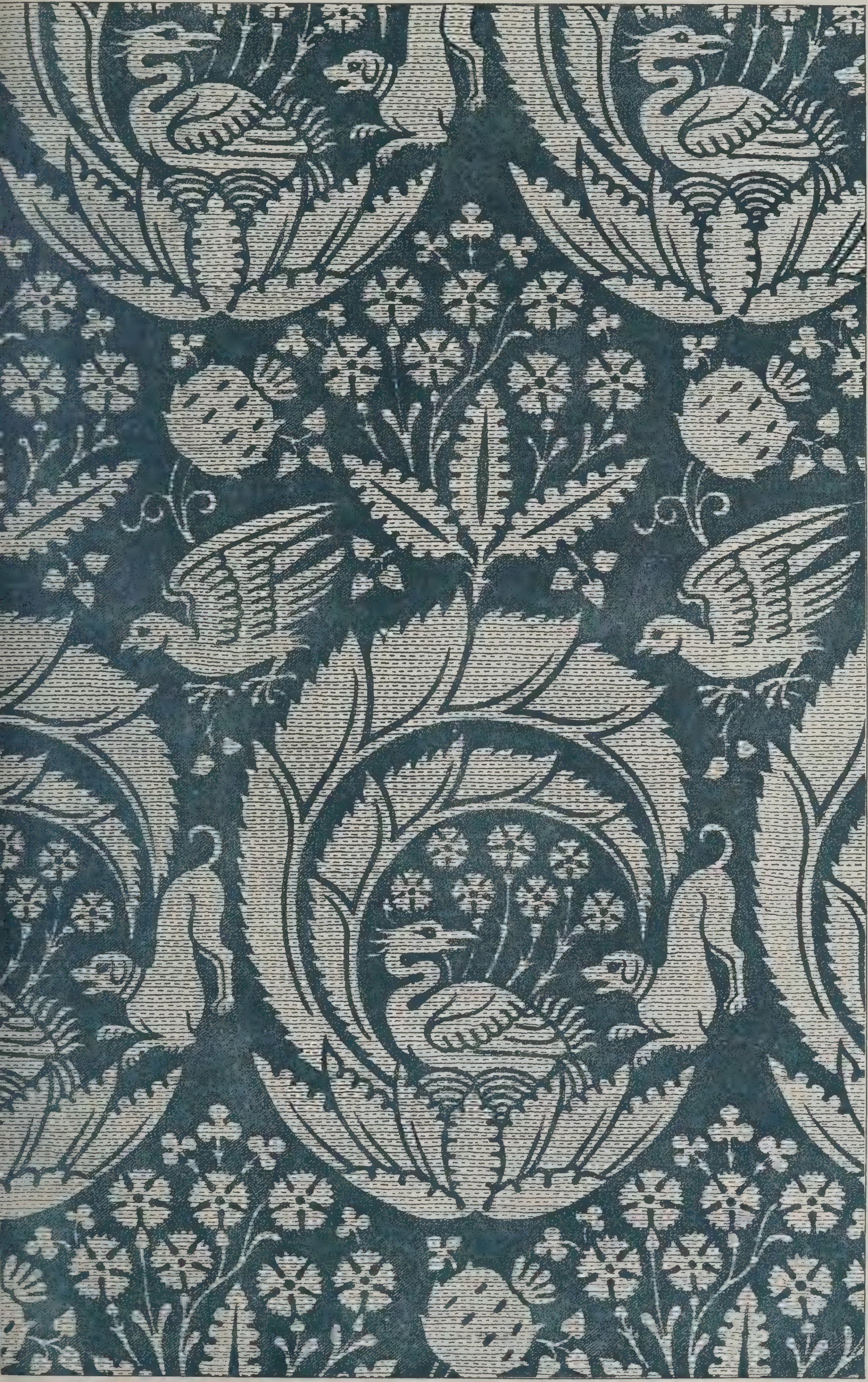

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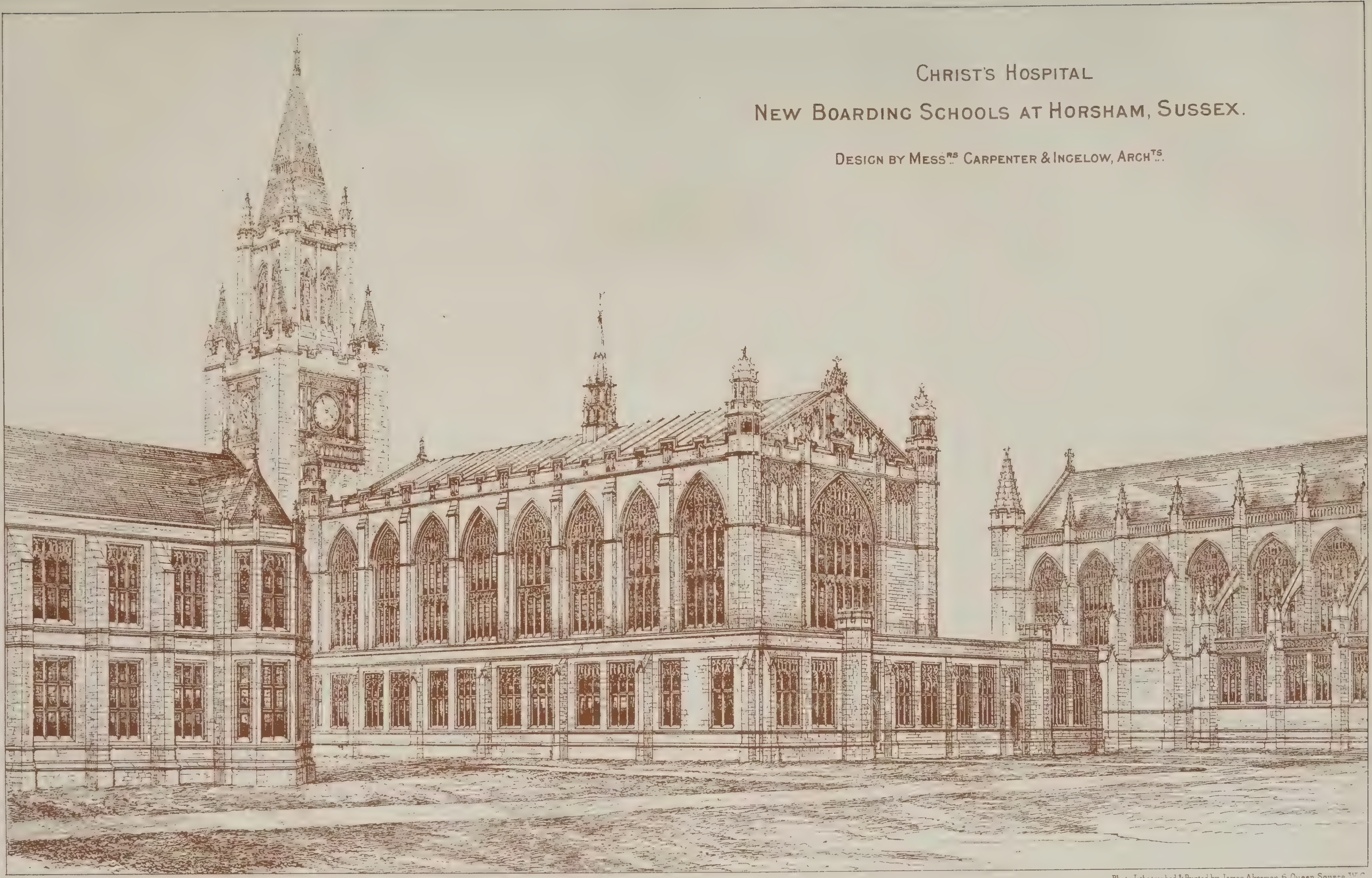

CHRIST'S HOSPITAL

NEW BOARDING SCHOOLS AT HORSHAM, SUSSEX.

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2064.

FRIDAY, JULY 27, 1894.

THE PRACTICAL AND THE IDEAL ARCHITECT.

THERE are two sides to everything. When the educational is being thrust so prominently forward, that the public hardly knows which is the more desirable equipment for the architect—a large acquaintance with theory or practical experience—it seems opportune to take a glance at the state of the architectural market at the present moment. People nowadays are apt to look only on one side of a man's attainments or qualifications, and to ignore the other side, as if both his experience and his knowledge were not equally necessary. In the case of the architect, this bias has had a very unfortunate effect on the profession by tending to divide it into two—the practical and the artistic—and the schemes of examination that have been put forward have rather served to increase this view of laying stress on a particular line of studies. The modern architect is a multiform creature. At one time he was supposed to be a master of the highest traditions of the building art, and knew everything appertaining to his vocation according to the Vitruvian model; but now he is supposed to be either an artist or a constructor, a designer or a building expert, an architect in the narrowest sense of the term, or a business man. A recent writer in the *Engineering Magazine* of New York distinguishes a variety of types of the profession founded on their natural aptitudes. He enumerates—the "successful" architect, the "sensitive" architect, the "engineer-architect," the "soured architect," the "bad architect," the "advertising architect," and the "school man," each of which varieties he describes; but these are rather accidental than real divisions of the subject. In this country we can distinguish four well-marked species. There is, for example, the man whose time is taken up in the drawing-office, whose idea of the architect's avocation is designing on paper, who is largely engaged as a draughtsman in assisting architects in competition work and otherwise. Many of these men have won prizes and distinctions at the Royal Academy School, or at the Institute of British Architects, as Soane Medallionists or Travelling Studentships. Accomplished as draughtsmen, they readily obtain employment in the offices of leading members of the profession, whose time is taken up by practical work. Then we have another well-known class of men, who have devoted their energies to mastering some branch of construction, like ironwork or sanitary work, who have perhaps written books on the strength of materials, or sanitary matters, on concrete work, or on some particular kind of building. They are perhaps more often theorists than practical men. Under the term "practical" may be included a large number of the rank and file of the profession, men who have been trained on buildings as clerks of works or surveyors, and who know a great deal more about the trades of building and general superintendence than of design. Lastly, we have a few whose inclination and studies have been chiefly "academic," who have studied at the Ecole des Beaux Arts of Paris or the Royal Academy, and have given themselves up largely to the literary and artistic branches of the profession. These four, the draughtsman, the constructional or scientific, the practical, and the academic, are well-marked varieties of the genus-architect. To bring these branches together, to unite them for the interest of the public and the profession must be the main object of any educational system. At present each represents a useless force. The practical man can do little without the draughtsman or the designer. Again, the latter is powerless in carrying out important buildings. Instead of these four separate factors, each working for himself in his own way, the object should be to combine these forces to bring their separate functions into action in our buildings. We may never make the born artist a thoroughly practical man, but we can, by directing his studies at the beginning, make him a constructive artist. The English system of education, which favours the apprenticeship method, seems to many to give the best results, as it subordinates the academic study to the practical work in the office of the architect. Both the French and American methods are different, and to a certain extent perhaps faulty. The French student receives his training at the Ecole des Beaux Arts. Traditions for a time obtain a mastery over him, his taste is directed by an æsthetic code which cannot be disputed, and when he begins to practice, this academic and æsthetic training directs his motives, and gives him largely-conceived views of plan and design. The American student begins also in the architectural school, and then goes into the architect's office to learn the practical details of his business. These two distinct methods of study have each some merit. The English system appears more in accordance with the training of the architect in the old times. The latter is essentially a modern method of making the architect, in which the academic course comes before the practical. A good deal may be said about the advantage of teaching art to the young and impressionable student before setting him to work on practical building problems. On the contrary, it is argued by many that early academic influences are captivating, and draw attention away from prosaic details—that academicism tends to stifle originality of thought, and make men copyists.

The school and the workshop are irreconcilable unless they are simultaneously used. In some remarks on the methods of architectural education in vogue in America, in the *Engineering Magazine* these two principles have been discussed, and we briefly refer to them. One writer, Mr. Arthur Rotch, on the French School of Fine Arts, shows the influence of the *Ecole* on American architecture. "It is distinctly," he says, "to the Beaux Arts at Paris, and its direct influence through pupils, or indirectly through the schools in America which have followed its lead, that the splendid buildings in its own chosen style at the World's Fair were erected." The same writer, speaking of the best way to fit an architect for his career, observes the broader the foundation laid for it the better; the most liberal is the best. Experience alone can teach the multitudinous details; but "there is another kind of knowledge which is not picked up in practice, and whose absence experience only emphasises. There are whole ranges of subjects which can be learned only from the professor or in the academic laboratory, and these studies, which stimulate investigation and train the judgment, are not to be found in the most extended practice." Chemistry, heating and ventilation, and other branches can be learned expeditiously only under a professor. The short road is necessary when so many subjects have to be learned, and this is why the author thinks a certain degree of academic training is needed to round out an architect's education, even if he can learn the æsthetics of planning and design in the office. A school discipline enables the student to grasp the bewildering facts and conditions of modern building problems. When brought face to face with such structures as business premises, railway stations, baths and wash-houses, his mind stored with æsthetic principles and a code of laws, enables him to avoid the crude guesses and conclusions of the untrained constructor. Hence, we find the academic method of architectural education has been able to cope with problems of a difficult kind. The American system is based on the Parisian system, where Classic and Gothic models have been instilled into the mind, and where traditions at first, as Mr. Rotch says, submerge personality, and enable the student to lay hold of immutable principles. Though every man has his own idea as to style, he has a larger grasp of plan, and we know that, for symmetrical design, the Ecole des Beaux Arts student has no rival. The influence of this school, it is said, "always makes for a large symmetrical treatment of masses, and a subordination of details in the composition." This system has found general favour. Those who have studied in the French capital and return to the States have acquired this mode of design, even if they rarely adopt French models.

If we turn to the practical method of instruction which is exemplified in the young man turned out of the busy architect's office, and whose opportunities have been spent on buildings, we shall find also much that is good, but a want of direction in his artistic studies. Unless he keeps himself well up in his theoretical acquirements, by attending classes and lectures and reading, he is apt to lose sight of the possibilities of his art, and to be outdone by the academic or the mere draughtsman. And yet his practical training is the most natural one, and will give him undoubted advantages in practice over his other rivals. He follows also nearer than the others the method of the Middle Ages; he is in daily contact with the building and the workmen. The modern problem is, then, how to combine the two, the school and the office—in other words, theory and practice. At present the schemes of our would-be educators have not been a great success. For an articled pupil or architect's assistant to spend a few hours a day or evenings a week in listening to lectures and attending classes is to furnish him only with a quantity of undigested knowledge of facts. The school classes and the technical workshop do not bring him nearer the object of real education. He is still far from the realities of his vocation. He thinks and designs on paper, assisted by books and photographs, and rarely sees the actual building. The schools that give instruction in architecture to the student are without the equipment of practical details. Another writer, Mr. R. D. Andrews, on architectural education for America, has tersely put the matter. He complains of the present unfortunate conditions of practice. The system of paying architects on a commission basis makes it necessary, he says, to secure a larger amount of work. "The money premium is set on quantity not quality, and the result is the architect becomes primarily an organiser, a hirer of draughtsmen, a man of affairs. The designer designs, the constructor constructs, the superintendent superintends, and the architect busies himself with administration and his clients." The superintendent, the only person who is brought into contact with the actual work, is the one person who is considered least worthy to design. We have here the gist of the matter. The separation of design from execution has been the weak points both in English and American architectural practice. To bring the architect closer to his work, paying him a certain sum for his services, instead of a commission, is a feasible suggestion we have before advocated, and we believe that every school for theoretical instruction should be in connection with workshops, where the student could learn the application of the principles he had acquired, bringing the architect and workmen together, and so profit by each other's attainments. No school of architectural education can be complete without facilities for the instruction of the student in the use of building materials and practical design, and for enabling him to work out problems which are of daily occurrence in buildings. The school and the office or workshop must be brought together, and the question still remains—How the reconciliation and their co-operation can be best effected?

EVASION OF BUILDING LINES.

IN carrying out the provisions of the Metropolis Local Management Act, 1862, technical objections, based on particular interpretations of the sections, are often raised. These frequently have reference to the meaning of certain words. Thus, for example, in sect. 75, the Act above named states: "No building, structure, or erection shall, without the consent in writing of the London County Council, be erected beyond the general line of buildings in any street, place, or row of houses, &c., &c." We can hardly conceive the terms "building, structure, or erection" to mean any other than what those words ordinarily signify. Yet there are people who would apply those terms to any single portion of a structure, such as a wall, and they would do this for the purpose of avoiding a very obvious intention of the framers of the section in respect of the general line of buildings in any street. The question, for instance, as in the following case, was "What in any particular circumstances amounted to a 'building, structure, or erection,' within the meaning of the section?" That section clearly applied to any building erected in any street, &c.; but if an owner erected only one or two walls, some considerable time before a general line was determined on, what the builder did subsequently was erecting a building, and not certainly completing one. It does not matter whether the original builder intended to build a house or shop, so long as there was no evidence of such intention before a line was established; a subsequent builder could not afterwards contend he was altering or completing a building. The case of "Wendon *v.* the London County Council," which was heard before the Court of Appeal, illustrates a case of this kind. The owner of a piece of land near Fulham laid out a road for building, 40ft. in width, called Fernhurst-road, which communicated in a direct line between other two roads. The owner deposited plans with the Vestry for the erection of twelve shops. There were no buildings on the land fronting the said road. In 1890 the owner commenced to build in accordance with the plans, and constructed, between the site and Fernhurst-road, footings for the front and flank external walls of the southernmost shops, and erected upon the footings the flank wall of the shop to a distance of 30ft. to a height of 12ft. from the level of the said road. The site of this shop was at the junction of Fernhurst and one of the other roads. The building was then discontinued, and soon became covered with rubbish. Two years after the owner erected a number of dwelling-houses, the fronts of which were erected at a distance of 30ft. from the centre of roadway, and about 10ft. back from the front of the old front wall. The owner subsequently granted a lease of the site to the appellant, who purchased the footings and flank wall, and who commenced building, utilising for that purpose the old foundations and wall of shop. He carried up the shop two stories, or about 24ft. high, which projected about 10ft. in advance of the "general line," but no portion of it was in advance of the flank wall before mentioned. He was then summoned. In March, 1893, the superintending architect decided the "general line" of buildings to be the main fronts of the dwelling houses. The magistrate ordered the appellant to pull down so much of the building as was erected beyond the "general line" of buildings in Fernhurst-road. The Divisional Court on appeal affirmed the magistrate's order, and the building owner appealed.

In delivering judgment, the Master of the Rolls defined the question as whether what was erected after the general line of buildings in the street was decided, was a "building, structure, or erection" within the meaning of section 75. Before the general line was laid down, as Lord Esher said, "part of a wall had been built to a height of 12ft. by the appellant's predecessors, and that must be taken to be the same as if the appellant had himself built it. The wall was intended to be the beginning of a shop or house. The building of the wall was discontinued for two years and a half; but inasmuch as there was no abandonment, the case must be treated as if what was done before and after the building line had been established had been done continuously. Then, was what was done after the general line was established erecting of a 'building, structure, or erection,' within the meaning of section 75? The wall was built to a height of 12ft. before the general line was established, and was intended to form part of a building; but the question was whether the wall was, as a fact, sufficiently advanced to be a 'building, structure, or erection,' within the section. The section did not prevent a building existing at the time when the line was established from being completed afterwards." After further argument, his Lordship thought the wall was not so far advanced as to be a "building, structure, or erection," within the meaning of the section. "There was nothing in the statute which said that when a building had been commenced before the building line was ascertained it might not be completed afterwards; but this wall, as a fact, was not a building within the section at the time the general line was established, and the land at that time was therefore vacant land within the true meaning of the section. If so, what was done afterwards was erecting a building, and the order of the magistrate was right." The appeal was dismissed.

The argument appears to be sound. If the statute could be construed in the way which the appellant wished, it would be no difficult matter to arrange encroachments in any new site. An owner or builder could lay the foundations of one or two walls of a house or shop on any new site before a general building line was decided, and afterwards complete the erection in defiance of the law. Section 75 does not prevent a building that existed at the time the "general line" was made from being completed afterwards. As the judge pointed out, in order to bring an erection within the section, the ground must be vacant at the time the building line was laid down; and it was virtually so in the case before us, as the wall left standing could not be said to be a "building" in any possible sense. It would be very easy for any builder to purchase the unfinished foundations of a house, and say he was completing or altering a building, structure, or erection which existed at the time a "general line" was fixed; but under this decision he will be obliged to prove that the original walls or fragments were a "building, structure, or erection" before he could claim to be exempted. The decision in the case turned on the meaning of the terms of the section, and should be another lesson to builders to be careful in the interpretation of words which have a definite meaning.

"OLD MASTERS" ON THE CONTINENT.—VII.

By CHARLES L. EASTLAKE

(Keeper and Secretary of the National Gallery).

ONE of the most distinguished painters who flourished in Italy during what is familiarly known as the *quattrocento* period was Benozzo Gozzoli. His real name was Benozzo di Lese di Sandro. Born of a peasant family near Florence in 1420, he was originally trained as a metal-worker, and is said to have assisted Ghiberti in the production of those famous gates which adorn the entrance to the Baptistery in that city. But his artistic instincts were destined to find expression in other forms of art. While still a youth he became the pupil of Fra Angelico, whom in due course he followed to Rome, where he assisted his master in decorating a chapel in the Vatican. When the Frate was summoned to Orvieto, he expressly stipulated with his employers that Benozzo should be allowed to help him in the frescoes which he was commissioned to execute in the Cathedral.

The next scene of Gozzoli's labours was Montefalco, near Foligno, where he painted for the Church of San Fortunato a Madonna and Child, an Annunciation, and various incidents in the lives of saints. These productions, which occupied him between 1450 and 1452, indicate unmistakably the influence of Fra Angelico's style of art. The same may be said of an altar-piece completed in 1456, and now in the public gallery at Perugia, representing the Virgin and four saints, in addition to many minor figures.

In 1459 Benozzo returned to Florence, where he was employed to decorate the walls of a small chapel in the building now known as the Palazzo Riccardi with frescoes, which have been selected for illustration with this article, and will be presently described.

A few years later he travelled to S. Gimignano, when he executed a series of works for Domenico Strambi, in the church of S. Agostino. Above the altar of St. Sebastian, the martyr is represented standing in prayer upon a pedestal, and clad in a long mantle supported by angels. In the upper portion of the picture the Almighty is seen launching the instruments of His wrath towards a concourse of people below, but at the intercession of Our Lord and the Holy Virgin, they are protected by the cloak of St. Sebastian. This curious picture is supposed to typify the efforts of the martyr to preserve S. Gimignano from the plague, by which it was visited in 1464. During that and the following year, Benozzo painted in the choir of the same church a series of incidents from the legendary life of St. Augustine, among which perhaps the best is that which represents the death of that saint. The churches of S. M. Magdalena and S. Andrea in the same town also contain works which bear his signature; while in the suburbs of Certaldo (where Boccaccio was born and buried) he decorated the chapel of the Giustiziati, near the Ponte dell'Agliena.

It is, however, in the Campo Santo, at Pisa, that the genius and inventive skill of this remarkable painter find their noblest expression. Nearly the whole of the north wall is covered with frescoes by Benozzo Gozzoli, illustrating various scenes from the Old Testament from the time of Noah up to the visit of the Queen of Sheba to Solomon. Notwithstanding the injuries which they have suffered from time and deplorable neglect, these large and important works are full of interest, and may be regarded not only as characteristic of the master, but as some of the most noteworthy examples of pictorial art in the 15th century. They occupied about sixteen years in execution.

It was during Benozzo's residence at Pisa that he painted for the Duomo in that city the "Apotheosis of St. Thomas Aquinas" (now in the Gallery of the Louvre), besides some minor works for churches and monasteries in the neighbourhood. His Pisan patrons appreciated his talents and industry so much, that they presented him during his lifetime with a tomb for his future burial in the Campo Santo itself. The tomb bears a Latin inscription, and the date of the donation, 1478. This led to an excusable error respecting the year of the painter's death, which really occurred much later, and probably not until 1498.

Benozzo Gozzoli's frescoes in the Palazzo Riccardi cover the walls of a dark and oddly-shaped room about 15ft. high, paved with marble and surrounded by a dado, above which the paintings are executed. The room is lighted by a single window placed at the end of a recess, so that only those frescoes which are painted on the sides of this recess can be distinctly seen. In order to examine the others, visitors are obliged to avail themselves of burnished metal reflectors provided for this purpose, and even then the inspection is attended with difficulty. The subject selected for illustration with this article is depicted on one of the main walls of the room on the spectator's right, and represents the Procession of the Magi. Towards the left of the picture, and riding alone on a white horse, richly caparisoned, is a youthful prince with long fair hair, clad in a tunic of white and gold, with red hose, and a blue cap handsomely jewelled. He is preceded on foot by a boy of singular beauty, and is followed by several attendants. On the right hand of the composition two other mounted young men ride towards the spectator. In the background is a landscape including rocks, trees, and a hunting scene, with horsemen, dogs, and game all in active motion. The costumes, horse-trappings, and other details in this fresco are elaborate, and executed with great skill. Indeed, the same may be said of all the mural paintings in this room, which, considering its peculiar plan, can hardly have been originally destined for a chapel. It has evidently undergone considerable alteration since Gozzoli's time, for the apparent purpose of widening a staircase outside.

The technical qualities of this work, the accurate and masterly drawing, and the chromatic scheme, which is brilliant but chastely harmonised, all tend to render it a characteristic and admirable example of the master. The figures in this group are somewhat less than life-size. Another portion of the cavalcade will be described hereafter.

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL.—V.

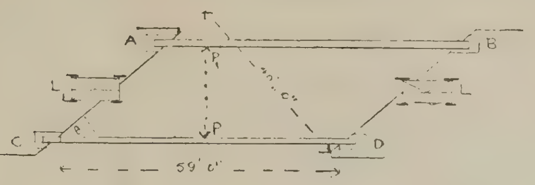
HAVING established the general formulæ for the more important instances of stress upon the flanges and web of a plate-girder, we may now proceed to make some further progress with the practical details of our bridge. The principal dimensions and data already arrived at are the following:—

Main girders of steel plate: span 60ft., depth 5ft., width of flange 1ft. 6in. Cross girders, five in number, placed 6ft. apart from centre to centre: span 36ft., depth 2ft. 6in., breadth of flange 1ft. 3in.

It is asserted that in bridges of large span it is preferable to measure that distance, not from the edges of the bedplates—that is, from the bearings in the clear—but from the centres of the bearings. Theoretically, this practice may be the more correct; but practically, it amounts to very little importance, and will be neglected in the present instance. The result of taking the span from centres of bearings is to increase it, and thus the assumption is on the safe side, as the calculations would be made, and the material apportioned, for a span a little larger than if it were measured between the bearings in the clear. There are three general items composing the total load that can come upon a bridge:—

1. The permanent dead or insistent weight of the whole superstructure itself.
2. The ordinary live loads to which the bridge may be subjected in everyday traffic.
3. Exceptionally heavy loads, to which road bridges are now considerably more exposed than in former times. The maximum exceptional load that could possibly be brought upon any road bridge could not exceed a pair of steam-rollers, the heaviest specimens of which would not surpass twenty tons each in weight, which is no light load to add to the amount already to be allowed for. So far as the main girders are regarded, this extra weight of forty tons may be considered, without any sensible error, to be equivalent to the same load uniformly distributed over the bridge. As the plate-web forms a continuous connection with the flanges, the effect of an actually concentrated load is not felt nearly so severely as if the attachments were made at long intervals, as happens when the main girders belong to the open-web type of bridge-building. Notwithstanding the advantage possessed, under certain conditions, by the open-web system, there can be no doubt that a continuous riveting-up of both the flanges and the web conduces to a greater uniformity of stress over the whole girder than is insured by the open-web principle. It is upon the cross-girders that the effect of a concentrated load is more felt, and sometimes they have to be specially designed to meet this contingency.

FIG. 6.



In estimating the total load to be provided for in the design of a bridge, each main girder is supposed to carry its share of one-half—that is, that the loading for each is regular. This is true, or fairly true, for a road bridge on the square, but not when it is on the skew, as will be seen from the diagram in Fig. 6. Let A B and C D be the main girders in a skew bridge, A, B, C, D, and let L be a rolling load advancing on the bridge. It is evident that in the position it first occupies in the figure, the whole share of the weight borne by one wheel is supported partly by the main girder A B, and partly by the abutment D B; and it is not until the rolling load has further advanced on the bridge that any weight is brought upon the main girder C D. When the load has traversed the bridge, as at L, the conditions of loading are exactly reversed, and the girder A B is in its turn relieved of all weight. Even when a bridge is on the square, it is obvious that unless the path of a heavy rolling load be exactly in the centre of the roadway, one of the main girders is more heavily strained for a time than the other. This irregular loading is of no material importance in the case of an ordinary road bridge; but the case is very different when it is a railway bridge that is concerned, and the rolling load takes the form of a locomotive weighing between seventy and eighty tons, and running at some fifty miles per hour. The effect of a load of this description in the position shown in Fig. 6, and with the *vis viva* or force of impact derived from the speed, has given rise to a good deal of discussion among engineers.

An examination of the diagram in Fig. 6 will serve to point out that during the whole passage of the rolling load the main girders A B and C D are differently affected by it. For example, let the load be supposed to be in the centre of the bridge on the line $P P_1$, in which P is the centre of the span of the girder C D, and P_1 a point near the end of the girder A B. Consequently, while the girder C D is thus strained to a maximum, the stresses on A B are of much smaller amount. There can be no doubt that when the driving wheel of a locomotive is in the position upon a bridge shown at L in Fig. 6, where the other wheel rests upon the solid abutment, a very severe local stress will be brought upon the main girder A B. As this subject is apropos to our present articles, as we shall discuss the example of a railway bridge, it is well to draw attention to this instance of unequal and irregular loading of bridges. Referring again to the rolling load L, the weight upon one of the foremost wheels rests upon an immovable support—that is, the abutment, while the weight upon its fellow is carried by a support which is not absolutely rigid and immovable. That support is the main girder, A, B, which, however strong it may be made, still deflects a little under the passing load. The inevitable result is that the foremost driving wheel upon the bridge must sink the fractional part of an inch, and a strong lurch of the rolling load towards the main girder A, B takes place. This causes a certain amount of twisting or torsional stress upon the girder depending upon the weight of the load and the *vis viva*, which gives rise to strains of deformation and even of distortion throughout the various members of the girder. In a word, the position of the normal planes in which the lines of the forces or of the external and internal resistances act is shifted, and the forces themselves no longer preserve those conditions of equilibrium which are supposed to obtain. Before leaving this part of our subject it may be observed that, in plotting or drawing the plan of a bridge on the skew, the span on the skew, as it is termed, should always be checked by calculation. The following equation connects together the three quantities, which are the span on the square, the span on the skew, and the angle of skew. Put these equal respectively to S, S_1, and θ, and we have—

$$S_1 = \frac{S}{\sin.\,\theta} = S \times \text{cosec.}\,\theta.$$

Similarly if the length of the face of the abutment on the skew be required, making W equal to the width on the square between the centre of the main girders and F, the dimension sought between the same points, then—

$$F = W \times \text{cosec.}\,\theta.$$

To this length, on the skew, must be added the corresponding value of the additional length on the square from the points already mentioned to the quoins of the abutments. This distance will depend to some extent upon the width of the booms of the main girders. If these are of a heavy description, the length of the abutments outside them must be increased. It is not uncommon, in consequence of a neglect of this precaution, to observe in some existing examples of bridges how much the quoins of the abutments, especially when built of brickwork, are jarred and shaken, and in some instances absolutely displaced. Large and deep bedstones are essential to all heavy girders, as they assist in absorbing, or partially nullifying, the effects of a heavy passing load, and so preserving from disturbance the material of the quoins of the abutments.

It is preferable, in estimating the total weight to be allowed for in designing a bridge, to make the calculations for the whole superstructure, and then divide it, to obtain the share for each separate main girder. Some engineers take the half of the separate items, and then add them together for a total; but this method does not afford so good an idea of what the whole bridge has to carry when fully loaded, and is, besides, far more liable to introduce errors into the various quantities. Our calculation of the total weight of the bridge will stand thus in tons—

Two main girders 9 tons each (trial)	18
Five cross-girders 3 tons each (trial)	15
Platform of buckled plates	9
Rolled steel joists	4
Weight of parapet screen	2
Roadways and footpaths of concrete and wood and asphalte	27
Total dead load	75

There is still a considerable difference of opinion existing among engineers and architects respecting the amount of the live load which should be provided for in the floors of both bridges and buildings. The unit of load is the weight per square foot which is produced by a dense crowd of people; and, as might be expected, there is a very marked variety in the value of this unit. It has been taken as low as 70lb., and as high as 140lb. There is no doubt that the description of bridge and also its position should be considered when treating of this important item in the live load. Many of our readers are no doubt aware of the rule relating to the congregating or massing of large crowds on suspension bridges in general, and on the example at Hammersmith in particular during the progress of the inter-University Boat-race. Disregarding, therefore, the extreme values of the unit of the live load, it may be safely taken at 120lb. per square foot of the total combined area of the roadway and footpaths, so that we have—

$$\text{Live load} = \frac{36 \times 60 \times 120}{2{,}240} = 116 \text{ tons.}$$

It has been previously stated that it is possible to have a pair of steam rollers abreast on a bridge with a clear width of 36ft. between parapets, and in these days of heavy loads and strict supervision—some people think too strict—the engineer must provide for the possible load, and not the probable, or even the improbable. In order, therefore, to bring our bridge up to modern requirements, and render it a thoroughly secure and reliable structure, a load of 40 tons must be added on to the items already enumerated. The effect of this large additional load upon the cross-girders will be investigated when their design and construction are before us. So far as the main girders are concerned, the extra load of 40 tons may be regarded as uniformly distributed over them. It is a very usual condition in competitive designs, which, it may be remarked, are not always awarded in accordance with the old Roman adage, *palmam qui meruit ferat*, to specify that special provision is to be made for concentrated loads. Now, in the great majority of cases, all these supposed concentrated loads may be treated in the manner we have stated—that is, as loads uniformly distributed.

It would not be difficult, but that our space is limited, to give a detailed calculation and working example of the two methods, the discrepancy between which would not amount to more than about 6 per cent. For the sake of this almost inappreciable difference, a large amount of useless additional labour and trouble is thrown upon the competitors, who have quite enough on their hands, without being subjected to the worry and annoyance of entering into a mathematical analysis, the equations of which terminate in an identity.

Summing up the separate items of the estimated weights upon the bridge, we have the total load equal to 231 tons, and dividing by 2, the share for each main girder amounts to 115 tons. Applying the formula given in our last article for the stress upon the flanges at the centre of the main girder—for our attention is now restricted to a single girder—we have—

$$S = \frac{W \times L}{8 \times D}$$

Substituting the numerical values already arrived at for these data—

$$S = \frac{115 \times 60}{8 \times 5} = 172{\cdot}5 \text{ tons.}$$

From what has been already stated respecting the relative resistances of steel to the respective stresses of tension and compression, neither the gross nor the net sectional area of the upper and lower flanges can be assumed to be equal, as they usually are, in designing wrought-iron girders. Although the Board of Trade fix a general limit to the tensile stress of steel intended for bridge-building at 6½ tons, yet in the Forth Bridge the material was strained up to 7½ tons, and the same comparatively high unit stress has been employed by engineers in the construction of steelwork for railways in foreign countries. If we take 80 per cent. of this maximum working tensile stress for that of compression, and 70 per cent. of it for the resistance of the rivets to a shearing stress, we shall have the following data for apportioning the amount of material in the main and cross-girders, in which the working tensile stress has been put at a little less than its maximum amount:—

1. Tensile stress, 7 tons per square inch.
2. Compressive stress, 6 tons per square inch.
3. Shearing stress on rivets, 5 tons per square inch.

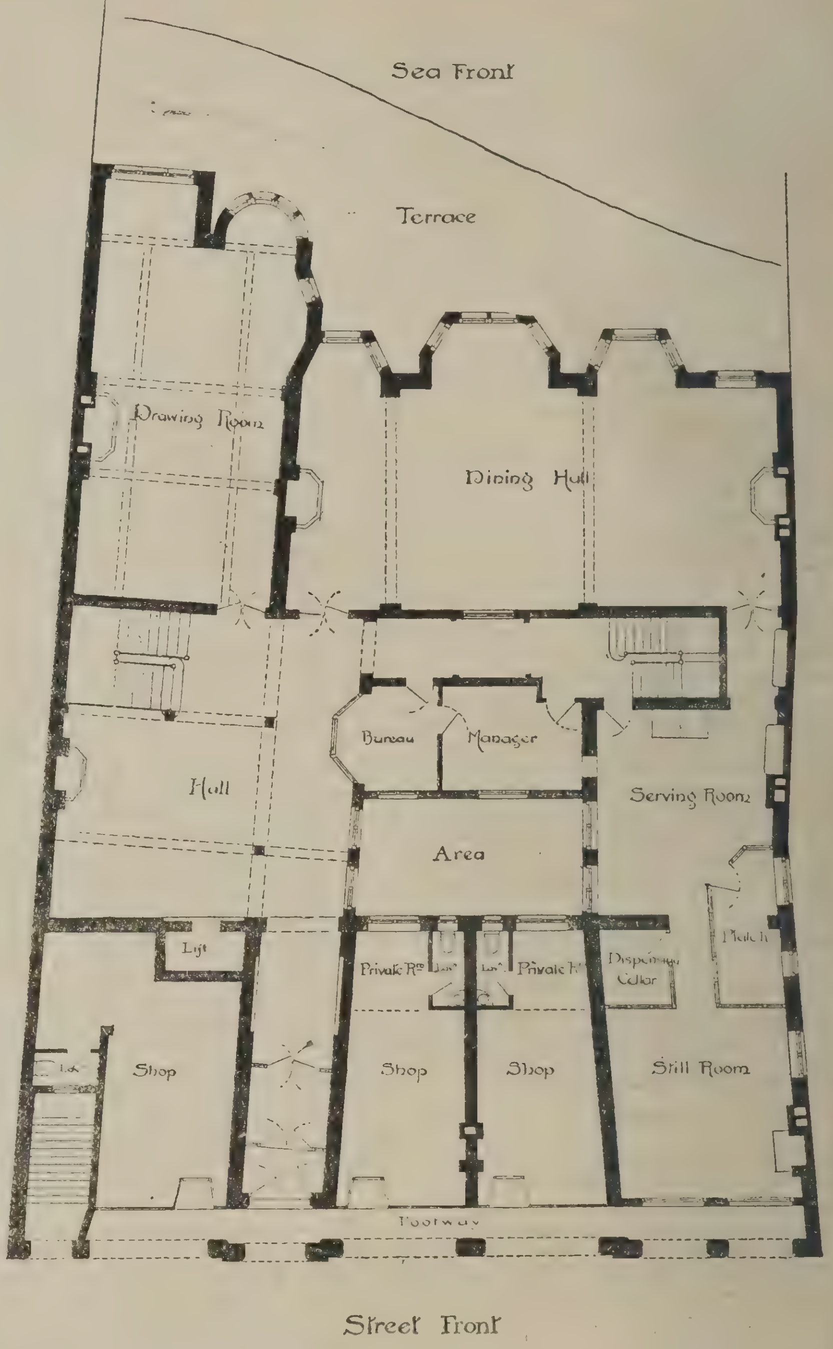
In accordance, therefore, with the value of these constants, if we make A equal to the required gross area of the upper flange, and A_1 equal to that of the lower, we have—

$$A = \frac{S}{6} = 28{\cdot}8\text{sq.in., and } A_1 = \frac{S}{7} = 24{\cdot}6\text{sq.in.}$$

We can now proceed to draw the plan and section of the two flanges, and arrange the pitch of the rivets and other practical details of the design.

* * *

The new Grand Theatre at Blackpool was opened on Monday night. It is the largest in the town, and is seated for 2,500 persons. Mr. Frank Matcham, of London, was the architect.

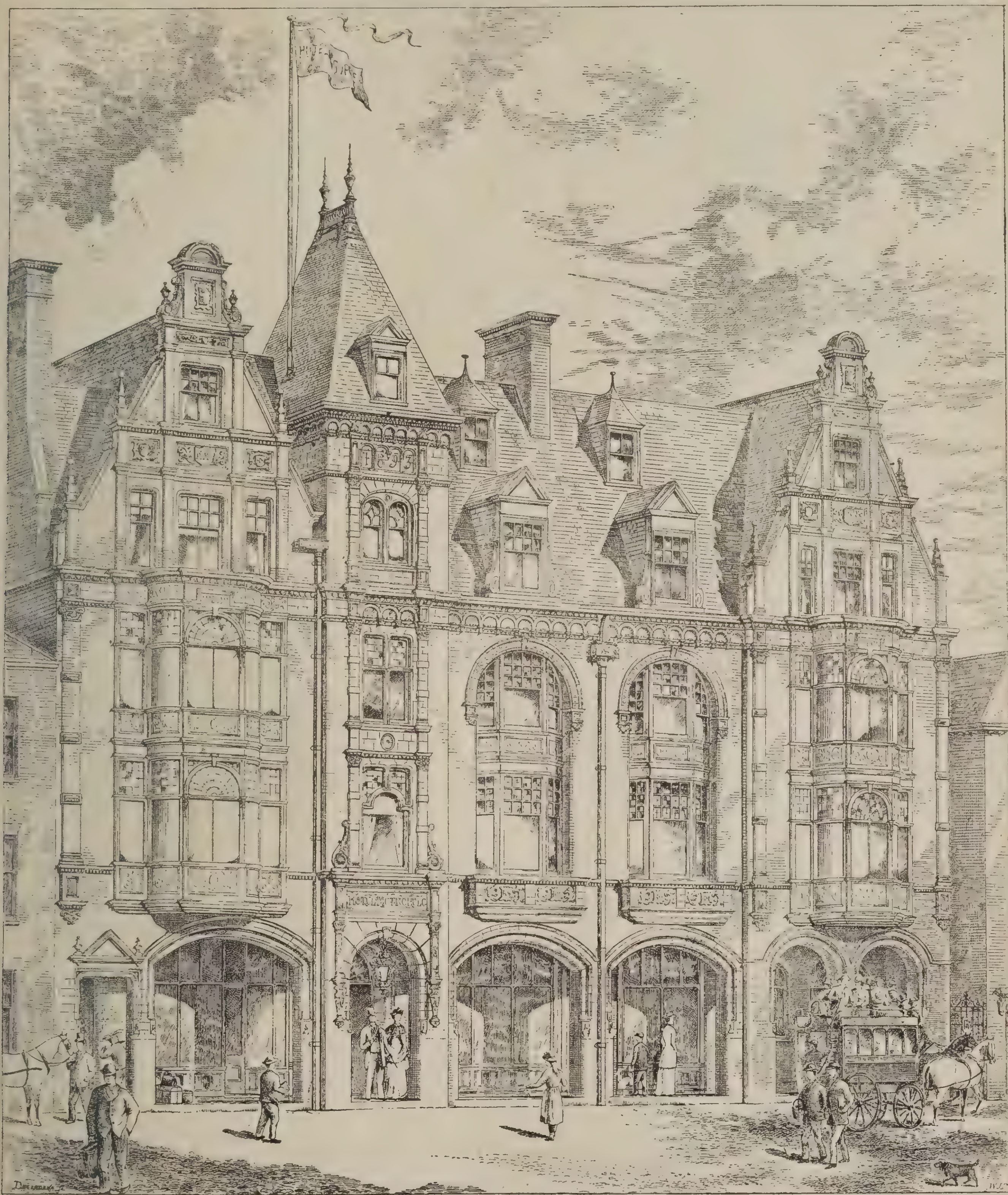


Ground Plan

HOTEL METROPOLE, CROMER.

YESTERDAY this building was opened, and to-day we publish a view of the street-front and ground plan of the building, which has been erected in a central position on the summit of the cliff facing the sea, commanding most magnificent sea views, and having direct communication through its own grounds with the promenade and beach below. A banquet was given yesterday (Thursday), to which a distinguished company were invited, to celebrate the opening, under the presidency of Sir Kenneth Kemp, Bart.

The plan indicates the general arrangement of the ground floor, which is mainly occupied by entrance hall, dining hall, drawing-room, manager's room, &c. The decorations of these apartments have been carried out in Japanese and Cordelova wall hangings. The woodwork is chiefly of walnut. The entrance hall has a canopied oak chimney-piece reaching from floor to ceiling. The staircases are constructed entirely of stone, with wrought-iron and copper scrollwork balustrading. A hydraulic passenger lift, supplied by Messrs. Waygood and Co., runs to the top floors. The natural fall of the ground allows of the billiard-room, reading and smoking-room, and private dining-room being placed under the dining-hall and drawing-room, obtaining for these rooms sea views also. The gentlemen's cloakroom and lavatory are on this floor, and so are the kitchens and most of the offices. In a basement floor are the steward's room, servants' hall, &c. The first, second, third, and fourth floors are occupied by bedrooms and private sitting-rooms, nearly all of which have been so arranged as to command good sea views. A feature of the scheme is the terrace arranged over the dining-hall, which is of easy access from the principal rooms of the building, affording an attractive resort for visitors who desire to enjoy the sea air and scenery without leaving the precincts of the building. The sanitary arrangements have been carried out on the most modern and approved principles; fire-hydrants are placed on every floor. The building has been furnished throughout by Messrs. Trevor, Page, and Co., Norwich, who also executed the chimneypieces from designs supplied by the architects. Externally the building is constructed entirely of red brick, and the roofs are covered with green slates. The decorative portions of the brickwork have been executed by Mr. G. Gunton, of Costessey, whilst the carving is the work of Mr. Minns, of Norwich. The building has been most expeditiously executed and completed by



HOTEL METROPOLE, CROMER.

Messrs. J. Youngs and Son, contractors, of Norwich. The architects of the building are Messrs. G. J. Skipper, F.R.I.B.A., and F. W. Skipper, of Norwich and Cromer, from whose plans, and under whose superintendence, the whole of the works, including the interior decorations, have been carried out. Mr. W. J. Bayes acted as clerk of the works.

THE PROPOSED NILE RESERVOIR AT ASSOUAN.

A LETTER of protest signed by a number of representatives of art, science, and literature (including Sir Frederic Leighton; Mr. E. J. Poynter, Director of the National Gallery; Professor J. Henry Middleton, Director of the South Kensington Museum; Sir A. W. Franks, President, and Mr. Hilton Price, Director of the Society of Antiquaries; Mr. Maunde Thompson; General Pitt-Rivers; Sir Henry Rawlinson; Mr. Arthur Evans; Dr. E. B. Tylor; and Dr. Flinders Petrie, Professor of Egyptology, University College, London), has been addressed to Lord Kimberley, condemning the proposed construction of a reservoir and dam at Assouan. They point out that such a high level dam would submerge the region of Nubia nearest to Egypt, and ruin the temples of Debod, Gertasseh, Tafeh, Kalabsheh, Dendur, Dakkeh, and Offa ed Dunya. It would also ruin the forts of Kostemneh and Kubban, and the towns, cemeteries, and various other remains of this region, beside leading to the ruin or removal of the various temples of Philæ. It is further pointed out that it would be impossible to utilise all the water of so great a reservoir for many years to come. Hence it would seem preferable to adopt some scheme which is capable of expansion, and which would not entail the whole expenditure long in advance of the result. It is urged that a dam at Kalabsheh would insure exactly the same benefits to Egypt; that, according to the fullest estimates of Mr. Garstin, would cost about the same amount, after fully allowing for all difficulties of construction; that the site at Kalabsheh is "geologically a good one"; that the required depth of the foundations of the dam, though presenting difficulties, would be much less than that attained in work already executed; and that, even if more immediate expense were incurred by placing a dam at Kalabsheh rather than at Assouan, the estimated profit from it is so great that the gain accruing to the country in only a few weeks would balance any additional expenditure attaching to a scheme which would have the merit of sparing the threatened antiquities.

BRITISH BUILDING STONES.—XI.

SCOTLAND (*continued*).

No.	Quarry.	County.	Geological Formation.	Description.	Colour.	Weight of a Cube Foot.		Water Absorbed per Cube Foot.	No. of Cube Feet to 1 ton.		REMARKS. Where used, analysis, crushing strain in tons per ft. super., cost per cube foot.
						Dry.	Wet.		Dry.	Wet.	
						lb. oz.	lb. oz.	Pints.	ft. in.	ft. in.	
372	CORSEHILL .. Annan.	Dumfries.	Permian *New Red Sandstone.*	Very fine-grained sandstone; little mica; bedding may be traced.	Brownish red.	128 3½	136 14	6⅞	17 5½	16 4¼	National Portrait Gallery, Very-place, Edinburgh, 1889. Cowper-street School, 1890, Edinburgh. Jews' Synagogue, Great Portland-street; St. James's Hall, Piccadilly; seven large mansions, Cromwell-road, Kensington, London; Lord Bute's mansion, Rothesay; Liberal Club, Belfast; London, Liverpool, and Globe Insurance Buildings, New York. 1s. per foot in random blocks up to 8 tons, on rail, Annan. Analysis: Silicious oxide, 95·24; aluminium oxide, ·56; iron peroxide, 1·28; calcium carbonate, 1·40; magnesium carbonate, 1·23; moisture, ·56; crushes with 372·7 to 643·0 tons (K), 341·6 to 579·6 tons (B).
373	COWGLEN ...... Dunfermline.	Fife.........	*Carboniferous. Limestone series.*	Fine-grained sandstone; a "liver" rock.	Light brown.	140 1¾	144 2½	3¼	15 11¾	15 6½	Trinity Presbyterian Church, Edinburgh; new docks, Leith. Proprietor says: "For strength, weathering, and clearness of grain, this stone is the best in Scotland or England." The rock below water mark is quarried creamy in colour, and turns a light yellow; hence the top rock must not be mixed with the bottom rock in dressings, or a patchy effect will be produced. Cube stones not exceeding 15ft. cube, and under 5ft. long, 1s. 3d.; 60ft. cube and same length, 4s. 5d.; up to 12ft. long and 60ft. cube, 6s. 4d. per cube foot. Broad stones under 10ft. super. and 6in. thick, 10½d.; 14in. thick, 1s. 10d.; up to 35ft. super. and 14in. thick, 4s. 8d. per super. foot; ashlar, 12in. high, 8d.; ditto, cut natural, 9d. per lineal foot; rubble, 1s. 6d.; large ditto, 3s. per ton. Stones ordered under 12in. broad or 6in. thick will be charged as if 12in. and 6in. respectively. Broad stones over 5ft. will be charged as cube stones, the thickness, where under ⅓, being calculated as if ⅓rd the breadth. Rybats, scuntions, founds, jambs, and steps sent out quarry worked at list prices in trucks at the quarry, Dunduff, Dunfermline.
374	CRAIGLEITH ...	Edinb'rgh	Calciferous sandstone. *Lower Carboniferous.*	Fine-grained, close-textured sandstone, little mica; bedding observable.	Dark, brownish-grey.	143 7½	148 2½	3¾	15 7¼	15 1½	Was used extensively in Edinburgh—Courts of Law, Custom House, Royal Exchange; St. Andrew's Church, 1785; St. George's Church, 1812; Town Hall, Leith, 1827; Old University, 1789; Calton Hill Monument, 1823. Analysis:—Silicon oxide, 98·3; calcium carbonate, 1·1; iron and aluminium oxide, 0·6. Craig says (Edinburgh Geological Society, xxxii.):—"The public and private buildings of the New Town, Edinburgh, were almost entirely built with stone from this famous quarry. Gradually the stones quarried in this district have become practically worked out. This quarry has an area of about seven acres, and is about 200ft. deep, and it has been worked since the commencement of the 17th century." In 1823 a stone (a "scuntion"?) was excavated in this quarry 136ft. long by 20ft. broad, and its weight was computed at 1,500 tons. A good weather stone. Crushes with 815 to 900·8 tons (B), 273 to 505 tons (Rt). This quarry produced a "Liver" rock and "Bed" rock. The labour on the stone is great, owing to its hardness.
375	CRAIGHTON ... Phillipstoun.	Linlithgow.	Oil-shale series. Coal measures. *Carboniferous.*	Micaceous, fine-grained sandstone, close texture; rubs smooth; bedding may be traced. "Liver" rock.	Dull purplish-brown.	134 2¾	135 3	¾	16 6¾	16 6¾	Surgeons' Hall, 1890, Edinburgh; Craigcrook Castle, 1891. Similar to Binny stone, No. 357. Cube stone, 20ft., 1s. 4d.; 30ft., 1s. 10d.; 40ft., 2s. 5d.; 50ft., 3s. 3d.; 60ft., 4s. 3d. Broad stones under 6ft., 6in. thick, 8d.; same area up to 14in. thick at 1s. 6d.; 35ft. super, 6in. thick, 2s. 10d.; up to 14in. thick, 4s. 3d. Long stones, 4ft., 12in. by 7in., 3s.; 4ft., 24in. by 11in., 9s. 8d.; up to 12ft., 12in. by 7in., 20s. 9d.; 12ft., 24in. by 11in., 74s. 9d. *each*. Columns, wheeling steps, founds, backs, scuntions, coursers, chimney heads, rybats, jambs, and pavements are supplied at list prices, which are quoted at quarry. Proprietors propose closing this quarry soon.
376	CRAIGNAIR ... Dalbeattie.	Kirkcudbright.	Granite.	Hornblende, biotite, with grey quartz, porphyritic.	Light grey.	165 2¾	165 9¼	⅜	13 6¼	13 6¾	Liverpool and Birkenhead Docks; Branch Bank of England, Liverpool; Thames Embankment at the Temple; Chelsea and St. Thomas's Hospitals. The quarry supplies blocks of all sizes for enginneering and monumental purposes, building rubble and crushed granite for pavements, concrete, gravel, sand, &c.
377	DALREOCH ... Dumbarton.	Dumbarton.	*Lower Carboniferous.*	Fine-grained crystalline sandstone; bedding distinct; does not rub smooth.	Light grey.	138 8½	145 14½	5⅞	16 2	15 4¼	West Bridgend and Knoxland Churches and Schools; memorial halls, several banks—in short, nearly all Dumbarton is built with this stone. Cube stones, under 20ft., 1s. 4d.; 30ft., 1s. 10d.; 40ft., 2s. 5d.; 50ft., 3s. 3d.; 60ft., 4s. 3d. Rubble, 2s. per cart in quarry, 2s. 5d. on trucks. Columns 6ft. long, 15in. by 15in., 18s. 11d. each; same length, 24in. by 24in., 63s. 11d. each; 15ft. long, 15in. by 15in., 109s. 10d. each; 15ft. long, 24in. by 24in., 325s. 10d. each. Wheeling steps, 3ft. 6in. long 13^{6} and 7in. thick, 2s. 11d.; 4ft. long 18^{6} and 7in. thick, 3s. 3d.; 5ft. long, 4s. 3d.; 6ft., 6s. 1d.; 7ft., 8s. 3d. each. Cope, 12in. by 6in., 8½d.; 14in. by 6in. 10d.; 16in. by 6in., 1s. per lineal foot. There are no beds in this quarry; all the work is cut out of the solid.
78	DANCING CAIRNS. Aberdeen (3).	Aberdeen.	Granite.	Quartz orthoclase, oligoclase, and biotite.	Light bluish-grey.	168 11¾	169 1	⅜	13 3½	13 3	Chiefly used for paving setts. Harris says the portico of the Music Hall buildings, and the monolith of the Gordon statue, Aberdeen, are of this rock.
379	DEVON .... Alloa.	Clackmannan.	Coal Measures. *Carboniferous.*	Moderately fine-grained micaceous sandstone. No bedding observable.	Light grey, with pink tinge.	134 1	141 13½	6⅛	16 8½	15 9½	One-half the town of Alloa is built with this stone. Two churches in Crieff. Beds from 2ft. to 2ft. 6in. thick. Worked by the lessee of Arno Quarry, 350. This is a pink stone; the Arno is a white stone. Cube stones, under 5ft. cube and 5ft. long, 1s.; 10ft. cube, 1s. 2d.; 15ft. cube, 1s. 4d.; 20ft. cube, 1s. 6d.; 25ft. cube, 1s. 10d.; 30ft. cube, 2s. 4d. If the stones are 10ft. long, the prices per cubic foot are nearly doubled. Long stones, under 5ft. long and 6in. thick, 8d.; 7in., 8d.; 8in., 9d.; 9in., 10d.; 10in., 1s.; 11in., 1s. 1d. per *superficial* foot. Stones up to 8ft. long, same thickness, are nearly double these prices. Rybats, corners, ashlar, coursers, scuntions, backs, and founds supplied at quarry list prices. All the Scotch quarry owners require notice of deficiency to be made within six days of delivery, or no allowance will be made.
380	DUBTON .... Auldbar.	Forfar ...	Old Red sandstone. *Devonian.*	Fine-grained micaceous bedding sandstone. Mica plats parallel to bedding.	Dark bluish-grey.	152 12½	156 9	3	14 8	14 3½	A pavement quarry, chiefly sized stones, containing not more than 10ft., 2½in. thick, 7d.; 3in., 8d.; 4in., 9d.; 5in., 11d.; 6in., 1s. 1d.; 7in., 1s. 3d.; 8in., 1s. 6d.; 9in., 1s. 9d. Stones can be obtained up to 62ft. super. at the following prices respectively (commencing with 3in.): 2s. 10d., 2s. 11d., 3s. 1d., 3s. 3d., 3s. 5d., 3s. 8d., 3s. 11d. Dressed steps, 4ft. by 6in., 10d.; dressed on tread and sawn on breast, same size, 1s.; dressed on tread and plain breasted, 1s. 2d.; dressed on tread and bottled, 1s. 4d. per super. foot; polishing pavement, ¾d. per foot extra; saw-jointed 2in. or 3in. thick, 1d. ditto; 4in. thick, 1½d. ditto; bottling steps is charged 3d. per foot extra. Prices are for stone free on rail at quarries.

No.	Quarry.	County.	Geological Formation.	Description.	Colour.	Weight of a Cube Foot.		Water Absorbed per Cube Foot.	No. of Cube Feet to 1 ton.		Remarks. Where used, analysis, crushing strain in tons per ft. super., cost per cube foot.
						Dry.	Wet.		Dry.	Wet.	
						lb. oz	lb. oz.	Pints.	ft. in.	ft. in.	
381	Dunbar.........	Haddington.	Lower. *Carboniferous.*	Fine-grained micaceous sandstone. Bedding very distinct.	Purplish red.	139 3	145 10½	5⅜	16 1½	15 5	Block stone not exceeding 5c.ft., 1s. per foot; from 5ft. to 10ft., 1s. 2d. per foot, not more than 6ft. long, and so on.
382	Dunmore ...... Stirling.	Stirling ...	Coal Measures. *Carboniferous.*	Fine-grained crystalline sandstone, with cavities and specks of carbon and ferruginous matter.	Light grey of a cold shade.	141 10¼	147 12½	4⅞	15 9¾	15 1¾	Half of Municipal Buildings, Central Station and Hotel, and Union Bank, Glasgow; St. Mary's Cathedral, Edinburgh. Craig says of this stone (Edinburgh Geological Society, xxxii. Vol. 6): "Coltbridge Hall, Murigfield, 1875; the frieze is wasting below the first cornice. The stones at U.P. Church, Morningside, 1884, are a good deal decayed. At the Pillars in Meadows, 1888, it is weathering badly, especially in the cornices; and at the Stock Exchange, 1889, it is already decaying in many places. In east front it is good, except in one stone." Analysis:—Silica oxide, 91·51; aluminium oxide, ·47; iron oxide, 1·49; calcium carbonate, 3·24; magnesium carbonate, 2·12; combined water, 1·20. Crushes with 289·3 tons (B).
383	Dunrobin...... Brora.	Sutherland.	Great Oolite *Middle Jurassic.*	Fine-grained silicious sandstone; no lime, no oolitic structure visible; bedding not distinct.	Cream.	117 4¾	131 9	11⅞	19 1¼	17 0¼	R.C. Monastery, Fort Augustus, "and the best buildings in the north." This stone is easily worked, looks well, hardens with exposure, and is very durable. Cube stones, blocks under 5ft., 1s.; 10ft., 1s. 2d.; 15ft., 1s. 4d.; 20ft., 1s. 6d. Long stones, 5ft. by 12in. by 8in., 8d. per lineal foot; 6ft., 10d. ditto; 9ft. by 12in. by 10in., 1s. 4d. ditto. Common "rybets," 8d. per rising foot. Inband "rybets," 2ft. long, charged ashlar price. Prices for stones on truck, Brora station.
384	Dyce .... Anguston.	Aberdeen.	Granite. *Granophyre.*	Quartz, orthoclase, and biotite.	Dark grey.	167 3¼	167 9¾	¼	13 4	13 3½	Chiefly a kerb and paving sett quarry. Crushes with 908·4 to 1253·0 tons (B).
385	Eglington ... Skelmorlie.	Ayr.........	Old Red Sandstone *Devonian.*	Fine-grained sandstone; no mica; rubs fairly smooth, bedding may be traced.	Red.	138 0	144 10½	5¼	16 2¾	15 5¾	Cube stones under 15ft., 1s.; 20ft., 1s. 2d.; 25ft., 1s. 4d.; 30ft., 1s. 7d.; 35ft., 1s. 10d.; 40ft., 2s. 1d.; 45ft., 2s. 4d. per cube foot; length not to exceed twice the breath, nor breath twice the thickness. Broad stones under 6ft. super., 6in. thick, 7d.; 8in., 9d.; 9in., 11d. per foot; up to 26ft. super., 6in. 1s. 7d.; 8in., 1s. 9d.; 10in., 2s. per foot. Long stones from 4ft. by 12in. by 7in. at 2s. 7d. each up to 12ft.; 24in. by 11in. at 64s. 9d. each. Stone-cut parapets will be charged 10 per cent. additional. Stones cut in natural beds will be charged 15 per cent. additional. Common "ruble," 1s. 8d. per ton; cut do., 2s. 6d. Backs, scuntions, coursers, chimney heads, "rybets," and common ashlar at quarry list prices. Quotations are for stones in the quarry; if put on rail at Wemyss Station, add 2s. per ton. Accounts from this quarry are rendered every second Friday to be settled on Saturday!
386	Ferry Toll .. Inverkeithing.	Fife.........	Greenstone. Dolerlite.	An aggregate of crystals of plagioclase and augite.	Dark blue grey.	163 15½	165 10¾	1⅝	13 7¼	13 6	This quarry is chiefly worked for paving setts, kerbs, channels, and stone for macadamising. Stone in the rough would cost 1s. per cube foot on rails at Inverkeithing.
387	Giffnock ...... Pollockshaw.	Renfrew.	Coal Measures. *Carboniferous.*	Fine-grained, micaceous sandstone; highly crystalline; rubs smooth.	Whitish grey.	136 3½	142 9½	5⅓	16 5¼	15 8½	St. Paul's Church, Woodside-terrace, and Crescent, Glasgow; university, Enoch station and hotel, Hawkhead Asylum, Glasgow; Custom House Offices, Belfast. Prices same as for Craighton, No. 375. Crushes with 218 to 309 tons (Rt). "Does not weather well in a murky atmosphere" (Craig).
388	Greenhill ... Kilmaurs.	Ayr.........	Coal Measures. *Carboniferous.*	Very fine, close-grained sandstone, no mica; rubs very smooth; bedding distinct.	Greenish grey.	153 2	157 6	3⅜	14 7½	14 2¾	This quarry is worked for pavements, jambs, lintels, and steps. Jambs, dressed on face and breast, 3ft. by 20in. by 5in., 3s. 8d.; 3ft. 6in. by 20in. by 5in., 4s. 6d.; 4ft. 20in. by 6in., 5s. 6d.; 5ft. 24in. by 6in., 11s. 6d. Jamb lintels dressed on face and top 3ft. 10in. by 7in. by 7in., 4s.; 4ft. 6in. by 9in. by 9in., 5s. 10d.; 5ft. by 10in. by 10in.; 7s. 10d. Steps dressed on tread and planed on breast, 4ft. by 7in., 1s. 4d. per foot super.; do., dressed on tread and bottled and fillited, 1s. 5d. Platts, rough, not dressed, under 10ft., 7in. thick, 10d. per super foot; under 30ft., 8in. thick, 2s. 1d. do. at quarry.
389	Hailes .... Slateford.	Edinb'rgh	Coal Measures. *Carboniferous.*	Fine-grained sandstone; fine streaks of carbon parallel to bedding, which is distinct.	Greyish white. Bluish grey. Not much difference in colours in hand specimens.	141 6¼ 138 5¼	146 8½ 144 14½	White. 4⅓ Blue. 4⅝	15 10 16 2¼	15 3¼ 15 5½	St. Mary's Cathedral, Observatory, St. Cuthbert's Parish Church, and extensively in Edinburgh; also in Leith and Portobello. Cube stones not exceeding 5ft., 1s. 2d.; do., 10ft., 1s. 10d.; do., 15ft., 2s. 4d.; do., 20ft., 2s. 10d.; do., 30ft., 3s. 4d. Cowstones not exceeding 15ft. super, 6in. thick, 6d. per foot; do., 30ft., 9d. Briggs and flags 3d. per super foot. White rock ⅓ less than blue. All stones over 4in. and under 6in. thick are charged as 6in.; all stones under 12in. broad are charged as if they were 12in. broad; all stones 10in. and 11in. thick are charged as cube stones; all "confined" pavement ½d. per foot extra. White stone crushes with 621·6 to 682·5 tons; blue with 428·3 to 480·5 tons (B). Used extensively for rubble work. Craig says: "Many buildings of this stone are standing well, but some of the stones are weathering badly on account of the thick clay bands, especially of the blue and grey rock."

THE DECORATION OF LEEDS TOWN HALL.

THE scaffolding is being removed from the interior of the Town Hall at Leeds, which is being decorated in colour under the direction of Mr. J. D. Crace, of Dulwich. The main objects of the decorative scheme, as originally explained to the Town Hall Committee by Mr. Crace, has been to do justice to the features and proportions of the architecture; to use such colouring and contrasts as would to some extent combat the too-frequent gloom of the Leeds atmosphere; and, lastly, to so arrange the colours as to produce an effective result by artificial light as well as by day. The great semicircular vault of the roof is treated, the *Leeds Mercury* explains, with light tones of cream white, broken by mouldings and ornaments in gold and gold colour, and pierced by the square sunk panels or coffers of blue as a background to the large rosettes which occupy them. The vault is divided, in its length, into five bays by broad borders of bronzed laurel-leaf enrichments, confined by wide gilt bands; the division corresponding to the position of the double columns below. These columns are painted in imitation of red marble—a treatment adopted originally by the architect of the building, Mr. Brodrick, when it was first completed. Had there then existed the facilities which now exist for procuring coloured marbles, no doubt Mr. Brodrick would have been glad of the real thing, for it was his expressed intention that they should appear as coloured marble. The red tone of these is the key-note of the decoration. It appears as a ground to the ornament of the frieze, and again in the arched linings of the windows; whilst it also marks out the semicircular ends of the hall as the ground colour of the inscriptions. It does much to cheer and warm the interior, and affords a valuable contrast to the light tones of the roof and the buff panels of the walls. The capitals of the columns are bronzed and richly gilt, and the door dressings, the front of the new gallery, and some other features are similarly treated. The ceiling beneath the gallery, which is in complete shadow, is decorated entirely in soft shades of white. In the vestibule, now in Mr. Crace's hands, the treatment is not unlike that in the hall, but with deeper colouring. Upwards of five hundred poles were employed in the scaffolding, besides boards, ropes, &c. This work has been performed by a local firm—Messrs. Mountain and Son. The wide gilt bands which border the arches, dividing the main roof into bays, are each more than 4in. wide, and their total length is about half a mile. They are gilt solid. There is half a mile of one 3in. moulding surrounding the panels of the roof, whilst the run of painted margins in the roof amounts to a mile and a half. The work is expected to be completed in about a month.

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GOEHRING AND ITS USES.

WE have on previous occasions described the many advantages of Goehring in framing and woodwork. A useful little brochure has been published by Messrs. J. M. Bennett and Sons, Timber Merchants, of Ardwick, Manchester, entitled "Goehring: What it is, How to Get it, and Where to Use it," which, in the compass of a few pages, describes the characteristics and many applications of this useful internal decoration. In the domain of ornamental woodwork the introduction of Goehring has enabled the householder and his architect to avail themselves of a species of decoration which very nearly resembles hand carving. Unlike those processes by which wood is embossed or stamped into ornamental forms, it has all the advantages of moulding cut out of the solid timber, with much of the beauty and ornamental effect of carving. Its inventor, Dr. Charles Louis Goehring, has perfected a marvellous system of machinery by which it is produced. The ornament produced is essentially geometrical, and can be applied to all kinds of moulding, spiral turning, matchboarding, panelling, architraves, framing, picture frames, ceiling panels, and other decorative treatments of wood. Thus a Goehring board, every third or fourth board of matchboarding, makes an effective and inexpensive lining. Goehring does not claim to be an imitation of or substitute for carving, and on this ground it has a decided merit over many modern processes. Several excellent examples of its application are given. Thus for ceilings it can be used with admirable effect. Old plaster ceilings need not be removed, but boarded over by Goehring mouldings or panelled. For rooms, the dado and door panels can be framed with it, and picture mouldings of Goehring introduced. Staircases can be lined with it, and rooms, like ladies' boudoirs, libraries, and billiard-rooms, panelled. For office screens and partitions, and a hundred other kinds of woodwork, this invention is applicable. Amongst the other uses to which it appears well adapted are the wooden pipes of organs, which can be brought to the front instead of the metal pipes, dado, picture rails and overmantels. As a casing of a decorative character, the value of Goehring cannot be overrated, and in this capacity we would recommend it for casing iron columns, girders, stair soffits. An example is given of a passenger elevator cased with mouldings and panels, making an inexpensive ornamental interior. We recommend our practical readers to obtain this little handbook, where the advantages of this decorative material are enumerated, and it is of importance to notice that the cost of Goehring is only a trifle above that of ordinary plain timber. The grain of the wood is cut crosswise. The most intricate patterns can be cut, and these have all the sharpness and precision of the best hand work. Raised and sunk patterns are alike produced, and the Goehring machinery is capable of producing spiral, twisted, and square turning.

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THEATRES.—XL.

By Ernest A. E. Woodrow, A.R.I.B.A.

There appears to be much more thought displayed for the personal comfort of the playgoers in the planning of Continental theatres, in the way of cloakrooms, than in this country; but, on the other hand, there is often a lack of urinal and w.c. accommodation shown in foreign playhouses.

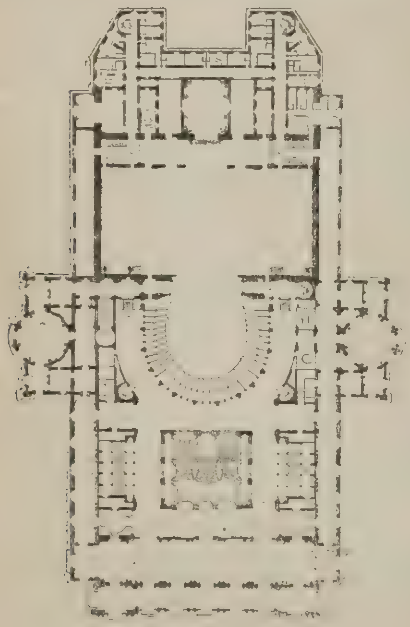

Fig. 1.

Too often we find in England that the cloakroom has been altogether omitted from the plan of the auditorium, and the manager has to have resource to an arrangement which in itself may be looked upon as one of danger to the public. I refer to the placing of hat and cloak-pegs, umbrella stands, and sometimes a counter in the passages and corridors of the theatre. This is dangerous, as it obstructs and impedes the free progress of the outgoing crowd; it is inconvenient and obstructive when the audience leave in the ordinary quiet way after the play; it would be highly dangerous in the event of a rush, as it not only lessens the width of the passage-way, but also creates stumbling-blocks in the path.

The omission of proper cloakrooms may be rightly considered as a lack of provision for public safety, as a manager cannot work his theatre without them, and if the architect omits them, he is forced to resort to some makeshift.

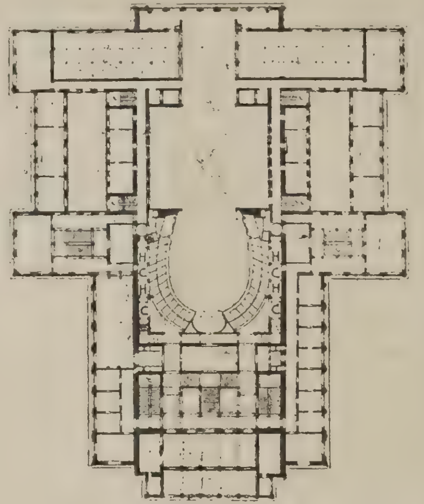

Fig. 2.

The planning of cloakrooms may, therefore, be looked upon as an essential provision for public safety as well as public comfort. Speaking on this particular point, Mr. Buckle writes: "Many representative theatres are sadly deficient in retiring-room accommodation. When planning these rooms due regard for the natural modesty of English ladies, and approaches arranged with some degree of privacy, so as not to render progress to and from glaringly observable, is advisable. . . . Each room should be fitted with a counter, having shelves below, and a sufficient number of cloak-pegs." "Gentlemen's cloakrooms," continues the same writer, "should be arranged near the entrance vestibule, but removed from the direct line of exit. Cloakrooms are most desirably situated when approached by passages leading off the main corridors. These passages may with advantage be divided longitudinally, the people passing up one side to the cloakroom and returning down the other. By this means struggling and confusion are avoided, and those congregating at the cloakrooms do not impede the egress of the audience."

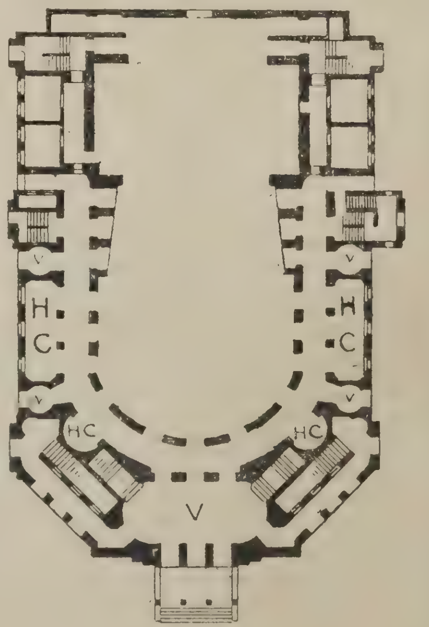

Fig. 3.

The English public have a dislike to part with any of their property in places of entertainment, due partly to the difficulty of obtaining their hats, &c., through the crowding in the cloakrooms after the performance is over, and partly to the tendency of preferring to keep possession of their own hat and coat. To meet this objection we have seen how some managers provide room under the seats for hats and coats. I have heard of a case where a man safely escaped from a theatre in flames, but returned to fetch his hat and was burned to death. I cannot at the moment remember where the fire occurred, but I received this information on good authority.

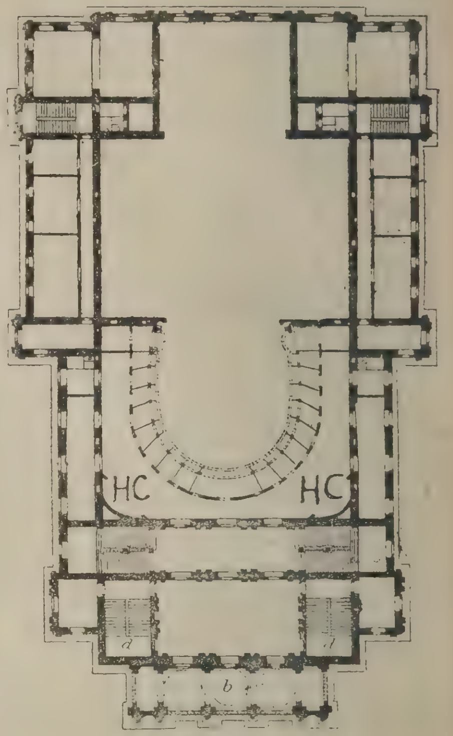

Fig. 4.

I illustrate a few plans showing the position of the retiring-rooms in different theatres:—

In Fig. 1, of the Paris Opera House, the cloakrooms H C may appear small; but there the demand is limited, as the private boxes are of such dimensions as to afford conveniences for the putting away and hanging up of wraps, &c.

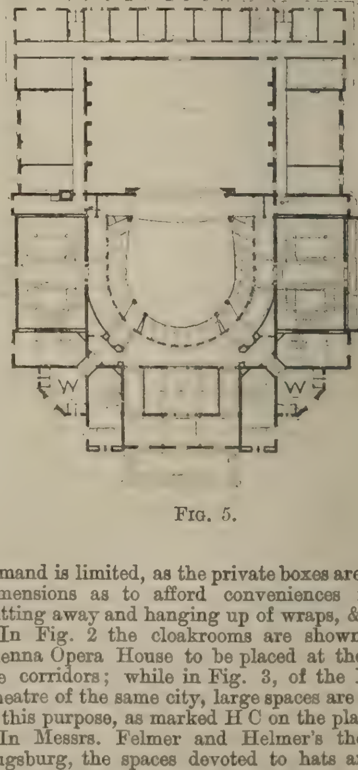

Fig. 5.

In Fig. 2 the cloakrooms are shown in the Vienna Opera House to be placed at the side of the corridors; while in Fig. 3, of the People's Theatre of the same city, large spaces are allotted to this purpose, as marked H C on the plan.

In Messrs. Felmer and Helmer's theatre at Augsburg, the spaces devoted to hats and coats are in the spare corners of the corridors formed by the square walls of the auditorium, and the circular line of the boxes, as shown in Fig. 4. The position of the "ladies'" and "gentlemen's" rooms (W W) in Mr. Jan Springer's Amsterdam theatre, Fig. 5, are very cleverly placed. The rooms are approached through lobbies from the corridors of each tier. They are not, therefore, obtrusive in asserting their existence; at the same time, they can be easily found. These rooms, perhaps, take more the place of lavatories than cloakrooms, as illustrated in Fig. 3.

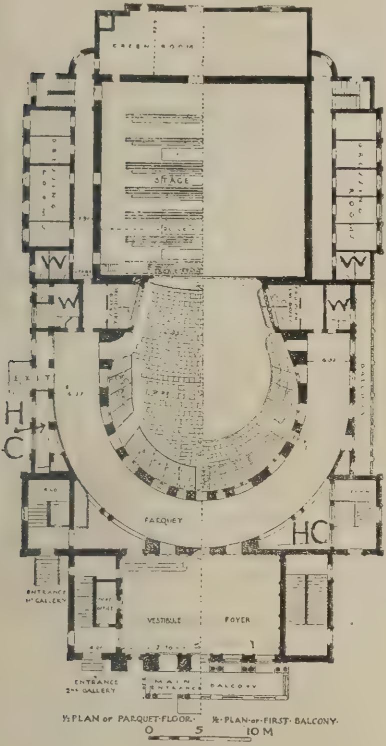

FIG. 6.

Fig. 6, of the Lessing Theatre, I extract from my series of articles now appearing in the *American Architect*. The plan shows two levels with the cloakrooms on each. I also would draw attention to the convenient arrangement of the lavatories and w.c.'s (W W) both for the public and the performers, they being arranged close together, the continuation of the proscenium wall dividing the actor's lavatories from those of the audience.

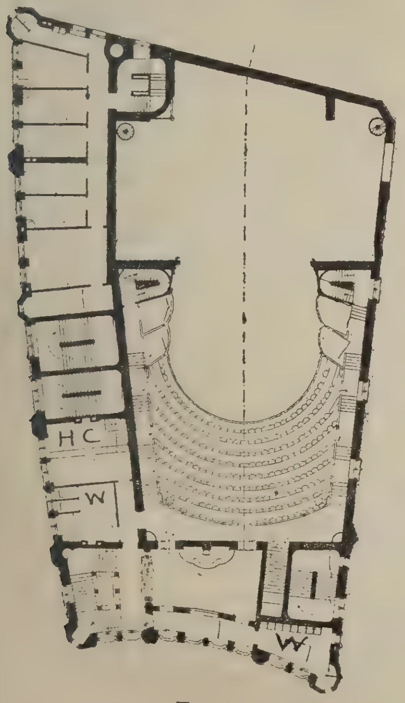

FIG. 8.

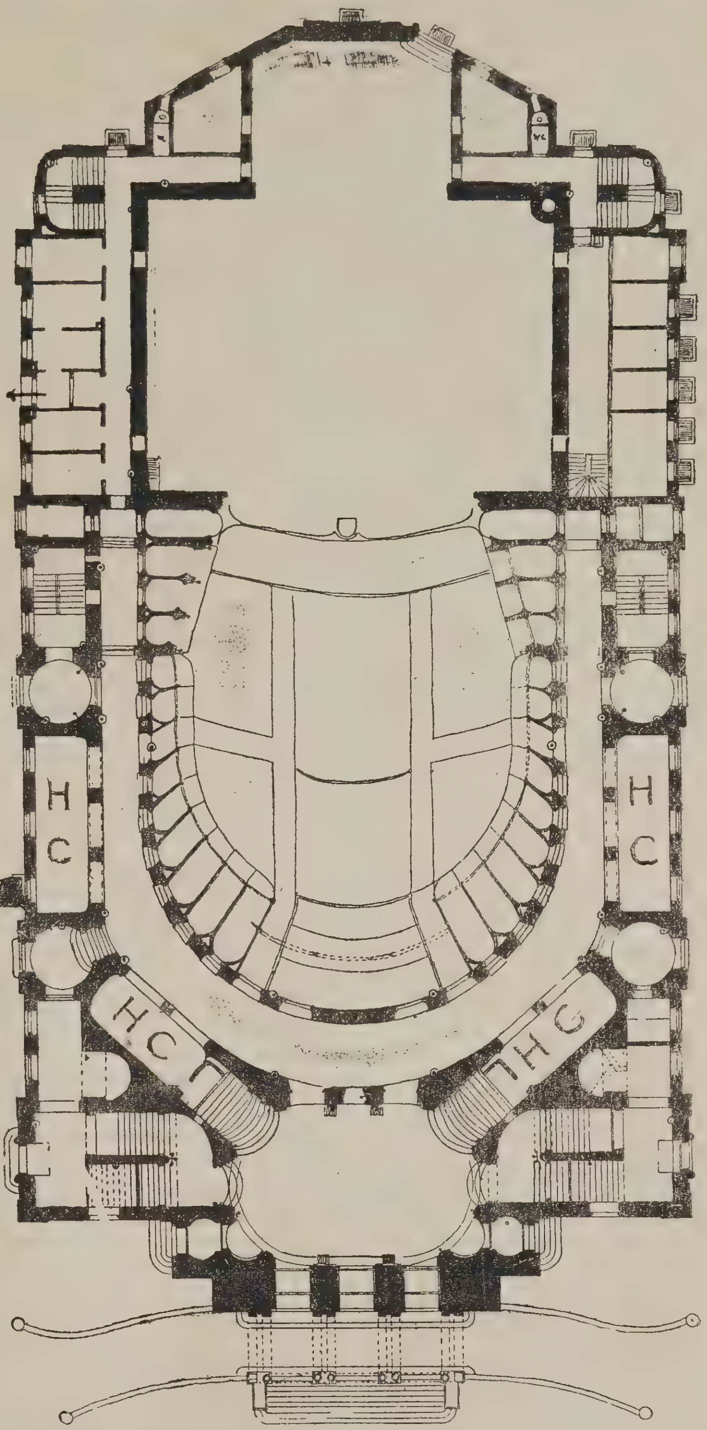

FIG. 7.

In the Prague Theatre (Fig. 7) the arrangement is somewhat similar to that in the Vienna People's Playhouse.

My last illustration, Fig. 8, is of the Royal English Opera House, the plans of which Mr. D'Oyly Carte has kindly permitted me to copy for reproduction in the *American Architect*, and one level of which I have taken the liberty of reproducing here, as one of the latest English theatres of note. The cloakrooms herein shown partake also of the character of lavatories.

It will be seen from these illustrations that abroad special spaces near the corridors are set aside for the reception of hats and coats. This space is, as a rule, large, while the w.c. and urinal accommodation, as I have pointed out, is small. In England, architects usually combine the two in one room. I have already dwelt somewhat upon the necessary arrangements for the provision of w.c.'s, and need only mention here the importance, especially in theatres of variety, of making such provision ample. The rule to be observed in respect to this matter is, at least, one ladies' room and one gentlemen's retiring-room for each division of the audience, and at least one w.c. and one urinal on each floor of the dressing-rooms in small theatres, more accommodation being, of course, required in accordance with the size of the theatre and the number employed therein.

In the accompanying plans the cloakrooms are marked H C, the lavatories W.

No further description need be given as to the internal fittings required in the cloakrooms of theatres. As long as there are plenty of numbered pegs and shelves, all requirements will be met.

NOTES FROM PARIS.

THE Committee of Theatres, presided over by M. Laurent, secretary to the Prefecture of Police, held an important meeting a few days ago, in order to examine the definite plans for the reconstruction of the Opéra Comique. Several important modifications were made to the plans of M. Bernier regarding the arrangements for heating the public portion of the theatre. The opinion of the Committee was that the boilers for heating purposes should not be placed in the cellars below the portion of the theatre devoted to the public, but in another portion of the theatre under the artists' rooms. Fireplaces in the dressing rooms will not be allowed; these rooms will be lighted solely by electricity. The gallery surrounding the pit and dress-circles shall not have a less width than 4ft. 6in.; the number of seats indicated in the present plans will be greatly diminished. The theatre will be constructed in every portion of incombustible materials, the lighting will be exclusively by electricity, the heating will be by steam at low pressure, and the ventilation by means of ventilators worked by electricity; above the stage will be a rolling ventilating trap. The question of the prevention of fire and easy means of exit was closely gone into. The Parliament has just annulled the vote of last year for £20,000, and has opened a new credit for this year for £40,000 for the continuation of the construction of the new theatre.

Decorative art has just lost a master in the person of Joseph Cheret, called the modern Clodion, and brother of the celebrated painter of advertisements, whose artistic posters so enliven the hoardings of Paris. Joseph Cheret, whose beautiful work always obtained the greatest success at the Salons and exhibitions, was a type of the old-fashioned artisan. Having no resources of his own, he was forced at the age of twelve to earn his living at the workshop of a decorator, and by dint of hard work, a real genius, and not trammelled by the classic tradition of the schools, giving his imagination full flight, he at length arrived to be one of the most characteristic decorators of his day; a few weeks only before his death he was decorated with the Legion of Honour. Amongst decorative artists he was one of the few who seemed to understand that architecture is the basis of decoration, and that the latter cannot exist without the former. He was a great admirer of architecture, and had studied its forms and principles to the depth.

The inauguration of the monument to the late celebrated sculptor of animals, Barye, took place a few days ago. This monument, erected on the Isle St. Louis, differs much from the ordinary style of memorial monuments. In memory of the artist, reproductions of the best of his works cover the monument, which contains a simple bronze bas-relief medallion of the sculptor. On the top of the lofty pedestal is placed the well-known group of Theseus fighting the Centaur; on either side of the pedestal are the groups of Order punishing Perversity, and Strength defending Work, two allegorical works of which the originals crown one of the pediments of the Louvre. In front is the celebrated bronze, a lion crushing a serpent.

Painters and sculptors are already feverishly anxious regarding the question of the exhibition of their works before and during the proposed Exposition of 1900. According to the present plans, the Palaces of Industry, of Fine Arts, and Liberal Arts will be included in the Exposition, and as these are the buildings in which the annual Salons take place, the anxiety of the artists may be well understood. The Society of Artists has the intention of asking permission to hold its own Salon at the Louvre; the National Society of Fine Arts, however, is greatly embarrassed in finding a suitable hall for exhibition.

M. Gavault, commissioned by the Minister of Public Instruction for archæological studies in Algeria, has just discovered a large basilic nearly 140ft. long. This monument dates from the 5th or 6th century, and is covered with sculptured ornaments, of which a number are purely ornamental, whilst others represent symbolical animals, fishes, lions, eagles, and bulls, one group representing Daniel in the Lions' Den. Most of the decoration presents a striking analogy with the decoration of the Syrian churches, and also with the designs with which the Kabyles now ornament their jewels.

At a meeting held by the committee of the Exposition of 1900, the discussion turned upon the question of prizes to architects and engineers competing for the general designs for the buildings, and arrangements of position of these buildings and attractions. The opinion was that the prizes of £2,000 for the best ideas were not sufficient, and that these sums should be increased to £4,000. The competition programme will very shortly be decided; a period of four months will be allowed for the preparation of the ideas and designs. The competitors may compose their ideas under the supposition that the whole of the ground devoted to the exhibition is available, and the existing buildings, which may possibly be pulled down, assumed as non-existing, unless the competitor should find these existing buildings useful in the composition of his ideas. The Eiffel Tower is supposed to be left standing. It appears, however, that since this decision the question of demolishing the tower has been discussed. It is, therefore, probable that competitors will be allowed to suppose the position of the tower as unoccupied, and an opportunity given for the imagination of a new attraction. The tower has been and is a financial success, and although our friends on this side declare the exhibition to be rather a means of public teaching than, as they say, "a money-making business," it is probable that, until some other attraction equally successful is imagined, the tower will remain. The competition will be open to all, professional men or amateurs. This being the case the administration will consider the designs to which prizes have been awarded as its own property, with liberty to intrust the execution of the ideas to others than the authors. This is well understood, for it is quite possible that the author of a good idea, and an interesting one, may be perfectly incapable of carrying out his idea in practice. The various sections of the Exposition will be divided into 17 groups, comprising 114 classes:—Education and teaching, six classes; works of art, four classes; instruments and processes of letters, science and arts, eight classes; mechanics, four classes; electricity, five classes; engineering and means of transport, seven classes; agriculture, eight classes; horticulture and arboriculture, seven classes; forests, hunting, and fishing, &c., six classes; food, seven classes; mines, metallurgy, three classes; decoration and furniture, ten classes; weaving, cloths and clothing, ten classes; chemistry, five classes, various industries, eight classes; social economy, eleven classes; armies on land and sea, five classes. The groups of social economy and armies are new. A portion of the latter is destined to colonisation.

The Paris Town Council invests each year a certain amount of money for the purchase of works of art exhibited at the two Salons. This year the total of purchases made from amongst the works at the Champs Elysées and the Champ de Mars amounts to over £3,000, nearly equally divided for works of painting and sculpture.

It is a serious question, and one now before Parliament, that of creating a museum fund to be entirely devoted to the maintenance of the various public museums and the purchasing of works of art. It is put forward that France is nearly the only country in which no charge whatever is made to the public for admission to the museums of science and art. The funds allowed by the State are not sufficient to properly keep up the museums or allow the purchase of valuable works of art, which are bought up by other countries richer in the necessary funds. At South Kensington and at the British Museum, it is remarked, there are three paying days a week; in Germany and Austria there are also free days and paying days; whilst in Italy the admission to all museums and monuments is taxed. It is therefore proposed that Paris should follow, and also institute several paying days per week, in order to form sufficient money for competition with other countries in the purchase of interesting works. These funds may also be increased by means of subscriptions, donations, and legacies.

The winners of the Prix de Rome in the section of Painting have just been announced. These are M. Jules Leroux, pupil of M. Bonnat, and M. Adolphe Dechenaud, pupil of Benj. Constant, winners of the Grand Prix; MM. William Laparra, pupil of M. Bougeureau, and Emmanuel Benner, pupil of M. Henner, winners of the first second and second second Grand Prix respectively.

Parliament, at a sitting of the 10th of July, opened a credit of £5,000 for the continuation of the archæological searches at Delphos.

A statue to the memory of the celebrated Condorcet was inaugurated a few days ago, on the Quai Conti, in front of the Institute. The statue is the work of the sculptor Perrin, and presents the celebrated philosopher standing, a book under his left arm, the right arm placed on the breast "à la Bonaparte." The statue is of bronze, and the pedestal bears the inscription, "Condorcet, 1743—1794." Arthur Vye Parminter.

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PUBLIC HEALTH CONGRESS IN LONDON.

The Congress of the British Institute of Public Health was inaugurated on Wednesday evening by a conversazione given at King's College, London. The meetings are being held in five sections:—A, Preventive Medicine; B, Chemistry and Climatology; C, Municipal and Parliamentary; D, Engineering and Building Construction; and, E, Naval and Military Hygiene. Section D was opened by a meeting at King's College yesterday (Thursday), at which the chair was taken by the President of the Section, Professor Banister Fletcher, F.R.I.B.A. In his inaugural address, the President summarised the advancements in construction and hygiene that have recently taken place, and then proceeded to indicate the improvements still desired. He summarised the provisions of the Public Health, London, 1891, which has done for the Metropolis what the Public Health Act of 1875 accomplished for the rest of the country, and the London County Council General Powers Act of 1890. The London Streets and Buildings Bill, which had, he remarked, every likelihood of becoming law, was a Bill to consolidate and amend the enactments relating to streets and buildings in London. The idea was to repeal the thirteen Acts under which at present all buildings were regulated in London, and to form a new Act which would embrace the regulations in these Acts and embody other regulations of great importance. This Act was one that was much required, though the President could not agree with some of its proposed regulations. He urged the paramount importance of intelligent energy in carrying out the law, remarking that it was self-evident that one might make the most perfect rules and by-laws and yet not have good buildings, unless those appointed to supervise, themselves understood how the work should be done. The principal, or, at least, the most important, duties for a sanitary inspector were those of seeing that buildings were properly built, and the drainage work properly executed with proper materials; and clearly the best man for such work was one who had been practically brought up in the building trades. Having referred in detail to the construction, drainage, plumbing, and water supply of dwellings, the President passed on to consider the lighting, and observed that, from a sanitary point of view, the electric light had no competitor. Gas seemed to have a future for cooking and heating, but for illuminating powers they hoped for its speedy extinction. In conclusion, Professor Fletcher alluded to the fact that no public baths or washhouses had been provided in the City, and having touched on the sanitary condition of London streets, he urged the importance of sanitary education to the architect and engineer.

During the afternoon papers were read in this section by Mr. W. H. Preece, C.B., F.R.S., on "Electric Lighting as a Health Agent"; by Mr. James Thomson, C.E., on "The Sanitation of Flats"; and by Mr. Walter G. Atkins, on "The Softening of Public Water Supplies."

This (Friday) afternoon the Section D will again meet at King's College, from 2 till 5 p.m., when the following papers will be read and discussed: "The Destruction of Town Refuse," by Mr. Charles Jones, of Ealing; "Sewage Effluents," by Mr. W. Kaye Parry, C.E., of Dublin; and "A London Architect's Troubles with the Local Sanitary Authorities," by Mr. Lewis Solomon, F.R.I.B.A.

The papers to be read and discussed on Monday afternoon at the same place include: "The Architectural Features of Elementary Schools from a Public Health Point of View," by Mr. T. J. Bailey, F.R.I.B.A, architect to the London School Board; "Electric Lighting, Power, and Heating," by G. Binswanger; "Eastwood and Grensley Drainage Works," by Mr. J. G. Browning, resident engineer; and "The Planning of Fever Hospitals," by Mr. Campbell Douglas, F.R.I.B.A., of Glasgow.

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It has been decided to light the magnificent church of St. Mary de Redcliffe, Bristol, with electricity, and Mr. W. H. Massey, of Twyford, consulting electrical engineer to the Cardiff corporation, has been instructed by the vestry to draw up, in conjunction with Sir Arthur Blomfield, A.R.A., a special report and scheme.

The Pengelly Memorial Fund amounts to £1,358, and the local committee at Torquay have commissioned Mr. E. P. Bovey to proceed with the erection of a portion of the additions to the Torquay Natural History Museum, from the designs of Mr. W. Harvey, of London. The amount already subscribed is only sufficient to cover the cost of the lecture theatre, but other buildings are contemplated as a complete memorial to the founder of the museum.

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"THE JOURNEY OF THE MAGI."—THE TOWER BRIDGE.—GOATHLAND CHURCH, YORKS.—ALL SAINTS' CHURCH, RAFFORTH.—SCULPTURE AT THE ROYAL ACADEMY.—DESIGN FOR A HOUSE.—THE "GRANVILLE" HOTEL, BOURNEMOUTH.—"LYNDHURST," WESTON-SUPER-MARE.

Our Illustrations.

OLD MASTERS ON THE CONTINENT.—VII.

WE publish this week, as the seventh of our series of reproductions of paintings in Continental galleries, Benozzo Gozzoli's spirited version of "The Journey of the Magi" from the East towards Jerusalem (Matt. ii. 1). It is one of this artist's frescoes, illustrating the history of the Wise Men, extending over three walls of the private chapel on the first floor of the Palazzo Riccardi, Florence, the ancient palace of the Medici. This building was erected in 1434 under Cosmo, the Father of his Country, from a design by Michelozzi, and since 1814 has been a public building. A biography of Gozzoli and a description of the fresco are given in Mr. C. L. Eastlake's article on p. 98 *ante*.

THE TOWER BRIDGE.

ON June 29, the day before that on which the Tower Bridge was opened, we published a general drawing of the entire structure, with plans of the various parts, besides a double-page detail of the great towers' upper stages. On July 13th a detail drawing was printed, illustrating these buildings as a whole. To-day another double-page plate, also drawn by Mr. G. D. Stevenson, A.R.I.B.A., the architect who is responsible for the designs of these details, appears among our lithographs in delineation of the north and south façades of the main towers, with sectional plans through the balconies and windows.

GOATHLAND CHURCH.

THIS church is being built amidst fine moorland scenery between Pickering and Whitby, and is to take the place of a barn-like building erected in 1812. It comprises: nave, 52ft. by 22ft.; chancel, 32ft. by 19ft.; vestries, 22ft. 6in. by 10ft. 6in., and S. porch, ringing belfry, and heating-chambers, and will altogether accommodate 180 people. The materials are local stone, pitch-pine roofs covered with red tiles, and sanded quarry glazing. A low, sturdy character of design was thought most suitable for such a wild locality. Mr. Barnes, of Malton, is the contractor; and Messrs. Demaine and Brierley, of York, are the architects.

RUFFORTH CHURCH, NEAR YORK.

THIS church is being erected to the memory of the late Mr. Middlewood, of Rufforth Hall, at the sole cost of his widow and daughters, and is to replace a dilapidated building chiefly of the last century, but in which one or two earlier features were found, which have been carefully incorporated in the new work. The church will comprise nave, 41ft. 6in. by 18ft. 2in.; S. aisle, 30ft. by 9ft.; chancel, 28ft. 6in. by 18ft. 2in.; vestries, heating-chamber, ringing and clock floors, &c., and will accommodate about 170 people. The materials are local grit stone for the walling, with Whitby stone for the dressings, tracery, &c. The inside is faced with coursed Tadcaster stone, finished with a dragged face. The whole of the roofs and joinery are of oak, and the latter includes a richly-carved chancel-screen and organ-case. Mr. Gould, of Leeds, is the builder, and Messrs. Demaine and Brierley, of York, are the architects.

SCULPTURE AT THE ROYAL ACADEMY.

WE have already given three plates illustrating selected works of sculpture from the present exhibition of the Royal Academy, and to-day we give another sheet of representative examples. Mr. F. W. Pomeroy's water-nymph "Undine," with fish disporting in the encircling waves round the base of the statuette, is an extremely graceful and well-modelled figure with uplifted arms and long flowing tresses of hair behind. The two knockers at once contrast with each other, and in detail they are essentially different, though as seen on the plate the two make a very good pair. Mr. Chas. J. Allen's knocker represents "Fortuna," and Mr. Alfred F. Lewis has chosen "Mermaids," with weeping Love seated in a shell between the sirens. Below is a fish completing the composition. Both designs are admirably suggestive.

DESIGN FOR A HOUSE.

THIS house was designed on a sketch plan provided by the building owner. The illustration shows the ground-floor walls to be faced with red bricks, those to the first floor being covered with half-timber work. The roofs are to be tiled, and the wood framings stained dark brown and oiled. The quoins are of stone. The illustration is from a drawing, now on view at the Royal Academy, by the architect, Mr. R. A. Briggs, F.R.I.B.A., of 2, Devonshire-square, E.C.

THE "GRANVILLE" HOTEL, BOURNEMOUTH.

THIS building has been recently erected on a corner site at the junction of Richmond Hill with Yelverton-road, Bournemouth. Up to the present time, probably no serious attempt has been made towards the application of terracotta for building purposes in the neighbourhood, and this may be instructive when it is remembered that one of the largest manufactories of this material is situated within about two or three miles of the spot, which is in the centre of one of the largest and most modern of our seaside towns, and where it would be naturally expected a large demand would exist were it not for the little difficulties and delays that its adoption often entails. Few architects, however, would perhaps question that these are trifling compared to the many advantages it possesses, and that if greater facilities were offered in its manufacture, that the popular prejudices would be in a much better way of being overcome. The general face is composed of Bridgewater red bricks, they being the best that are easily procurable in the locality. The heating is by ordinary fireplaces and hot-water coils, and the lighting by electricity throughout. The entire works have been carried out by Mr. T. H. Kingerlee, of Oxford, under the superintendence of the architects, Messrs. Lawson and Donkin, Bournemouth.

"LYNDHURST," WESTON-SUPER-MARE.

THIS house is to be built of brick; the lower portion to be faced with dark red face-bricks, the upper portion to be cemented. The roof is to be tiled with Broseley tiles; all external woodwork to be painted a dark brown. On the ground-floor there are three reception-rooms, a studio with a north light, and a large hall fitted as a billiard-room. There are nine bedrooms, dressing-room, bath-room, &c., on the first floor. Mr. J. Ramsay Cox, of Weston-super-Mare, is the architect.

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The work in connection with the erection of the new church at Gretna, near Carlisle, was commenced last week. The building occupies an open elevated site at the corner of four roads between Gretna Green and Springfield, and will accommodate over 200 persons. It is being erected from designs prepared by Mr. T. Taylor Scott, architect, of Carlisle. The contractors selected for the various trades are:—Mr. James Rae, builder, Ecclefechan; Mr. A. Tweedie, joiner, Annan; Messrs. Millar and Son, plumbers, Annan; Mr. McCulloch, painter, glazier, and decorator, Annan; Mr. C. J. Nanson, slater, Carlisle; and Mr. W. Norman, plasterer, Carlisle.

WORKMEN'S CLUB UNION CONVALESCENT HOME, PEGWELL BAY, ISLE OF THANET.

BANK HOLIDAY in August this year will mark a memorable occasion for Pegwell Bay, near Ramsgate, when this institution, which Mr. J. Passmore Edwards has given to the Working Men's Club and Institute Union, will be opened, equipped and ready for use with accommodation for about 35 beds. In connection with the Club Union, whose offices adjoin the Holborn Town Hall in the Clerkenwell-road, there are 150 clubs in London with 35,000 members, and in the Provinces there are 300 clubs associated in the same way and giving 45,000 more members. The Pegwell Bay Convalescent Home thus about to be opened will be used mainly by members introduced by the London clubs. Three weeks of residence is the usual time contemplated for each patient, who will contribute five shillings per week towards his board, the club by whom he is nominated paying 21s. for his term. Should the honorary physician, Dr. Channing Pearce, of Ramsgate, certify that an extension of the patient's stay is desirable, he may for an additional five shillings remain for another week. The patients to be received will be mostly artisans. For months past the work of converting the mansion formerly known as the Clifton Hotel, with its annex buildings on the other side of the Ramsgate-road, into a convalescent home has been in progress. Originally over £20,000 was expended by the company by whom these buildings were erected, and besides, a sea-wall, inclosing the skating rink or tennis courts, was built, forming in its entirety a promenade about 550ft. in length. The two main buildings, now transformed for the purposes of the home given by Mr. Passmore Edwards, are connected by a tunnelled corridor under the public roadway, and by this means a direct and private communication is obtained for the inmates with the rink overlooking the shore, and where there are terraced walks and summer-houses commanding a sea view beyond Ramsgate Foreland and Harbour to the north, and southwards to Deal and Walmer. The whole of the ground floor of the principal part of the institution will be used as offices and reception rooms. The superintendent's office commands all departments and all entrances, as well as both staircases, thus insuring a ready supervision. All the upper stories of both buildings will be used as dormitories, and bath-rooms are provided with w.c.'s to each floor. The kitchen department is in the basement, and has new ranges and coppers, sinks, &c. Beyond the tunnelled passage way leading from the principal wing to the lower half of the establishment, is an alcove surrounded by wall-benches, from whence in a sunny and well-screened corner a fine view of the bay is obtained. The refectory, or dining-hall, is on this level, with direct service from the kitchen, and below a day-room for reading and games, &c., is situated at the same level as the tennis-courts and terraces which extend to the sea-wall on the shore. All the rooms are rendered cheerful and pretty with artistically patterned papers, the colours of the painted work being in harmony with them. The passages, staircases, corridors, and offices above the dado levels are finished in flatted colour of a pink terra-cotta shade, the joiner's fittings being in reds. All the old sanitary arrangements have been removed, and new drains, lavatories, and closets on the most practical principles have been employed. The buildings have been almost entirely re-roofed. Teale's grates have also been introduced. The contractors were Messrs. Jarman and Sons, of Ramsgate, and the architect supervising the work was Mr. Maurice B. Adams, F.R.I.B.A. Part of the improvement thus carried out by Mr. Passmore Edwards is due to his gift of a portion of the frontage of his property adjoining the Convalescent Home, whereby the public roadway has been materially widened just where it was most dangerous and restricted, at the foot of the hill near the angle of the buildings. The Mayor of Ramsgate was appointed to apply to Mr. Edwards, on behalf of the Corporation, who were anxious to secure so manifest a public improvement, to which Mr. Edwards at once consented.

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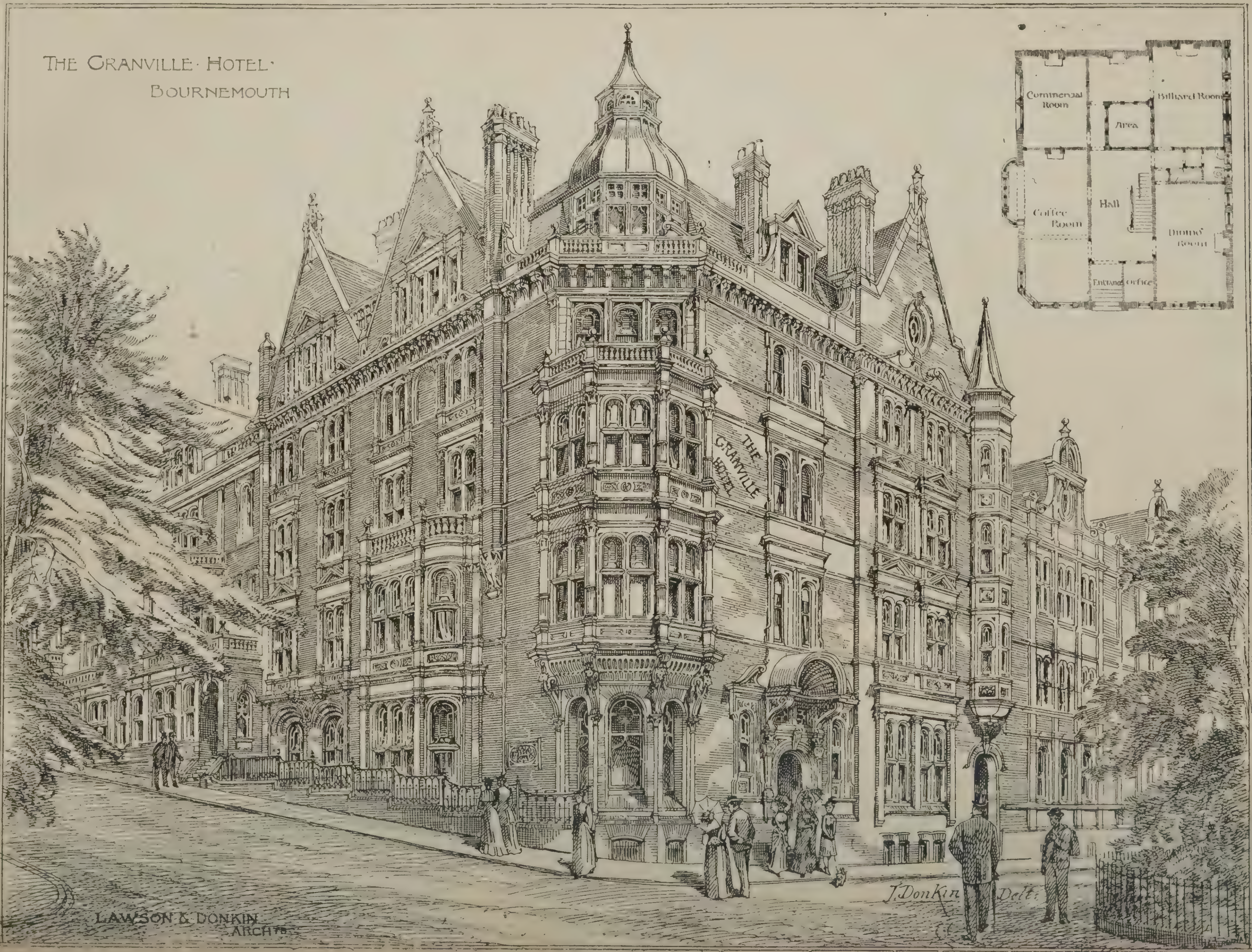
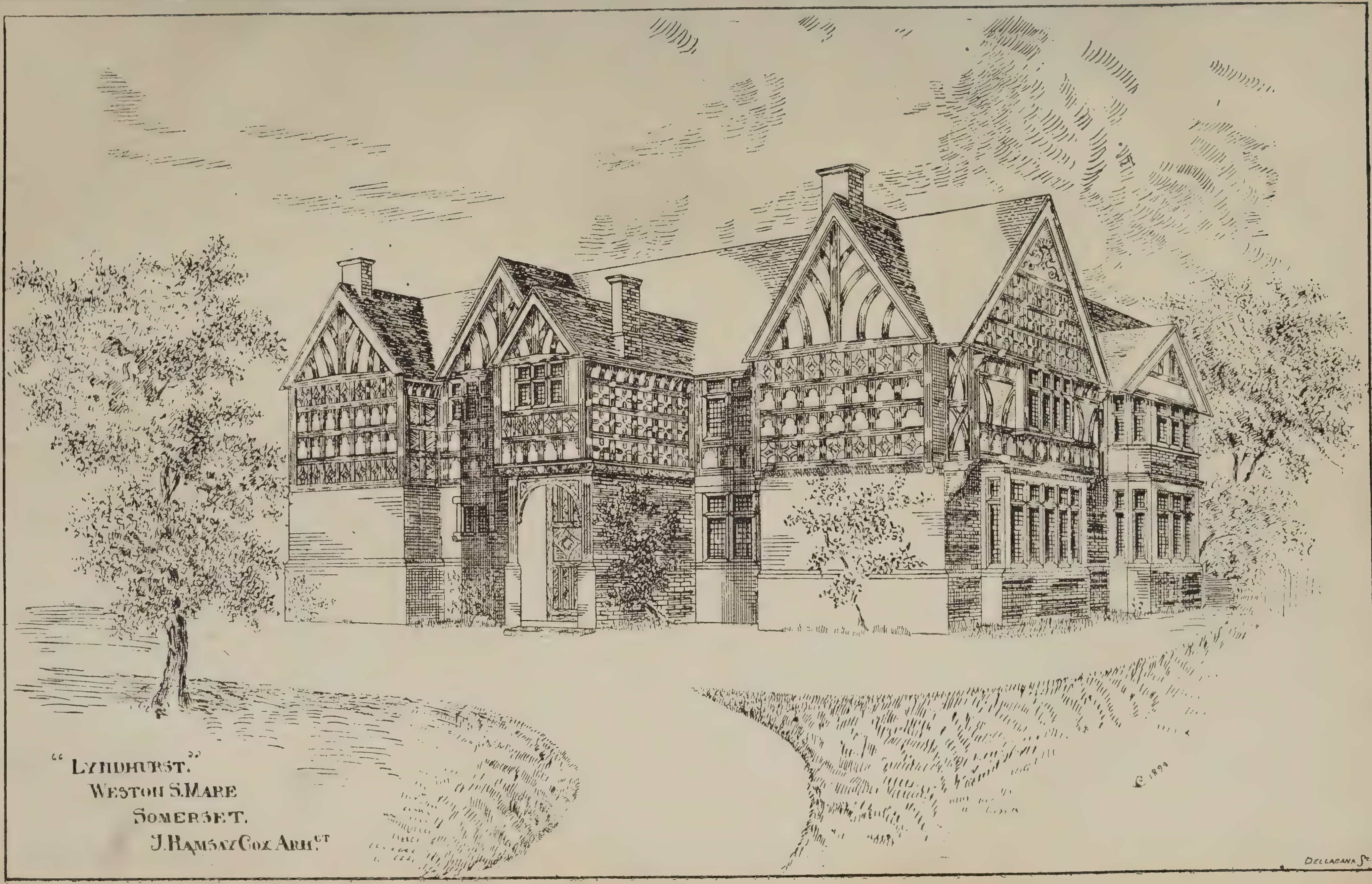
Major-General H. D. Crozier, R.E., Local Government Board Inspector, held an inquiry at Exmouth on Thursday in last week, the local board having applied to borrow £1,500 for laying out public walks and pleasure grounds. Considerable opposition was raised to the proposal.


THE GRANVILLE· HOTEL·
BOURNEMOUTH
Commercial Room
Area
Billiard Room
Coffee Room
Hall
Dining Room
Entrance
Office
THE GRANVILLE HOTEL
J. Donkin Delt.
LAWSON & DONKIN ARCHTS.


"LYNDHURST."
WESTON S. MARE
SOMERSET.
J. RAMSAY COX ARHᶜᵀ
C 1894
DELLAGANA Sc.

WAYSIDE NOTES.

Among the various picnics and congresses which will presently beguile the leisure of the wearied world of art and science, the Congress on Internal Navigation, which commenced its deliberations on Monday at the Hague, seems likely to be of some interest to civil engineers. One of the subjects which has received prominent attention was the question of the construction of navigable canals, and the means of preventing them from being frozen up. The British Association will meet at Oxford soon. Some of the papers are on subjects of much interest as well as of practical value. Among them will be Professor Bayley Balfour's paper on "Forestry," a subject which is being forced on the attention of landowners from various quarters and with various baits. Germany, they are told, for example, finds great pecuniary profit in its timber trade. The temptation to plant would be irresistible if we could only tell the many-acred squire who cannot let his farms that the trees, like the gourd of Scripture, would grow up in a single night. But the cultivation of timber demands the years of Methuselah and the patience of Job combined.

One more of the literary landmarks of London is about to vanish before the march of enterprise. The old home of Dickens in his early years is about to disappear, that the new wing of an insurance office may be erected on the site. It is Wood's Hotel, in Furnival's Inn, two of the rooms of which, just over the entrance, Dickens occupied when he was a Gallery reporter on the *Morning Chronicle*. One of these was his bedroom, and the other his sitting-room. He occupied these rooms for six months. Then he migrated to other rooms in the Inn unconnected with the hotel, and after a short sojourn in them he removed again to others close by in the same Inn, which formed his home for several years from 1835. This last house cost him £50 a year for rent, and its long identification with the great novelist when he was shooting into fame has led the Society of Arts to affix to it one of the tablets which it is putting on many of the historic houses of London. If any reader, curious in such matters, should ever visit the spot, he will find the house and the tablet at No. 15, where, doubtless, that rising young architect, John Westlock, had his diggings after his emancipation from his pupilage with Pecksniff.

The Exhibition Commissioners of 1851 have been summoned to meet to-day at Marlborough House, under the presidency of the Prince of Wales, when it may be expected that important questions connected with the disposal of land at South Kensington will be under consideration. The piece of ground adjoining the science collections, purchased by the Government from the Commissioners three years ago, is still awaiting occupation, no decision as to its final appropriation having as yet apparently been arrived at. I wonder what little job is in contemplation to-day? Is the Imperial Institute to be yet a little while longer bolstered up at the expense of the public, who are practically shut out from it, except at times and seasons convenient to the management? Some of these days we shall have the "true history of a surplus," from some one who knows the story of the balance left from the Exhibition of 1851, and a nice record it will be!

I see some of the medical papers have recently been excusing the demerits of wood pavement. My opinion as to its utter unsuitability for large towns remains the same. I see only last week Mr. Burmester submitted a report from the City Streets Committee on the question of repaving Upper Thames-street, and recommending that one portion of the said thoroughfare—viz., from London Bridge to Queen-street, should be paved by way of trial with Australian wood at an estimated cost of about £2,600, and that the question of repaving the remainder of the thoroughfare should be adjourned to try the effect of the experiment. Mr. Gordon moved as an amendment that the thoroughfare in question should be paved with asphalte at an estimated cost of £2,400. Mr. Gordon said that wood was objectionable at that point, in consequence of its absorbent nature. Mr. Wallace having seconded the amendment, and concurred with the remarks made by the mover, the medical officer was called upon to give his opinion on the relative merits of wood and asphalte paving. Dr. Sedgwick Saunders said that, after 21 years' experience in the matter, he was still of the opinion that the only clean and useful pavement for the City streets, having regard to sanitation alone, was asphalte pavement. Wood, in his opinion, was about the worst pavement ever invented. As far as Thames-street was concerned, he had often reported on its condition, and he repeated that the only way to improve the sanitary condition of the street was to lay down a hard and jointless pavement. After discussion, Mr. Gordon's amendment was put to the meeting and carried, and very wisely. Dr. Sedgwick Saunders's opinion is warranted by experience and common-sense.

Despite a great deal of what may be said from the architect's point of view respecting the New Tower Bridge, we have to bear in mind the engineering conditions of a structure to fulfil the requirements. Two very opposite materials had to be combined. It is easy to find fault with the architectural design and details of the bridge—indeed, there is some truth in what Mr. Marsland says about them; but the question is whether the architect would, with so many moving parts to consider, have given us anything more satisfactory as a whole. I took another opportunity of looking at the structure last week, and my impression was generally favourable. The towers and approaches are massive and well designed, though I do not like the way the angle-octagon turrets spring out of the circular corners. The long-pointed corbellings are certainly out of character, and the windows on the narrow sides of the towers look small, cramped, and over-elaborated. Mr. Marsland complains of the suspension chains, and suggests lattice girders to carry the side spans. I think he is wrong here, as the outline of the bridge would in that case have been less graceful. There would have been nothing to give support to the upper part of the towers, and the space between the tower and the approach would have formed a large gap which is now filled up by the chains and their suspending rods.

Lattice girders would have required a proportionate depth over the 270ft. spans, and have left little headway. Rigid forms harmonise better with towers of large size and proportion, and in this respect I agree with Mr. Marsland's strictures that girders would have given a more substantial appearance to the structure, but the engineering requirements made it necessary to have lighter side spans. Chains were thus an indispensable means of giving the necessary strength, and the mode of treating them was one of the difficulties that had to be overcome. It was a crux for both engineer and architect. I do not admire the attachment to the towers, the chain at the junctions tapering to points; but, after all, it is the right form for a chain, for the idea of rigidity at the attachment would be mechanically and æsthetically wrong.

Personally, I should have preferred to see the windows of the towers less ornate and more elongated in shape, so as to give a verticality to the lines of the tower—lancet-formed openings between piers of masonry. I think a sense of greater rigidity would thus have been given to the towers—æsthetically, of course—which would have taken away the present solid-masonry look of the towers, which, as everybody knows, only clothe the steel structures within. From the high-art view of the matter, the Tower Bridge must be pronounced a sham, as no real art can tolerate a casing. At the same time I prefer the towers as they are to huge skeletons of iron or steel, which might have been prodigiously ugly.

"Through the occurrence of unforeseen difficulties" the project of a competition of plans for the Cathedral of Westminster has been abandoned. The Cardinal Archbishop has, therefore, after consulting his advisers and experts in the profession, confided the task of preparing designs for the cathedral to Mr. Bentley. There can be no doubt of the result, architecturally, from the hand of that architect, and all will hope that the work of his life may secure the best fruits of his genius. The scheme provides for a cathedral in plan and arrangement similar in many respects to the old basilica of St. Peter's at Rome, as originally built by the Emperor Constantine, and a Benedictine Monastery; also a palace for the Cardinal Archbishop and a hall capable of holding 2,000 people.

No wonder work is slack for architects and builders in London when the municipal authorities shirk their duty in the way of providing necessary buildings. Sir John Hutton, in his annual address to the London County Council on Tuesday, pleaded strongly for the erection of the new Municipal Hall that is so badly wanted for London. Year by year the London County Council has to waste the ratepayers' money on additional rent for more office accommodation. Twelve separate houses have had to be taken since 1889—or one about every six months. If any other public body thus frittered away its resources on mere temporary accommodation, it would soon be called to account. It is high time that a great municipal hall was built, architecturally worthy of the Capital, which in this respect is put to shame by almost every fifth-rate borough in the Kingdom.

Similarly, "Diggleism" on the London School Board is responsible for the stoppage of the erection of the much-needed new board schools. One well-known senior inspector of schools declares that "the supply of school accommodation is as yet incomplete, and neglect of education has resulted from the deficiency." Another says: "My colleagues are agreed that there is unnecessary delay in recognising the need of building, in getting out plans, and lastly, in completing the buildings. Thousands of children all over London are at present denied admission because there is no room for them." And yet the board, for mere electioneering purposes, neglects to build new schools, and when it does set about the work, is dilatory and cheeseparing to a degree of meanness that is disgusting. Architects and builders who are voters for the London School Board will do well to read "The Case against Diggleism," just published by the Progressive School Board Election Council, and to be had for a shilling of Messrs. Alexander and Shepheard, 21, Furnival-street, E.C. They will find abundant confirmation therein of what I allege, and will, I hope, help to turn out the present reactionary majority when November comes.

CHIPS.

The tower of the ancient church at Stainton, Yorkshire, has been restored, and was reopened by the Bishop of Beverley on Tuesday week.

The bronze statue of Condorcet, by M. Jacques Perrin, exhibited at the Salon of 1892, has been set up on the Quai Conti, Paris, as a pendant to the statue of Voltaire. M. Aubé's statue of F. Boucher, the well-known painter, has been erected in the Jardin des Tuileries.

The Watford School Board have adopted plans by Mr. C. P. Ayres, of that town, for new schools at Callow Land.

Messrs. Newman and Newman, of Tooley-street, London Bridge, are the architects for the New Mendham memorial schools, to be built in Emmanuel parish, Hastings, for the Rev. Sholto Newman.

M. V. Palmaroli, a well-known Spanish painter, has been appointed director of the Madrid Gallery in the place of M. F. Madrazo, deceased.

A new building erected by the Manchester School Board in Ashton Old-road, Openshaw, was formally opened on Wednesday week. It provides accommodation for 1,000 children in three departments, the central-hall principle being adopted.

Mr. Samuel Sandars, J.P., of 7, De Vere-gardens, Kensington, and Chalfont Grove, Bucks, who recently died, leaving upwards of £256,000, has bequeathed a picture, "Tobit and the Angel," by Elsheimer, to the National Gallery; his picture, "Faith, Hope, and Charity," by Rubens, to his wife for life, and then to the Fitzwilliam Museum, Cambridge; and there are specific bequests of valuable books, manuscripts on vellum and silk, &c., to the Fitzwilliam Museum, the Cambridge University Library, and the library of Trinity College, Cambridge.

An extensive block of mercantile and shipping offices, occupying the site of Nos. 96, 97, and 98, Leadenhall-street, was opened on Monday by Alderman and Sheriff Sir J. Dimsdale. There are in the new building, of which Mr. Delissa Joseph is the architect, 105 rooms, and the structure is seven stories high, the area being about 7,000ft. The elevation, which is in Portland stone and granite, is of Free Classic design.

The Stockport town council decided at their last meeting to accept the tender of Messrs. T. and W. Meadows, Heaton Norris, amounting to £20,360, for carrying out contract No. 3 of the extensive scheme of sewerage now in progress. The council decided to join in the protest against the action of the Cheshire county council in resolving to spend about £80,000 in extending Upton Asylum, near Chester.

A TWO-HUNDRED-FOOT STEEL CHIMNEY.

WE herewith illustrate a 200ft. steel chimney recently built for a manufacturing plant, and figured in the *Engineering Record*. The contractors were Messrs. Riter and Conley, of Pittsburg, Pa., and the chimney was built for the Westinghouse Air Brake Company, at Wilmerding, Pa. The stack is designed to resist a wind pressure of 50lb. per square foot, with a factor of safety of 4. The material is punched and formed in the shops, but no riveting is done there excepting on the anchor brackets and other small parts. The ladder, for instance, is shipped in lengths of 15ft. or 20ft. The work is erected by inside scaffolding with a centre derrick for raising the sheets, and outside cages for the workmen which are hung on trolleys running on the edge of the shell. These are raised by the derrick as each course is added. When the stack is finished it is painted from a swing carriage suspended from the trolleys which run on the zee bar underneath the top ornament.

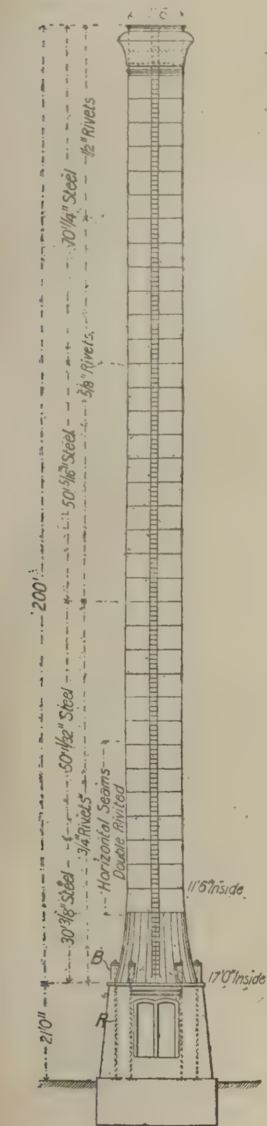


FIG. 1

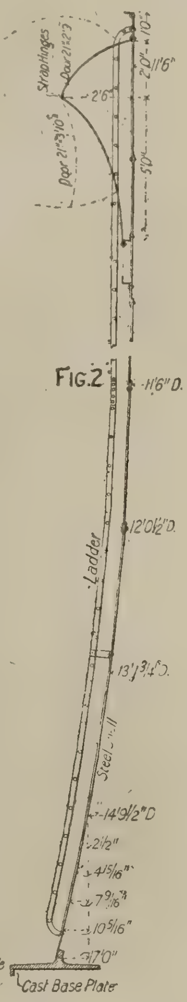


FIG. 2

Fig. 1 is a general elevation of the completed stack. The seams are single-lap riveted throughout except when otherwise marked. Fig. 2 shows the curved sections at top and bottom. Fig. 3 shows one of the 24 tapering bottom plates and one of the eight anchorage brackets B, Fig. 1, which make connections for the 2⅜in. round holding down bolts R, which penetrate 20ft. into the masonry pedestal and bear against the built-in stiffened anchor plates. Fig. 4 shows the cast plates for base and coping.

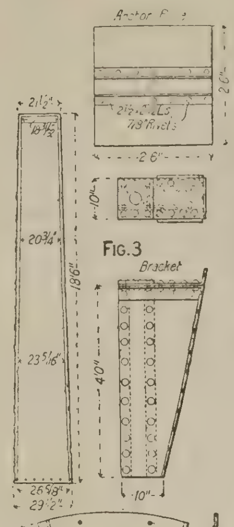
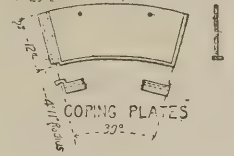
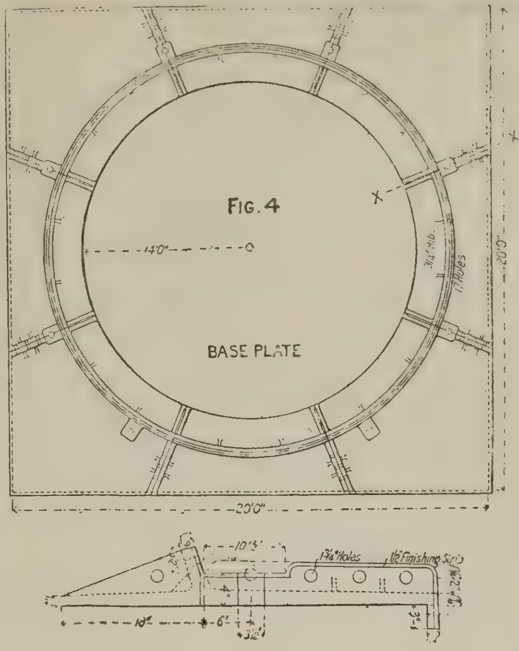


FIG. 3





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BOOKS RECEIVED.

Engineering Construction in Iron, Steel, and Timber, by W. H. WARREN, Challis Professor of Civil Engineering, University of Sydney, &c. (London: Longmans, Green, and Co.), is a large octavo volume, well printed and illustrated, intended as a textbook for students in technical colleges and universities, and for those engaged in constructional iron and steel work. Prof. Warren fully and comprehensively deals with his subject, availing himself freely of the works of many authorities in this country and America and Australia. The chapters on strength, elasticity, and safe-working stresses in iron and steel and timber are thorough, and the most recent experiments are recorded. The methods of determining stresses in structures, bending and shearing stresses on beams and girders, moments of resistance are clearly put before the student by the help of diagrams, and without an unnecessary amount of mathematics. The examples are valuable, and will give the means of enabling the student to see what real progress he has made, and whether he has mastered the principles. These examples illustrate the design of the most important structures in iron, steel, and timber. The chapter on bending moments gives the student a clear view of each case of loading, with their respective diagrams, representing bending moments and shearing stresses. Examples of bridges of small span, braced girders, bowstring girders, swing bridges, arched and suspension bridges are among the various subjects treated. As an engineering textbook, Professor Warren's treatise will take a high place.——*Theoretical Mechanics, Solids*, by J. EDWARD TAYLOR, M.A., B.Sc.Lond. (London: Longmans, Green, and Co.), is an introductory manual on theoretical mechanics, dealing mainly with solids. The author has kept in view the Science and Art Department's syllabus for the elementary stage, and has furnished a good selection of worked-out examples, and of questions and answers. The requirements of the London University matriculation examination have also been studied. One great merit of this book is the numerical examples given in each chapter. Thus the examples worked out in treating the polygon of forces, the moment of force and parallel forces are more likely to engraft the principles on the mind than a verbal explanation. The mechanical powers, the pulley, inclined plane, work done by a machine, motion of falling bodies, laws of motion, &c., are explained with the aid of clear diagrams. The statement and illustration of certain laws are concise and to the point, and unnecessary verbiage is dispensed with. This book will be found a useful elementary treatise for students of architecture and engineering. The price is 2s. 6d.

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OBITUARY.

BY the death at Plymouth of Mr. EDWARD OPIE, at the age of four-score and four, another of the few remaining artists of the old Devon and Cornwall school is lost to us. He belonged to a family of artists, of which the most distinguished was John Opie, R.A., his great uncle. Born at St. Agnes, he was at the age of 16 sent to study in London, where he was introduced to James Northcote, R.A., and Sir Thomas Lawrence, P.R.A., who allowed him to inspect the pictures in his study. Subsequently Opie went to Norwich, where he was under the tuition for six months of G. P. Briggs, R.A. By this time he had become a popular portrait painter amongst the richest families in Cornwall, and many of his works hang upon the walls of country family mansions. He has painted four generations of the St. Aubyn family, including the present head—Lord St. Levan. His first contribution to the Royal Academy was in 1839. Since that year, with one exception, at least one of his pictures has always been accepted. Opie settled down in Plymouth about 1840, and assisted Mr. Philip Mitchell, R.I., who still survives, in founding a local society of painters. Deceased had the privilege of assisting in the training of several distinguished artists now alive, including Mr. J. C. Hook, R.A. Deceased was a widower, and leaves no children.

THE death is announced of Mr. ALFRED WILLIAMS, C.E., the head of the firm of Alfred Williams and Co., of Bankside, Southwark, who has been for many years closely identified with that branch of the profession which relates to gas engineering. His death took place on Friday morning last, at the age of 68, he having been in failing health for some time past. Mr. Williams was one of the founders of the Society of Engineers, and since its inauguration in 1854 has held the position of honorary secretary and treasurer, in which capacity he has rendered the society marked service.

THE death is announced from Paris of M. EDMOND GUILLAUME, architect to the Louvre, and Professor at the School of Art. He was born at Valenciennes in 1825; was sent in 1861 on an archæological mission to Asia Minor; in 1864 designed the Place Clichy Monument, and from 1867 was architect to various public buildings. He was the author of a history of art and ornamentation.

* * *

The new graving dock at Grimsby, belonging to the Manchester, Sheffield, and Lincolnshire Railway Company, will be opened on Wednesday next, August 1st.

The Canon Hale Memorial Church, Richmond, Surrey, is seated throughout with chairs of special design, and fixed to the floor in folding rows. The contractors for the seating were Messrs. West and Collier, church furnishers, Hambleden, Henley-on-Thames. The seating required for St. Werburgh's, Derby, and the temporary choir fittings, were also supplied by Messrs. West and Collier, Hambleden, Henley-on-Thames. St. Hilda's Church, Sunderland, has been seated throughout by the same firm, and the new Church of St. Aldhelm, Branksome, Bournemouth, is seated with chairs and fixed in rows, the contractors for the seating being Messrs. West and Collier, church furnishers, Hambleden, Henley-on-Thames.

Building Intelligence.

Carlisle.—The memorial stone of the new Fisher-street Presbyterian Church, which is about to be reconstructed from plans by Mr. T. Taylor Scott, of Carlisle, was laid on Thursday in last week. The front of the church will be brought forward to within a short distance of the street line; the roof will be reconstructed, and at the east end there is to be a chancel for the organ. The street façade will be entirely new in style; it is to be Transitional Gothic. The gallery itself will be entirely new, and the church will be newly seated, accommodation being provided for 760 worshippers. The new ceiling will be divided longitudinally into three sections, the nave roof being semi-polygonal in outline, and divided into bays by principals, whilst the roofs over the two side aisles will also be open-boarded and divided into panels. The contracts already entered into bring up the cost to about £2,650. Messrs. W. and H. Davidson are the contractors for the building, joinery, and carpentering.

Lexden.—The new chancel of the parish church of Lexden, a suburb of Colchester, was consecrated on Thursday in last week. The church itself was built at the beginning of the present century. Some time since the west gallery was remodelled and reseated, and the space below was furnished with open benches. Two years ago these improvements were continued by the removal of the low, whitewashed ceiling, and the erection of an open roof above. The small recess which served for a chancel has now been taken down and a new one built. The new chancel consists of choir, sanctuary, north aisle and ambulatory, beyond which still remains to be added a south aisle. Over the ambulatory is an organ-loft and minstrels' gallery. The structural work has been carried out by Messrs. N. Saunders and Son, of Dedham, from designs furnished by Mr. J. C. Traylen, of Stamford. Mr. G. Spearman, of Lexden, has superintended the building as clerk of the works. The style is Early Perpendicular, and is partly adapted from the beautiful abbey church of Sherborne. The addition is built of the local flint-work, with Box stone dressings and bands intermixed. The east end is an example of Perpendicular work, and the window is enriched with stone carving, both internally and externally. Round the outside arch of the window head is a crown of twisted thorn, with shields at intervals bearing emblems of the Saviour's Passion. The window, which consists of ten lights divided by a transom, is filled with stained glass from the works of Messrs. Heaton, Butler, and Bayne, and illustrates the Crucifixion and other scenes of the Passion. The pavement of the choir and sanctuary is laid in marble, and the steps are of Derbyshire polished marble, enriched with Devonshire red, Irish green, and Italian white. This is the work of Messrs. Martinenghi and Gilhardi, of Milan, who have introduced some of their mosaic. The interior of the east wall above the floor is formed of Bath stone and alabaster in alternate bands. In the recess of the east window and above the retable is a hanging, designed and executed by Mr. William Morris. All the fittings of the choir are temporary.

Manchester.—The memorial-stones of two new Board schools — one in Queen-street, Bradford, and the other in Holland-street, Newton Heath, were recently laid at Manchester. The Queen-street school, which is to cost £7,500, will accommodate over 500 children; and the school in Holland-street, which is to cost £14,000, will have places for about 1,200 children. The Queen-street school is being built on a triangular site, in close proximity to an existing Board school. It is a one-story building, with a central assembly-hall, on the sides of which are arranged nine classrooms, providing accommodation for 528 scholars. At either end of the hall are placed the entrances, cloakrooms, and teachers' rooms. A manual instruction room, 36ft. by 24ft., is provided. The school has been kept studiously plain and inexpensive in character, both inside and out. The classrooms are separated from each other by glazed sliding partitions, and from the central hall by a series of arches filled with glazed screens. The floors are laid with wood blocks. The building is heated and ventilated by hot air. The architect is Mr. H. Lord, and Messrs. R. Neill and Sons are the builders. The Holland-street school is two-storied, and, like the one in Queen-street, is planned on the central-hall principle. In the basement there is a manual instruction room, 59ft. by 25ft. There are eight classrooms and two teachers' rooms on the ground floor, and nine classrooms and two teachers' rooms on the first floor. Provision is made for throwing two, three, or four classrooms into one, if necessary. The heating throughout will be by means of open fireplaces. The entire cost of the structure, including site, is estimated at £14,000. The architects are Messrs. Woodhouse and Willoughby, and Messrs. Neill and Sons are the contractors.

St. Alban's. — The Hertfordshire County Council have purchased the Beastney and Hill End Farms in the parish of St. Peter at St. Alban's, and having an area of 175 acres, as a site for a new pauper lunatic asylum, and have appointed as their architect Mr. George T. Hine, F.R.I.B.A., of Parliament-street, Westminster, and of Nottingham. His remuneration is to be at the rate of five per cent. on the cost of all work done under his direction up to £50,000, and four per cent. on any further expenditure; this payment to include cost of plans, taking of levels, travelling, and all other out-of-pocket expenses. The Council have decided to provide accommodation in the new asylum for 400 patients, with an administrative department adapted for 800, the kitchens, laundries, recreation rooms, and chapel to be constructed with a view to their eventual enlargement; the plans to be arranged for the accommodation of 800 patients, and to be so submitted to the Lunacy Commissioners.

CHIPS.

A young man named F. W. Mawer, of Hope Cottage, Lime-street, Tettenhall, was killed by a fall from Blakenhall Church, on Monday. The deceased was a carpenter in the employ of Mr. Gough, builder, Dudley-road, who is placing a new clock in the tower of Blakenhall Church, and while Mawer was descending a ladder, he slipped and fell, incurring injuries that were almost immediately fatal.

A faculty was granted in the York Consistory Court, on Thursday in last week, to the rector and churchwardens of Stockton-on-Forest to take down the greater part of the church, which has no chancel and is in a bad state of repair, and to rebuild and refit the edifice.

The Clarence Park recreation ground at St. Alban's, given by Sir Blundell Maple, M.P., was formally opened by the Duke of Cambridge on Monday.

The rural sanitary authority at Tiverton have instructed Mr. J. Siddalls, C.E., of Tiverton, to prepare plans and specifications for the drainage of Cullompton, and have applied to the Local Government Board for sanction to borrow £2,000 for carrying out the works.

The Sutton (Surrey) local board have increased the salary of their surveyor, Mr. Albert D. Greatorex, Assoc.M.Inst.C.E., from £250 to £300 per annum.

New art schools are being erected at Wrexham, and special consideration has been given to the ventilation, which will be effected on the Boyle system, the latest patented improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

The Lambeth board of guardians have accepted the tenders of Messrs. Galloways, Limited, and Mr. W. Neil, for the new work at their Renfrew-road workhouse, the former supplying the boilers and carrying out the engineers' work, and the latter undertake the new chimney-shaft and builder's work. The consulting engineer under whose specifications the work will be carried out is Mr. E. H. G. Brewster, of Delahay-street, Westminster. The amount of the respective tenders was £1,500 and £1,906, making a total of £3,406.

On Tuesday the members of the Bristol and Gloucestershire Archæological Society commenced their annual meeting, which is held this year at Ledbury.

A block of new board schools at the Green, Darlaston, was opened on Tuesday. The buildings are arranged to accommodate 600 children in three departments, and are supplied with the usual classrooms, cloak-rooms, and conveniences. Externally, the principal façade is towards the Willenhall-road, and is surmounted with a lofty tower and flèche, which is utilised for ventilating purposes. The material used is red brick with stone dressings, and the style is a free rendering of the Renaissance. The architect is Mr. C. W. Joynson, Darlaston and Wednesbury; and the builder, Mr. T. Lees, Darlaston; and the cost is estimated at £5,000, including furnishing.

COMPETITIONS.

Bristol.—The Finance Committee of the Bristol Corporation have awarded the first premium of £50 in the competition for laying out the central space at St. Augustine's to Messrs. W. J. Taylor and H. I. Weston, of Southampton, but no plan has at present been definitely recommended to the council for adoption. The site is divided into three parts; the end portions are circular, and are separated from the central portion by short roads 45ft. wide. The southern circle is about 130ft. in diameter. The centre of this space is occupied by a raised fountain basin. A wide gravel walk, with seats, runs round the fountain and statues. The circle at the northern end would be similar, but smaller.

Wednesfield.—A special meeting of the Board was held on Monday night to consider the plans for a new board school at Wednesfield. A letter was read from Mr. E. R. Robson, the consulting architect to the Education Department, who said he had examined the ten sets of plans sent in, and he placed those signed "Plan" and "Creon" first and second. He did not, however, recommend any of the designs, and suggested that the lines of a ground plan which he appended to his report should be followed. It was decided to ask the whole of the competitors to prepare pencil sketches based on Mr. Robson's plan.

Winwick Asylum, Lancashire.—A special meeting of the Lancashire Asylums Board was held on Friday in the County Hall, Preston, to consider the report of the Winwick Asylum Committee upon the plans and estimates for the new county asylum at Winwick. Mr. C. H. Howell (architect to the Commissioners in Lunacy) recommended three out of 22 competitive plans sent in for consideration, and placed them as follows:—Messrs. Giles, Gough, and Trollope, London, original estimate £258,900, amended ditto £239,809, rate per bed £118 15s. 2d.; Mr. G. T. Hine, London, original estimate £223,914, amended ditto £234,464, rate per head £117; Messrs. Henry Crisp and Oatley, Clare-street, Bristol, original estimate £300,200, amended ditto £240,466; rate per head £125. Of these the committee recommended the board to accept Messrs. Crisp and Oatley's plan as being the most suitable. The chairman said there was a discrepancy of £76,000 between the lowest and highest original estimate, and one of £13,000 between the lowest and highest amended estimates. The committee believed that by alterations that discrepancy could be reduced, or they would not have been so unanimous in their decisions. After some discussion it was decided "That the report of the Warwick Asylums Plans Committee be received and adopted, and that a committee be appointed with power to confer with the architects on the plans, and submit the same to the Commissioners in Lunacy for their approval."

* * *

Major-General Crozier, R.E., Local Government Board inspector, held an inquiry at Hinton Charterhouse on Tuesday, with regard to the application of the Bath Rural Sanitary Authority for power to borrow £1,550 for works of water supply at Wellew and Hinton Charterhouse, and £1,500 for drainage works at Freshford.

At Monday's meeting of the Huddersfield town council, the health committee reported that fifty-six competitive designs for an infectious diseases hospital at Mill-hill had been sent in, and that Dr. Whitelegge, of the West Riding county council, had consented to act as medical adjudicator, and that Mr. Alexander Graham, of Carlton Chambers, Regent-street, S.W., would act as architectural adjudicator.

At Thirsk Sessions, on Monday, the Birdforth highway board obtained a verdict for £75 and costs against Joseph Howe, contractor, West Hartlepool, for extraordinary traffic on a high road at Sand Hutton, by using a traction engine during the building of Breckenborough Hall.

Mr. Justice Collins, at the Manchester Assizes on Thursday in last week, delivered judgment with reference to the pollution of Lake Windermere. The case was brought by the owner to compel the Bowness local board to abstain from putting their sewage into the lake. The judge said it was admitted that the board was passing sewage into the lake, after subjecting it to a process, at the rate of 100,000 gallons a day. He decided that the effluent in its present form left something to be desired. He believed there were means available for improving it. He made the order asked for, but suspended it for six months, to enable the defendants to perfect their system of purification.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Northern Architectural Association.—The members of this association held their annual excursion on Saturday, their destination being Thirsk. Twenty-six members, coming from Newcastle, North and South Shields, Sunderland, Durham, Morpeth, Middlesbrough, Leeds, and Raby Castle, left the Central Station, Newcastle, in a special saloon carriage attached to the 9.30 a.m. south express on Saturday. Conveyances and brakes awaited them at Thirsk. The members were driven to Coxwold (passing Shandy Hall), where the church was inspected; they then proceeded to Byland and Rievaulx Abbeys, where a very pleasant afternoon was spent. The association afterwards returned to Thirsk, and dined at the Fleece Hotel.

S.A. Association of Engineers and Architects.—The second annual meeting of the South African Association of Engineers and Architects was held at Johannesburg, S.A.R., on June 27th ult., Mr. A. H. Reid, president, in the chair. The report spoke of continued progress; during the year 17 members were elected, against which there were two losses by death, two by resignation, and two written off for non-payment of subscriptions, leaving a total of 56 against 43 last year. The headquarters have been removed to the Equitable Chambers, Rissik-street, Johannesburg, and the Association is now seeking to obtain from the Government a charter of association.

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CHIPS.

The baths erected at the rear of his workshops in Adelaide-road, Andover, by Mr. F. Beale, a local builder, some nine years ago, were recently destroyed by fire. They have just been reconstructed on an enlarged scale, and were reopened on Thursday in last week. The swimming-bath is 60ft. by 20ft., and has a tiled bottom. Over the twenty dressing boxes are galleries seated for 140 people. The room itself is 76ft. by 38ft., and 30ft. in height, and adjoining is a suite of private baths.

On Friday a special service was held in Trentham Church for the purpose of dedicating the new organ which has been presented to the church by the Duke of Sutherland. The instrument, which has been erected by Mr. J. J. Binns, of Bramley, near Leeds, has cost about £1,000. The specification of the organ was drawn up by Mr. J. B. Lott, organist of Lichfield Cathedral.

A large memorial brass is about to be erected in St. Michael's Church, Coventry, in memory of 4 Bishops of Mercia, 31 Bishops of Lichfield, 6 of Coventry, 27 Bishops of Lichfield and Coventry, and 4 of Worcester. It will also contain the heraldic arms of the Archbishop of Canterbury, and will record events from the creation of the See of Mercia from the year 656 to the present day. Messrs. Stokes and Bradley, of Wolverhampton, are carrying out the work.

Herr Karl Roux, a well-known painter of animals and idyllic scenes, and manager of the picture Gallery at Mannheim, died there of typhus fever on Monday.

The new recreation ground at Stanningley, one of the most recent acquisitions of the Leeds Corporate Property Committee, was opened on Saturday. The land, which has been well laid out, is thirteen acres in extent, and cost the corporation £5,000, while further sums have been incurred in the erection of boundary walls and a lodge.

Hackney Marshes were opened as a public recreation ground on Saturday, by the chairman of the London County Council. They have an area of 337 acres of flat meadow land intersected by the river Lea, and have been acquired at a cost of £75,000, two-thirds of which has been contributed by the county council, and the remainder by the Hackney district board, the lord of the manor (the vendor), and private donors.

Norwich city council on Tuesday week elected Mr. A. E. Collins, of Reading, city engineer and architect, at a salary of £600. A gratuity of 200 guineas was voted to Mr. Buchan, the late engineer, who has retired owing to failing health.

The Duke of York will lay on Saturday, Sept. 8, the foundation stone of the new General Hospital at Birmingham. Mr. Hemman, of that city, is the architect, and the builders are Messrs. Barnsley and Son, also of Birmingham, whose tender for the superstructure was accepted in March last at £177,888, and by whom the foundations have already been laid under a separate contract.

The scheme for the purchase of Turner's "Ancient Italy," for the Louvre, has failed and been abandoned. Although the picture has been for some time on view at Paris, the £8,000 required is not forthcoming.

Correspondence.

ASSISTANT SURVEYORS, WAR OFFICE.

To the Editor of the Building News.

Sir,—I hope you will allow me to correct an error in my letter of last week. The number of years necessary to rise from the bottom of the Assistant Surveyor class into the second class should have been 28, and not 18, years; this, with the 12 years necessary to reach the first class, makes 40 years in all to reach the ultimate prospect of £500 a year.

A civil servant must retire at 65, and may be retired at 60 years of age. When I stated that a married surveyor might find himself £150 out of pocket when proceeding on foreign service, I meant £150 both out and back, making £300 in all. This illustrates how idle it is to dilate on the extra duty pay allowed in the Colonies.—I am, &c.,

One Who Was In It.

Sir,—I apologise for continuing a subject which, through your kindness, was so well ventilated in these columns last year; but the warning of "One Who Was In It" carries a deeper significance to the readers of your paper beyond the mere grievances of a much-abused body of public servants, however great these may be.

It is complained that the War Office does not treat the members of our vocation properly; yet if architects and civil engineers do not adopt Registration, with its attendant compulsory examinations, they have no means of enforcing that respect and protection which is their due as professional men.

Notwithstanding the great advances made in the profession, our just claims are still ignored. We all know how Lord Palmerston bullied Sir Gilbert Scott; how the treatment of Edmund Street over his law courts hastened his death; of the setting aside of the architect of the Imperial Institute; and how, only yesterday, Mr. Wolfe Barry was so inadequately rewarded. And, presumably following our example, the War Office itself does not compel its own military engineers to pass any real test as regards their technical efficiency, and whose training during a period of somewhat under *two years* is nothing short of antediluvian. Hence these officers shirk all technical labour, and the dirty work connected with it; but, still wishing to pose as the architects of the army, and having the authority, they do all in their power not only to *suppress* their unfortunate surveyors, but a whole host of "temporary" architects, surveyors, draughtsmen, clerks, and foremen of works as well. The Royal Engineer Civil Staff is but another name for the Army Works Department. Thus the R.E.'s act, for their individual gain, and because their ruling in this establishment affords them easy positions with increased pay, where they are exempt from disagreeable military duties. In short, they hide the workers and blind the eyes of the public; and to be on the safe side, they cunningly appointed H.R.H. the Commander-in-chief honorary colonel of their corps.

It would, no doubt, be interesting to your readers to know the names of some of these Tom Pinches. The greatest is Mr. E. Ingress Bell, F.R.I.B.A., First Class Surveyor, R.E. Civil Staff, whose partnership with Mr. Aston Webb is celebrated. It is to this clever architect the type-plans of most of our modern barracks can be accredited. The fine barracks at Southsea, and at Grangegorman, Dublin, were designed by the late Mr. J. Mechelen Rogers, A.R.I.B.A., who died in 1889. Mr. Walter H. Tregellas, formerly chief military draughtsman at headquarters, also carried out innumerable schemes. The new army buildings at Parkhurst, Isle of Wight, are from the designs of an assistant surveyor, whilst those near Belfast are likewise being planned by two civil architects. The same story can be repeated of the recent barracks at Norwich, Knightsbridge, Hyde Park, Aldershot, Curragh, and of every other military station in the kingdom.

It is idle for R.E. surveyors to hope to get their grievances redressed as long as the Royal Engineers are permitted to hold sway in what should be a properly constituted Army Works Department, attempting to conceal the real workers of that department, and persistently opposing that reform which would pull to pieces their self-glorifying administration. What can be expected of men who probably have never seen one brick laid upon another, and who do not understand the commonest terms of building construction; men whose interest in the housing of our soldiers is so vast that their visits to works in progress are few and far between, and then only when compulsory? Should a surveyor, or any other official, refuse to accede to the wishes of his engineer officer, a confidential letter is forwarded to headquarters, reporting the unfortunate victim "incompetent." Such are the abuses of this tyrannical system!

What has become of that scheme for the improvement of this branch of the service formulated by the late Sir Lothian Nicholson, R.E., and now so carefully pigeon-holed by his successor? Is this concealment evidence of the desire of the Royal Engineers to improve the public service of their country, or evidence of their lust to benefit themselves only?

Your correspondent has made a clerical error in stating it will only require 18 years to rise from the bottom of the lowest class into the second class; in other words, to rise from £180 to £300 per annum. He probably meant 28, but it will really take 33 years!

As long as Royal Engineers are encouraged to pose as qualified architects and civil engineers, so long will Registration be delayed, and these anomalies allowed to exist.—I am, &c.,

One Who Is In It.

SEWER VENTILATION.

Sir,—I read with interest in your issue of 13th inst., the summary of Dr. F. W. Clark's report on Sewer Ventilation, and also Mr. Hurst's remarks thereon in your last number. Having been engaged for some nine months in experimenting on this matter for Mr. Caink, our city engineer, as well as in ascertaining the views and practice of municipal engineers elsewhere, I should like, with your permission, to give the results of my experience.

There is little doubt but that the days of the ordinary street-level ventilator or grating are numbered. The theory that a sewer should resemble, as much as possible, an open trench, and that the condition of the air within it must be brought as nearly as may be to that of the outside atmosphere, is no longer a universal article of faith. Mr. Mansergh, by recent experiments, has proved that, even when gratings or shafts are provided at an average distance apart of only 82 yards, and on well-constructed sewers, nuisance from those gratings is not avoided. In Worcester we have proved that it is not only not avoided, but that it is actually caused or aggravated by the frequency of the openings—which conclusion, as Mr. Hurst remarks, common sense would lead one to expect.

For six months I made almost daily anemometric tests on a troublesome sewer here, which, in a length of less than 300 yards, is fitted with five ventilating gratings. We have never detected any pressure; some of the shafts *always* acted as inlets, and from the others came powerful currents and very bad smells. Sometimes the nuisance was at one shaft, sometimes at another; it would shift its quarters and change the direction of its current sometimes in the course of a few minutes, obedient, doubtless, to the vagaries of the wind, which never blows exactly alike for ten consecutive seconds.

This action of the air is simply a gratuitous drying and scouring of an ever-foul pipe into the street or, as Mr. Hurst happily expresses it, "doing the best to evaporate the sewage into the atmosphere." It happens everywhere with ordinary street ventilators, and many surveyors are getting tired of the process and the endless complaints it causes.

One result is the tendency to close the surface gratings altogether, and substitute high pipes where permission for their erection can be obtained. The nuisance is transferred from ground level to the house-tops; complaints often cease, and it is presumed that all is well. Will it be so in reality?

Will not these shafts, exposed as they are to the full action of the wind, induce currents of air through the sewers more powerful than those we have already? Will they give a more distributed exit for foul air than do the street gratings? Will not first one and then another pour poison from its mouth or from any defective joints, while its neighbours act as inlets for the time? Will not the tops of these pipes in fact be simply bad street gratings stuck up 10ft. above our windows instead of 20 or 30ft. from our doors?

Complaints may diminish, it is true: "something has been done," and, besides, instead of assailing the nostrils of fussy citizens on their walks abroad, the poison is now instilled into their bedrooms as they sleep, or, as Mr. Hurst points out, into their water cisterns.

"Get rid of the stinks, and we will chance the microbes," was the dictum of one surveyor to me, and the remark has been echoed by others—fortified, perhaps, by Mr. Parry Law's recent report to the L.C.C., wherein he states he finds sewer air comparatively free from germs.

Certainly, if we are to provide against a nuisance only—merely to "stop a stink"—high shafts may answer the purpose, though that may be doubtful as they become old and out of repair; but if sewer emanations be dangerous to health, it is surely better to take one's chance of a whiff in the street than to have a continuous supply laid on over one's dwelling to sink, it may be, as soon as it escapes from the inducing current in the shaft or to be blown down by the wind as smoke so frequently is.

The street-gratings loudly invite attention; the surveyor proclaims them a nuisance, and then the medical officer indicts them as a danger, and quotes diphtheria death-rates. If the poison be sent up aloft where it may be "out of smell," it will very likely drift "out of mind" also, but it will be there nevertheless, and more dangerous than before, because unnoticed.

As the result of his Worcester experience and experiments, and after trying everything else, Mr. Caink has decided to check the rush of air through the sewers by the insertion of cotton-wool filters in the street shafts. These, he finds, allow perfect relief or "breathing" to the sewer, and render innocuous the comparatively small amount of air which must pass out to equalise pressure, &c. The condensation of moisture which, unless guarded against, rapidly renders all sewer-air filters saturated and impervious, is prevented by a heat-equalising arrangement. The thing can be fixed without permission from any private person, and remaining the property of the local authority and in official hands, it has proved a satisfactory solution of this troublesome problem.

I am, &c., W. E. Buck.

Shrub Hill, Worcester.

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CHIPS.

Two stained-glass windows, the work of Messrs. Heaton, Butler, and Baynes, of London, were dedicated at St. James's Church, West-end, Southampton, last week. The subject of one, a memorial to the late Dr. Browne, Bishop of Winchester, is "Christ and the Doctors in the Temple," and that of the other, also a memorial window, is "The Miracle at Cana."

The foundation-stone of the Jenkins memorial hall and institute, at Aberdare, was laid last week. It is being built by Messrs. Bowen, of Hereford, from plans by Mr. Wakely, of Merthyr.

Mr. Passmore Edwards has given instructions for the erection of an art gallery at Newlyn which shall be worthy of the reputation the Newlyn school has gained in the art world. The primary object of the new gallery, of which Mr. James Hicks, M.S.A., os Redruth, is the architect, is the bringing together of the best work executed by the Newlyn men. Stanhope Forbes, A.R.A., W. J. Bramley, A.R.A., and other painters of repute, are acting as advisers in the matter.

The new board schools, Lower Gornal, near Dudley, are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Intercommunication.

QUESTIONS.

[11182.]—**Market Fittings.**—Will some reader kindly give me the names of one or two modern markets well fitted up with fittings, lock-up shops, benches, &c.? I am anxious to see the most approved arrangements that have yet been tried.—Magazine.

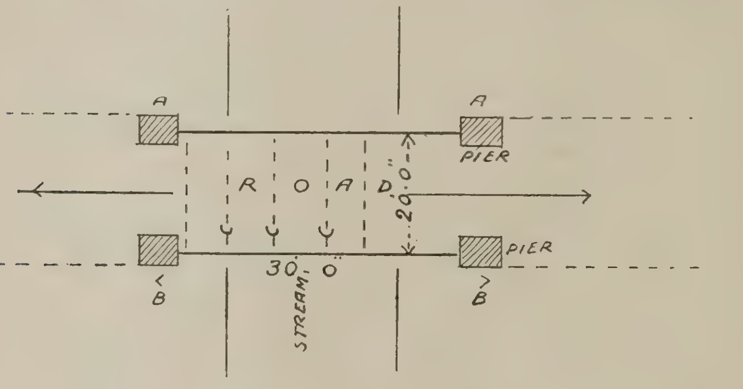
[11183.]—**Levelling with Theodolite.**—Will any of your readers who have done much levelling with a theodolite tell me what, if any, disadvantages the method has, as against the use of an ordinary level.—Theo.

[11184.]—**Heraldic Supporters.**—I intend to have the town arms carved over the entrance to a certain public building. Would it be admissible for me to introduce heraldic supporters (such as two lions or figures) on each side of the shield bearing the arms, even supposing that, according to the strict laws of heraldry, there were no supporters to the shield bearing this town's arms? I wish to know if it would be considered erroneous to introduce such supporters?—L. and Y.

[11185.]—**Lightning Conductor.**—I have just had a conductor fixed on a house in a very lofty and exposed situation; but the top of it only stands a few inches above a chimney-stack, which is 6ft. by 2ft. Is this sufficiently high, and will some kind reader inform me as to the rule for fixing, and as to the extent of building protected by same? I am told only the portion within an angle of 45° is safe.—J. W. S.

[11186.]—**Sewage Filtration.**—Would some reader of the Building News kindly inform me where I could obtain particulars of the system of filtration of sewage through polarite, and its treatment with ferozone?—M.

[11187.]—**Bridge.**—Below is a sketch plan of a bridge over a stream in a country road. Will some experienced reader kindly tell me what load per foot sup. the girders should be calculated to sustain? There will be two main girders, A A and B B, with minor ones, C, between them at 2ft. 6in. centres.—Iron.

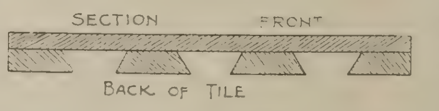


[11188.]—**Wood Furnace.**—Will some reader kindly say if he knows of a furnace specially suited to burning wood, and give the maker's name? What height shaft would be required? Does it consume its own smoke?—W. J. Easton.

[11189.]—**Dynamics.**—What is the formula for solving the following question? Will someone please say? A cricket-ball, weighing 5oz., is propelled at 80ft. a second, and is met by a bat weighing 35oz., the bat moving also 80ft. a second, and batsman exerting a force of 50lb., the figures in each case being assumed. What force, in pounds, does the ball exert on the bat?—Difficulty.

REPLIES.

[11178.]—**Fixing Tiles to Walls.**—Tiles are fixed to walls by means of cement, and held there by suction; but they often fall, as lately in the House of Commons. I have just in course of construction an arrangement for making dove-tail grooves in the back of tiles, of which I give sketch, and if these tiles are once fixed, they are fast for ever. An advertisement will be found elsewhere with my address.—S. Kluh.



[11181.]—**Wood Beams.**—The examples given by the drawings A and B in the last issue of the Building News of timber arches are, substituting other materials, very similar to a stone arch, in which the voussoirs are in one, although not necessarily uniformly one depth, and an arch of the same span, rise, and thickness of brick in which the depth is made up of several concentric rings of brickwork. I do not call to mind any instance of an arch worth the name being built of wooden voussoirs, as shown in drawing A; but the method shown in drawing B is well known as De Lorne's laminated principle, and very fairly-sized arches have been constructed successfully in that manner. The chief objection to that mode is the relatively small scantlings of the bent planks, and their consequently rapid deterioration and decay. On the other hand, owing to the cumulative amount of shrinkage due to that of each wooden voussoir, the tendency for them to deform the arch by partially sliding on their bed joints is obvious.—Philip Sheldon Strettoune.

Legal.

MOVABLE STRUCTURES.

The advisers of the London County Council seem to have surpassed themselves in their last effort at fussy interference. This was in the case of a summons against the firm of Humphreys (Limited), the well-known makers of movable structures in wood and iron. The complaint laid was that they had unlawfully erected and continued a wooden structure of a movable and temporary nature called a bungalow, upon a piece of ground at Knightsbridge, without having first obtained the license of the London County Council for that purpose. The facts were that the defendants had erected this bungalow on a piece of their own land adjoining their offices as a specimen of the buildings they sold, and to attract purchasers. It was made of wood and iron, with a floor and a roof, and was divided into four rooms, and it had a board up showing it was for sale. It had no foundation and no chimney, and was not used in any way for dwelling or other purposes, and was simply a sample of the bungalows the firm was ready to supply. The magistrate found that it was a wooden structure, placed where it was merely as a specimen of the wares sold by the makers, and on this ground he held that the Act did not apply, and dismissed the summons, as he considered that no offence had been committed.

The County Council, however, were not content with this result, for they appealed to a Divisional Court. As to the hardship of the case, their counsel argued that the Council would grant a license in all proper applications, and, further, that the makers of such structures could and should keep them out of London, and do without having any specimens to show buyers. After a very long and learned argument, which will seem to many people as much sheer waste of judicial time, as the litigation is waste of ratepayers' money, Wills and Kennedy, J.J., affirmed the magistrate's decision. They held that however technically the structure might be brought within the exact words of the section relied upon, as it was only put up for exhibition and was never to be used as a building in that place, the object of the statute was not touched. Of course, the Act was intended to apply to temporary and movable buildings; but only to such as were used for some purpose or other upon the spot where they had been erected. If this summons could have succeeded, no one could construct a summer-house, still less expose it for sale outside, without a special and separate license from the County Council in every case, and the Court rightly shrank from holding that this was necessary—at all events, yet awhile.

Fred. Wetherfield, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

A. J. F.—Ancient Lights.—Prescription.—The Prescription Act has not been altered, and the term of user required to give a right to light and air under the statute is still 20 years without interruption. The 12 years to which you refer is the period given by the Statute of Limitations of Actions of 1874, and which was formerly also 20 years, but which is quite a different thing.

H. T. K.—Contract.—Gasfittings.—Unless there is some clause in the contract under which it can be supported, it would seem that the separate contractor for gasfittings under a subsequent contract could not be brought upon the premises while the contractor for the whole job is still carrying out his work, and against his orders—at all events, not without affecting his liability for damage or fire. Probably the contractor has a right to the exclusive possession of the premises until he has completed his contract.

Bill of Exchange.—Acceptor.—Endorsement.—If the bill has not been endorsed to anyone, the acceptor can only be sued by the drawer, and so, although the document has somehow got into your hands, you cannot sue upon it, unless you were authorised to endorse by the drawer, and did so, and have given value for the bill.

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It has been decided that the memorial to the late Lord Arthur Hervey, 69th Bishop of Bath and Wells, shall take the form of a recumbent figure to be placed in Wells Cathedral. Mr. Thomas Brock, R.A., stated that such a figure in best statuary marble would cost £1,000, irrespective of mounting, while an enthroned figure would cost £1,200 or £1,300. The family of the late Bishop have intimated that they will fill with stained glass two windows in the cathedral, near the entrance always used by the bishop, as a private memorial.

LEGAL INTELLIGENCE.

NON-ADHERENCE TO APPROVED PLANS. — At Chesterfield Borough Police-court, on Friday, Messrs. C. W. Rollinson, architect; W. B. Askew, builder; and A. G. Broomhead, accountant, answered to summonses taken out at the instance of Mr. Nicholas Dunscombe, borough surveyor, for erecting a dwelling-house in Clarence-road, an upper room in which differed from the plan approved by the committee of the council. Mr. Middleton said that the original plan of the building of Mr. Broomhead's house showed that the top room should be 8ft. 6in. in height, whereas the actual height was only 7ft. 1in. When spoken to by the borough surveyor, Mr. Broomhead stated that he did not know that he was guilty of any breach of the by-laws, as he left the entire matter with the builder. Mr. Rollinson handed in the original plan, and pointed out that there was nothing about 8ft. 6in. on that, whilst on the tracing being put in, the figures 5ft. 9in. at the side, and 11ft. 2in. at the apex were given, so that actually there was a difference between the original and what purported to be a tracing, and Mr. Rollinson asked if the Council had any regulation as to the height of rooms. Mr. Dunscombe said that it was left to the discretion of the building committee. He added that if plans were sent in, nothing less than 8ft. 6in. in height for a room would be approved. After a lengthy hearing, the Chairman said the Bench had come to the conclusion that there had been a misapprehension somewhere, and the defendants would only have the costs to pay. Mr. Rollinson said they were quite prepared to do that.

BUNGALOWS ON SALE, AND THE BUILDING ACTS.—LONDON COUNTY COUNCIL V. HUMPHREYS, LIMITED. —This appeal case, heard by Justices Wills and Kennedy last week, was one stated by a metropolitan magistrate on a summons under section 13 of 45 Vict. c. 14,of the Metropolis Management and Building Acts Amendment Act. The complaint was that the respondent from October 17, 1893, to February 22, 1894, at the west side of Hill-street, Knightsbridge, did unlawfully erect and continue a wooden structure of a movable and temporary nature called a bungalow without a licence first had from the London County Council, contrary to 45 Vict. c. 14, section 13, and 51 and 52 Vict. c. 41. The respondents are manufacturers and dealers in buildings constructed of wood and corrugated iron, and carry on business in Hill-street, Knightsbridge. They set up in March, 1893, on an adjoining piece of land belonging to them a bungalow 31ft. long, 22ft. to 25ft. wide, in height 17ft. to the ridge of the roof. The floor was of wood, the sides and ends consisted of wooden uprights and cross-pieces, lined on the inside with match-boarding and covered partly with corrugated iron and partly with wood. The interior was divided into four rooms. It merely rested upon the ground, and had no foundation and no chimney. The bungalow was erected for sale, to attract purchasers, and as an advertisement, but more particularly as a specimen building. It had a board on it notifying that it was for sale. The magistrate found as a fact that the bungalow was a wooden structure of a movable or temporary character, placed there merely for the purpose of sale, and as a specimen of wares sold by the respondents. He was of opinion, as a matter of law, inasmuch as it was merely exhibited by the respondents as wares which they had for sale, that upon the true construction of the 13th section of 45 Vict. c. 14, the respondents had committed no offence, and dismissed the summons. Mr. Daldy, for the County Council, cited "Stevens v. Gourley," "Hall v. Smallpiece," "London County Council v. Candler," and "London County Council v. Pearce." He urged that this was a "structure," and ought not to be erected without leave of the County Council. A license would be given in all proper cases. There was, therefore, no hardship. Another alternative would be for the manufacturers to keep such structures out of London in the same way gunmakers had their ranges for trying guns outside London. Mr. Poland said this house was merely part of the wares exhibited for sale. The cases cited dealt only with buildings used as buildings. There was no occupier here, no chimney, and no gas. People must see what they were asked to buy. Therefore it was necessary to set up the bungalow. The Court dismissed the appeal. Mr. Justice Wills said the structure came within the actual words of the section, but the authorities cited showed that that in itself was not conclusive. The question was whether the Act was intended to apply to structures that were not purposed to be used where they stood, and were only part of a manufacturer's stock-in-trade. It was impossible to draw a logical line; but the question was to be answered in each case by considering what was the purpose of the structure, and the object of placing it where it was placed. If the object was exhibition only with a view to removal when a purchaser could be procured, then the principle of the cases cited applied, and the Act did not affect it. Mr. Justice Kennedy concurred. Was one compelled to hold that this temporary building came within the operation of the Act? On the whole, he thought not. The structure was not intended for use on that spot. It was on the premises solely for the object of immediate sale. The Act was intended to apply to buildings movable and temporary, it was true, but only to buildings put up for use on the spot. If the Act covered this case, no one could construct a summer-house, or any kind of habitation for man, still less could they expose it for sale outside, without a particular license from the London County Council in each case. The decision of the magistrate must be affirmed.

THE SUTTON LOCAL BOARD V. HOARE.—This was a motion (before Mr. Justice North) for an interim injunction to restrain the defendant, a grocer, of 121, High-street, Sutton, from rebuilding his premises so as to come beyond a line prescribed by the plaintiff authority under section 155 of the Public Health Act, 1875. It is provided by that section that where a house or building, or the front thereof, in a street in an urban district is taken down in order to be rebuilt or altered, the urban authority may prescribe the line in which such house or building, or the front thereof, shall be re-erected. High-street, Sutton, is a narrow thoroughfare. Mr. Hoare had pulled down his house; he had sent in plans to the local authority for rebuilding on the old line. The board, however, prescribed a line for rebuilding some 6ft. behind the old line, and refused to pass the plans unless altered to conform to the prescribed line. Mr. Hoare had commenced to put in his foundations, and the plaintiffs commenced these proceedings. The defendant's case was that the board (as it must be inferred) were not acting *bonâ fide* in the exercise of their powers, because om each side of his house were comparatively new houses, and the board had not proceeded to lay down a general line in that part of the street to be carried out by the compulsory powers of the board under section 154 of the Act. It was argued on behalf of the defendant that it would be futile to put back only one house. Mr. Justice North said last Saturday it was obvious that what the local board was doing was with a view to widen the street as opportunity arose when houses were from time to time rebuilt, and what they were doing was precisely what they were empowered to do by section 155 of the Public Health Act. It was true they had an additional power under section 154; but the exercise of that involved their taking the whole of the houses abutting on the side of the street to be set back. He could not see that the requiring the house to be set back some 6ft. was at all an unreasonable exercise of the board's power, and he must grant the injunction asked for.

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A stained-glass window, which has been placed in the chancel of St. John's Church, West Bromwich, was dedicated last week. The window forms part of a series of subjects representing the burial and resurrection of Christ, and is the work of Mr. S. Evans, of West Smethwick.

The south chapel added to St. Andrew's Church, Lincoln, in 1890, was reopened on Saturday after completion and decoration in colour. At the entrance to the chapel has been fixed a carved oak screen, 15th-century style, designed by Mr. W. D. Pratt, architect, Nottingham, and executed by Mr. S. C. Basker, Lincoln, who has also done the other joiner's work. The floor is laid with polished oak. The walls are panelled 5ft. 6in. high in oak. The two stained windows on the south side of the chapel represent St. Stephen and St. Hilary. Four angels are painted on the east wall. The roof is panelled with floral decorations—in the centre panel the Holy Eucharist, and the side panels offering of incense. Above them in the clouds are cherubim and seraphim. Mr. Jones Davis, of London, was the artist.

The new assembly rooms at Ambleside have been opened. The work comprises large assembly room, 80ft. by 38ft., with spacious entrances and staircases at each end, and retiring-rooms for ladies and gentlemen, with lavatories over these rooms. There is a large committee-room and rooms for the caretaker, having a separate staircase. In the basement there is a large drill-hall of a similar size to the assembly-room, and 10ft. high, with a kitchen, pantry, and store-room under the retiring-rooms. There is an outside entrance to the drill-hall, and a good roomy staircase for the assembly-room, so that suppers, &c., can be provided when required, with direct access from the assembly-room. The building has been carried out with the local stone and green stone dressings, and have been well and substantially built by the contractor, Mr. Arthur Jackson, of Ambleside. Mr. A. D. Dawnay, of London, supplied the steel roof for the large room; Mr. Spencer, of Oldham, carried out the heating; while Messrs. Kershaw and Co., of Lancaster, supplied the whole of the ventilators and air-inlets. The whole of the work has been carried out from the designs, and under the superintendence of, Mr. Robert Walker, F.R.I.B.A., architect, Windermere, whose plans were selected in competition.

WATER SUPPLY AND SANITARY MATTERS.

BOLTON.—Consequent upon the attitude of the Mersey and Irwell Joint Committee as to the pollution of the rivers, the Bolton Corporation has for some time had under consideration various improvements in connection with the sewage works of the town. At Thursday's meeting of the Scavenging and Sewage Committee, the chairman and the engineer, Mr. H. L. Hinnell, C.E. (Hinnell and Murphy, Bolton), reported the result of an interview with Lord Derby's agent respecting the proposed purchase of land for the purpose of carrying out the filtration scheme. It was stated that terms had been arranged for the purchase of Rhode's Farm, Ringley, which covers an area of about 140 acres, and which is considered a suitable site for the new works. The works will be commenced as early as possible after receiving the sanction of the town council, and it has been decided to apply to the local government board for sanction to borrow £75,000 for the purpose of the undertaking.

DARTON.—Some time ago the Darton local board invited Mr. W. H. Radford, C.E., Nottingham, and Messrs. Duncan and Pickard, C.E., Leeds, to prepare competition schemes of drainage and sewage disposal for the townships of Darton, Kexborough, and Barugh. After consideration the board decided to adopt the scheme sent in by Messrs. Duncan and Pickard. They have therefore been appointed the engineers to carry out the works of drainage and disposal of sewage. The mode of purification is that known as the Carbonised Refuse System, combining therewith the disposal of town's refuse under Jagger's patent.

CHIPS.

The Cardiff corporation have adopted a scheme to form the Bute, the Penarth, and the Barry docks into a public trust. It is estimated that something like £7,000,000 will be necessary for the acquirement of the properties.

The opening services of the new Ebenezer Congregational Chapel at Cwmtwrch were celebrated last week. The building, which affords sitting accommodation for 750 people, has been erected by Messrs. Williams and Morgan, under the supervision of the architect, Mr. Owen Powell, at a cost of £1,400.

It is said that the London County Council are about to have the mound, or tumulus, in Parliament-hill-fields, Highgate—sometimes spoken of as Boadicea's Tomb—opened and scientifically examined, in order to determine, if possible, whether it is really a place of historic interest and worthy of still being preserved as such.

The Lord Mayor attended in state, on Monday, the reopening services of the Church of St. Stephen, Coleman-street. The seating accommodation has been increased, and an entirely new floor has been laid, beneath which is a concrete foundation; hot-water pipes have been fixed for heating the church, and the electric light has been adopted.

A scheme is on foot for the erection of a steel rope suspension bridge across the River Wye at Sellach, Herefordshire. Already a fair amount has been collected in the district, and application for grants have been made to the county council and the Great Western Railway. The plans show a suspension bridge with a clear span of 180ft., and necessary approaches to same; the design is light and pleasing. Mr. Ernest Davies, M S.A., of Hereford, is the architect.

A new four-dialled illuminated turret clock, striking the hours upon a bell fixed in the tower, has just been erected for the Acomb School Board, by Messrs. W. Potts and Sons, clock manufacturers, of Guildford-street, Leeds, and 22, Collingwood-street, Newcastle-on-Tyne. Messrs. Potts are also making a new illuminated turret clock for Hunstlet new board school, for the Leeds School Board, and one for Rufforth Church, near York.

The Lords of the Admiralty have for the tenth time awarded the contract for the supply of "Victor" metallic joints, and other asbestos goods, for use in Her Majesty's Navy, to the United Asbestos Company, Limited, Dock House, Billiter-street, London, E.C.

The theatre at Rochdale, which was burnt down some time since, is about to be rebuilt, from plans by Mr. Frank Matcham, of London, and will be reopened in November next.

The Commission on the Paris Exhibition of 1900 having decided that architects competing for designs may either retain or demolish the Eiffel Tower, M. Mascart, as a member of the Commission watching over that building till its reversion to the Paris Municipality in 1909, pleads strongly for its preservation.

A new church is about to be built at Kea, near Truro. Mr. A. Carkeek, of Redruth, is the builder, his tender having been accepted at £4,131, and Mr. G. H. Fellowes Prynne is the architect.

Our Office Table.

THE private view of the works submitted for national competition at the South Kensington Museum took place yesterday (Thursday). The number of works selected for competition is 3,605. Of the nine gold medals, one is given to Henry Mitchell, of Glasgow, for his design for a college, a design submitted in a late Soane Medallion competition. J. Benjamin Fletcher, of Leicester, wins one also for a nice series of ink sketches of doorways and other church details. Silver medals are awarded to Thomas S. Purdie, Glasgow, for a design for an exchange (Alexander Thomson's Travelling Studentship) in a severe Greek style; and to W. Tait Conner, also of Glasgow, for his Tite design for a royal mausoleum. Several other creditable designs are exhibited, and Glasgow contributes a number of works of merit. We hope to notice the architectural and other designs next week.

THE representation of the French School at the National Gallery, at present very meagre and inadequate, has been strengthened by the "Holy Family," by Eustache Le Sueur, presented this week by Mr. Francis T. Palgrave, and hung, on Monday, at the north-west corner of Room XIV. The work is numbered 1422, and measures 29in. in height by 19in. in width. The Virgin, clad in the traditional blue and red, stands on the left, supporting on her knee the Infant Christ. Opposite is St. Elizabeth, who is directing John the Baptist to raise his hands in the attitude of adoration towards his Cousin. In the background is St. Joseph, leaning on a long staff. The treatment is simple and broad, and the colouring pure and harmonious, although low. Le Sueur, of whose work this is the only example in the Gallery, was born in Paris in 1616, studied under Simon Vouet, was known as the "French Raffaelle," and died in 1655. With the exception of Nicholas Poussin, no French painter approached so nearly to the dignity of the Roman school.

AFTER many vicissitudes, and having undergone the ordeal of a month's investigation before a Select Committee, the London Streets and Buildings Bill of the London County Council has a fair prospect of passing into law, although shorn of many of its original provisions. The Earl of Morley, who has taken charge of the Bill in the Upper House, obtained leave on Monday to dispense with standing orders prohibiting the second reading of a private measure brought from the House of Commons after June 26th, and the Bill was accordingly read a second time on that evening.

THE Sheffield Corporation some time ago initiated a scheme for widening High-street, involving the purchase of eighteen blocks of property. Up to a month ago, as we stated at the time, settlements had been come to with sixteen of the owners; but terms were not settled between the corporation and Mrs. Younge, the owner of the Clarence Hotel and adjoining shops, in the occupation of Mr. Walsh. Arrangements were therefore made for an arbitration, and the proceedings were to have commenced on Monday; but on the parties meeting, a consultation took place, and it was agreed that the corporation should pay for 501 square yards of land required the sum of £28,500, and that they should give up certain important rights of light.

THE promoters of the Birmingham, North Warwickshire, and Stratford-on-Avon Railway have succeeded in proving the preamble of their Bill to the satisfaction of the House of Lords' Committee, as they had previously done to that of a Select Committee of the House of Commons, and there is little doubt that the Bill will receive the Royal assent. The accommodation the projected line will afford is urgently needed in the district, some eight or twelve miles wide, lying to the south-west of Birmingham, between the Midland and Great Western Railways. Its chief interest, however, is that it forms an important link in a new and direct route to London. The Bill gives powers for a connection to be made with the East and West Junction Railway from Stratford to Morton Pinkney, where it would meet the proposed line between London and Sheffield which is to be made by the Manchester, Sheffield, and Lincolnshire Railway Company, and for which the capital has just been raised. The route thus formed from Moor-street, Birmingham, to the Baker-street Station of the Metropolitan Railway Company would measure 115 miles, only three miles more than the North-Western route from New-street to Euston.

THE autumn congress of the Sanitary Institute is to be held at Liverpool from September 24th to the 29th. According to the programme we have received, the sectional meetings comprise sanitary science and preventive medicine, engineering and architecture and chemistry, meteorology and geology. Conferences will be held on sanitation of the passenger and mercantile marine service, on medical officers of health, municipal and county engineers, sanitary inspectors, &c., and an exhibition of apparatus and appliances relating to health and domestic comfort will be held. The council of the institute invite papers on subjects appropriate to the sections and conferences, and the co-operation of all interested in sanitary knowledge. All communications should be addressed to the secretary, Mr. E. White Wallis, F.S.S., Parkes Museum, Margaret-street, W.

THE notion of some builders, that by adding lime to cement mortar it is improved in cold weather, has been refuted. Many masons say that by adding a little lime to the mortar freezing would be averted; but when such mortar is spread over a cold stone or brick, the mortar would quickly freeze even though the water be warmed, for the coldness of the stones or brickwork would speedily rob the mortar of its heat. But by warming the stones or bricks the mortar may be kept from freezing for a considerable time, long enough, in fact, to allow the cement to set before freezing commences. An American builder (Mr. O. W. Norcross) warms foundation-stones by a jet of steam before laying them in cement in cold weather. A better and quicker way of heating the stones is said to be to pile the stones or bricks over a furnace in which a moderate fire is kept up night and day, the masons or bricklayers can then be supplied with hot bricks as the work proceeds, which enable the cement mortar to be used in the coldest weather.

IT will be remembered that the Duke of York, when distributing prizes recently on board a training-ship, expressed his deep sympathy with the parents of a boy who, on the very morning when he was to have taken his prize from His Royal Highness, lost his life while cleaning a window. On Wednesday morning the Duke paid a special visit to the exhibit of the National Accident Prevention Window Company, 34, New Bridge-street, London, and, after asking many practical questions, cordially expressed his approval of the window. Mr. W. Youlton, a London architect, who is the inventor, had the honour of explaining the advantages of the window to His Royal Highness. We have already commended the invention, and again urge architects and builders to make themselves acquainted with its advantages, which are many.

ACCORDING to the *Centralblatt der Bauverwaltung*, the new bridge over the Elbe river at Magdeburg, Germany, has a roadway about 26ft. wide, with two street railway tracks in the centre. The pavement consists of pine blocks 4·4in. high, and 3·2in. wide, laid on a bed of 0·8in. of asphalt. Owing to the presence of the railway, the travel over the bridge on each side is entirely in one direction, and the wear on the pavement is very great. After the blocks had been down five years a careful examination of them was made, and it was found that on the rising and level pavement the side of the blocks which the wheels passed over first were not worn at all, but were pressed from 0·5 to 0·6in. into the asphalt. The wear had taken place on the further side. On the falling part of the carriage-way on each side of the bridge the wear had been the opposite. The explanation offered is that the friction of the wheels shoved the blocks in the opposite direction to that of the vehicle, and the traffic was heavy enough to make this shoving of enough force to produce the results noticed.

BLOCK concrete walls are not so recent an introduction as many imagine. Mr. Ranger, a builder, of Brighton, in 1832, took out a patent for an "artificial stone," which was used in several important buildings, among them the College of Surgeons, Lincoln's Inn Fields, and houses in Pall Mall, which have stood remarkably well. He used an aggregate of sea gravel, broken flints, masons' chippings, &c., and he mixed these with powdered grey Dorking lime and boiling water; the latter caused the concrete to set rapidly. This material was put into a mould, and in ten minutes the sides and ends of mould could be taken away; the block was fit for use in a fortnight. The material was rammed into the mould to drive out the air. The mould was a simple box with movable sides and ends, these being held together by four iron cramps. A bar passing through the mould was left while the concretewas being deposited and afterwards withdrawn, and was intended for the convenience of handling and hoisting, for an iron bar could be placed through the hole when required for handling or moving the block.

FLINDERS-STREET market, upon which the city council of Melbourne have spent something like a quarter of a million of money, occupied a good deal of the time of the city council at their last meeting, on a recommendation from the market committee that the contractor be fined £1,000 for delay in completing the contract. The chairman of the committee stated that the contract should have been completed in December, 1892, but it was not finished till August, 1893. This laid the contractor open to penalties of £2,550, but under all the circumstances the architect had recommended to the committee that a penalty of £1,000 be imposed. The town council had lost money by the delay, for at the beginning of 1893 the shops could have been let, but before August the boom had burst, and they had not been let since. He thought a fine of £500 would meet the case. A member of the market committee thought that £250 would be a sufficient fine. After a long discussion it was resolved to refer the question back to the committee for a definite recommendation. A member said the council had no idea it was going to spend £250,000 on the markets when it commenced. A great mistake had been made in not confining the work to a fish market. The chairman of the committee said the income of the markets was meeting the expenditure, which was a good result in these times, and he was quite prepared to take the building on lease and pay the interest of the money expended. An endeavour was made to have an account of £2,274 for professional services by Mr. R. G. Gordon, architect of the building, postponed till the other question was settled; but it was pointed out that the architect had given his final certificate some months since, and the account was passed for payment.

A PERSPECTIVE view is given in *Indian Engineering* of the new public offices now in course of erection at Mehsana for His Highness the Gaekwar of Baroda, from the designs of Mr. F. W. Stevens, C.I.E., F.R.I.B.A., of Bombay. The site of the new building is on the top of a hill overlooking the town of Mehsana, and the structure is designed in the Hindu style, which will harmonise with the buildings of the town. The plan in shape partakes of the letter H. Over the centre grand staircase is a large masonry dome 110ft. high of circular plan, with four similarly shaped cupolas at the angles. Surmounting the angles of corridors of the wings are square-shaped, pointed domes, which emphasise the wings and give variety of outline to the exterior. The ground floor gives accommodation to the departments, judicial, municipal, and engineering, and the upper floor will be occupied by the judicial and Naib Suba's departments. The main façade, which is well broken, is 320ft. long, and the wings are each 100ft. in length; the width is 52ft. The walls are of local bricks, and the dressings, domes, minarets, &c., will be of white Dhrangadra stone. The floors and roofs are to be of iron girders and teak joists, with concrete and asphalte covering.

A deputation of builders waited upon the Cleethorpes Local Board last week, to protest against the action of the building inspector in insisting upon the partition walls of back buildings being carried to the ridge. The board decided that the request of the deputation could not be granted.

A district church was recently opened at Little Walden, Essex. It has been built from designs by Mr. Edward Burgess, of London, and measures 40ft. by 20ft. The walls are of Ashdon red bricks, with dressings of Weldon stone, and the roof is covered with Broseley. The internal roof is of pitch-pine, and the pulpit, reading-desk, and doors are of oak.

Dr. Heinrich Brunn, Professor of Archæology at Munich University, and a member of the Bavarian Privy Council, died at Schliersee on Monday, in his 73rd year.

CHIPS.

Another City church is doomed—that of All Hallows the Great in Upper Thames-street.

A new theatre is about to be erected at Wallsend from plans by Mr. W. Hope, of North Shields.

A new organ, to be built by Messrs. Hele and Co., of Plymouth, is about to be placed in Marylebone Presbyterian Church.

The name of Mr. Frederick Barlow, builder, of Rothwell, has been added to the commissioners of the peace for Northamptonshire.

A Masonic hall is about to be built in Beaconsfield-street, Blyth, Northumberland, from plans by Mr. A. A. Windle, architect, of that town.

New vagrant wards at Crossland Moor, Huddersfield, were opened on Thursday in last week. The wards are on the cell principle, and in two blocks. The cost has been £5,500, and Mr. J. S. Kirk, of Huddersfield, was the architect.

In a breach of promise case, tried at Nottingham on Thursday in last week, before Mr. Justice Wills, in which Samuel Finch Wilkinson, builder and contractor, Newton, was the defendant, the plaintiff, a dressmaker, was awarded £50 damages.

The London County Council's Bill for the construction of a southern approach to the Tower Bridge, was considered on Wednesday by the Committee of the House of Lords, and the clause which relates to betterment was altered in certain particulars.

The small church at Frinton, between Clacton and Walton-on-the-Naze, which was enlarged and restored in 1879, has again been lengthened by an addition of 21ft. to the western end of the nave, giving 100 additional sittings. A new bell-turret has been built.

An organ of three manuals and 35 stops is being built for All Saints' Church, Falmouth, at a cost of £700, as a special gift. The case is of carved oak, and has been designed by Mr. E. Sedding, of Plymouth. The builders are Messrs. Hele and Co., Wyndham-street, Plymouth.

The memorial statue of the late Cardinal Newman will be placed in front of the Oratory at Brompton, objection having been made to its erection at Oxford. The statue, which will be of white Campanella marble, will be placed under a canopy of Portland stone, and is estimated to cost £2,000, towards which about £1,440 is in hand.

The ceremony of opening to the public the new corporation buildings at Dudley, and free libraries at Netherton and Woodside, was performed by the Countess of Dudley, on Tuesday. The buildings have been erected at a total cost of £8,400, the contracts for the edifice at Netherton amounting to about £5,600, and that at Woodside to £2,800. The buildings at Netherton include a public hall (accommodating 1,000 persons), lending library, reading-room, fire station, and three houses for married policemen. At Woodside the buildings comprise a lending library, reading-room, recreation-room, fire station, and two police houses. Mr. T. Grazebrook was the architect, Messrs. Webb and Round were the builders for the Woodside suite of erections, and Mr. D. Willetts (Old Hill) had the contract for the erection of the structures at Netherton. The Earl of Dudley gave at both places sufficient land, worth about £6,000, for the erection of all the buildings.

Two Early English windows in the north transept of Newport Church, North-West Essex, have been filled with Early 14th-century glass. The subjects are SS. Catherine and George. The glass, which was purchased in London, has been rearranged and fixed by Messrs. Heaton, Butler, and Bayne.

Extensive improvements are about to be made to College Green by the Bristol Corporation. The inner railings, which give to the place a pen-like appearance, will be cleared away, so that except as to the boundary railings the whole of the space will be thrown open. The entrance from the bottom of Park-street will be widened, and approached by a slope, instead of steps. None of the trees are to be removed, but some plants and shrubs will be added.

At the half-yearly meeting of the Manchester, Sheffield, and Lincolnshire Railway Co., held on Wednesday, Lord Warncliffe mentioned that the full amount of £4,200,000 required for their extension to London had all been taken up. As they were anxious to lose no time in proceeding with the work, they proposed in a few days to invite tenders from the largest contractors. The company would make it a condition that these tenders must be sent in by the first week in September. This was allowing as short a time to the contractors as possible. The work ought to be executed within the time they originally contemplated—that was, between three and four years, or possibly a little over four years —and the estimates that had been formed of the expenditure were more likely to be within than beyond the mark.

A new Baptist chapel at Codrington, Somerset, was opened on Wednesday week. It is constructed of native blue stone, with Bath stone dressings. Mr. J. B. Hudson, of Yate, was the contractor.

The Hertford and Ware Joint Hospital Board have instructed Messrs. Newman and Newman, of Tooley-street, London Bridge, to prepare plans for the Isolation Hospital to be built at Gallows Hill.

The harbour commissioners of Burntisland, N.B., have instructed Messrs. Thomas Meik and Son, of Edinburgh, the engineers of the present dock, to prepare plans for providing a new deep-water dock at that port. Mr. R. Henderson, the harbour engineer, will be associated with Messrs. Meik in the undertaking.

Mr. J. G. Naish, the well-known painter of Cornish and Devonshire coast landscapes, has placed a full-size cast in bronze from Luca della Robbia's panel called "The Heavenly Choir" in the church at Ilfracombe. The original is now in the Bargello, and represents a group of angels, with psalteries in their hands.

The Duke of York will lay the foundation stone of the new General Post Office for Liverpool on September 10th. The building is being erected from the designs of Mr. Menry Tanner, F.R.I.B.A., of H.M. Office of Works, and was illustrated by plans, perspective and working drawings, in our issues of Oct. 27, Nov. 24, and Dec. 15, 1893.

On Saturday the Mayor of Croydon opened a new municipal lodging-house, which has been erected at Pitlake by the corporation at a cost of about £6,500. The building is divided into two wings, the left being reserved for women and the right for men. It has been built on similar lines to the London County Council establishment in Drury-lane and Lord Rowton's at Vauxhall, the cubicle principle being adopted. The charge made for a bed is to be 5d.

The dedication of the restored west front of Rochester Cathedral took place on Wednesday. This façade, which was built early in the 12th-century by Bishop John, replacing an earlier west front erected by Bishop Gundulf, which had suffered through decay, has been restored on its original lines by Mr. J. L. Pearson, R.A., the contractor being Mr. John Thompson, of Peterborough. The principal features of the restoration, in addition to the repairs, are the raising to their original height of the two flanking turrets, which were lopped off 150 years ago, and the filling of two vacant niches by statues of Bishops Gundulf and John, executed by Mr. N. Hitch. The work just accomplished is part of a larger scheme, which owe its inception to Dean Hole.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

ASHFORD, KENT.—For pulling down five old houses and erecting two pairs of cottages and a farmhouse at Challock Lees, for the trustees of the Eastwell Estate. Mr. Henry J. Jeffery, M.S.A., Ashford, architect and surveyor:—

For two pairs of cottages:—			
Knock, Ashford	£920	0	0
For farmhouse:—			
Peters, Kennington	538	0	0

ASHFORD, KENT.—For the erection of two houses in Christchurch-road, Beaver Estate, Ashford, for Mr. W. Finn. Mr. Henry J. Jeffery, M.S.A., Ashford, architect, &c.:—

Knock, Ashford (accepted)	£455	0	0

ASHFORD, KENT.—For pulling down and rebuilding back portion of No. 40, High-street, Ashford. Mr. Henry J. Jeffery, M.S.A., Ashford, architect and surveyor:—

Knock, H., Ashford	£375	0	0
Howland, C., Ashford (accepted)	346	0	0
Wood, J., and Sons, Ashford	280	0	0

ASHFORD, KENT.—For alterations and additions, new post-office, Charing. Mr. Henry J. Jeffery, M.S.A., Ashford, architect. Quantities supplied by the architect:—

Clark, Lenham	£313	0	0
Wood and Sons, Ashford	295	0	0
Edwards, Charing	279	6	0

ASHFORD, KENT.—For addition to house, Kennington, for Mr. Padgham. Mr. Henry J. Jeffery, M.S.A., Ashford, architect:—

Peters, G. (accepted)	£222	0	0

ASHFORD, KENT.—For new house and shop, Lydd, Kent, for Mr. Burton. Mr. Henry J. Jeffery, M.S.A., Ashford, architect, &c.:—

Terry and Martin (accepted).

BETHNAL GREEN.—For alteration and repairs, No. 75, Green-street, Bethnal Green. Mr. W. Stone, 2, Great Winchester-street, E.C., architect:—

Higgs, F. G.	£421	10	0
Bradford	349	0	0
Knight and Sons	267	0	0
Edwards, A.	208	0	0

BETHNAL GREEN.—For addition to 380, Bethnal Green-road, for Mr. W. Unwin. Mr. W. Stone, 2, Great Winchester-street, E.C., architect:—

Higgs	£885	0	0
Beale	873	0	0
Thomson and Son	859	0	0
Jarvis and Sons	842	0	0
Knight and Sons	627	0	0

BEXHILL-ON-SEA.—For the erection of two houses and shops for Mr. Herbert Sherwin. Messrs. Hicks and Alton, Bexhill, architects:—

Gold, C. H. (accepted)	£1,500	0	0

BILSTON, STAFFS.—For the construction of a waterworks reservoir at Goldthorn Hill, for the township commissioners. Mr. Latham, engineer:—

Hill, H., Maidenhead (accepted)	£3,601	17	0

CARDIFF.—For painting the 2,300 gas-lamps in the borough with two coats of paint, for the town council:—

Bradbury, D. R., Cardiff (accepted)	£176	3	6

[Highest tender, £505 4s. 6d.]

COVENTRY.—For the erection of a mortuary at the workhouse, for the city board of guardians:—

Haywood, C., jun., Coventry	£115	0	0
Isaac, J., Foleshill (accepted)	98	2	6

CROYDON.—For alterations and additions to the boys' and girls' departments and new w.c.'s, at the board schools, Oval-road, East Croydon, for the Croydon School Board. Mr. Robert Ridge, 12, Katharine-street, Croydon, architect:—

Hubbard, P. R.	£3,287	0	0
Bowyer, J. and C.	3,260	0	0
Akers, W., and Co.	2,994	0	0
Huntley Bros.	2,992	0	0
Bryan, G. E., and Son	2,990	0	0
Smith, W.	2,975	0	0
Smith, J., and Son	2,963	0	0
Marriage, A.	2,854	0	0
Bullock, A.	2,754	0	0
Umlandt and Nicoll*	2,647	0	0

* Accepted, subject to the approval of the Education Department.

FAWLEY, HANTS.—For works of painting at Fawley Board School:—

Cole, Hythe	£43	10	0
Talling, Fawley (accepted)	40	0	0

GREAT BADDOW, ESSEX.—For the erection of a new house for Dr. Hart. Mr. F. Whitmore, Chelmsford, architect:—

Moss and Co., Chelmsford	£1,250	0	0
Rayner, J., Hanningfield	992	0	0
West, E., Chelmsford	950	0	0
Potter, H., Chelmsford (accepted)	900	0	0

HARROGATE.—For detached house, Clarence Drive, Cornwall-road, Harrogate, Yorks, for Mr. Llwellyn J. Cocks. Mr. T. Butler Wilson, F.R.I.B.A., Leeds and Harrogate, architect:—

Accepted tenders.

Mason and brick:—			
Stephenson, J., Harrogate	£630	9	0
Joiners:—			
Raworth and Allen, Harrogate	340	0	0
Plumber:—			
Thompson, G., Leeds	99	0	0
Plasterer:—			
Dobson, J., Leeds	87	7	3
Slater:—			
Heavyside, T. E., Leeds	51	15	0
Total	£1,208	11	3

Hill Head, Fareham.—For the erection of a detached villa, for Mrs. H. M. Warner. Mr. W. Judd, M.S.A., Stubbington, W. Fareham, architect and surveyor. Quantities supplied:—

Crockerell, J.	£660	0	0
Plummer, J., and Son	605	0	0
Hall, T. P.	590	0	0
Wareham, C.	560	0	0
Russell, W.	550	0	0
Amended estimate:—			
Wareham, C.	482	0	0
Russell, W., Fareham (accepted)	398	0	0

Hoole, Cheshire.—For making up Philip-street, Derby-place, Walker-street, and Tomkinson-street, for the local board. Mr. C. A. Ewing, surveyor:—

Jones, J., Kilmorey-road, Hoole (accepted) .. £837 1 7

Kennington.—For proposed erection of four houses, Montford-place, Kennington, for Mr. Pattison. Mr. John A. J. Woodward, architect:—

Long	£2,990	0	0
Parsons	2,920	0	0
Marsland	2,877	0	0
Edwards and Medway	2,797	0	0
Hooper, T.	2,755	0	0
Burman and Son	2,743	0	0
Ford, J.	2,596	0	0

Lambeth.—For proposed erection of two houses, Tinworth-street, Albert Embankment, for Mr. J. Cookson. Mr. John A. J. Woodward, architect:—

Burman and Son	£1,745	0	0
Marsland	1,675	0	0
Long	1,660	0	0
Hooper, T.	1,595	0	0
Ford, J.	1,547	0	0
Parsons	1,520	0	0
Edwards and Medway	1,489	0	0
Quannell	1,375	0	0

Leighton Buzzard.—For the erection of new boy's school in Beaudesert, for the school board. Mr. J. T. Lawrence, Leighton Buzzard, Beds, architect. Quantities by the architect:—

Tutt Bros.	£2,185	0	0
Adams, F.	2,147	0	0
Garside, G., and Son	2,126	0	0
Dawson, A.	2,125	0	0
Hart	2,030	0	0
Cook, D., and Sons	1,998	0	0
Edwards, H., and Sons	1,900	0	0

All of Leighton.
Architect's estimate, £2,000.

London, W.—For repairs, alterations, and decorations at No. 11, Conduit-street, W. Mr. G. Gordon Stanham, 100B, Queen Victoria-street, E.C., architect:—

Appleby, J., Cornwall-road, S.E. (accepted) ... £309 0 0

London.—For rebuilding the Royal George Tavern, New-street, Kennington Park-road, S.E., for Mr. C. Dick. Messrs. F. J. Erdle and Meyers, 8, Railway Approach, London Bridge, S.E. Quantities by Mr. H. Dow White, 52, Finsbury-pavement, E.C.:—

Gould and Brand	£3,148	0	0
Ansell, C.	3,091	0	0
Marsland, J.	3,085	0	0
Dearing and Son	3,080	0	0
Whitehead and Co.	3,070	0	0
Tyerman, J.	3,050	0	0
Burman and Sons	3,045	0	0
Aviss and Co.	2,980	0	0
Rider and Sons	2,975	0	0
Spencer and Co.	2,915	0	0
Young and Lonsdale (accepted)	2,887	0	0

London.—For rebuilding the London Apprentice public-house, Old-street, St. Luke's, E.C. Mr. E. H. Abbott, 6, Warwick-court, High Holborn, W.C., architect. Quantities by Mr. A. Johnson, 50, Imperial-buildings, Ludgate Circus, E.C., surveyor:—

Richardson, J. O., Albert Works, Peckham (accepted) £6,382 0 0

London.—For repairing, painting, white-washing, &c., the interior, and painting the exterior and ironwork, and other works, at the workhouse, Parish-street, and the Infirmary and casual wards, Rotherhithe, for the guardians of the St. Olave's Union. Messrs. Newman and Newman, 31, Tooley-street, London Bridge, architects:—

Proctor, Woolwich	£2,330	0	0
Pritchard and Renwick, Tooley-street	2,200	0	0
Mills, Westcombe Park	2,179	0	0
Vigor, Poplar	1,908	0	0
Bullers, Bermondsey (accepted)	1,840	0	0

Merthyr.—For the execution of sewerage works at Gilfach Vargoed, for the Merthyr rural sanitary authority. Mr. J. Jones, surveyor:—

Isaac, Taliesin (accepted.—Lowest tender received).

Merthyr.—For the execution of sewerage works at Pontlottyn, for the Merthyr rural sanitary authority. Mr. J. Jones, surveyor:—

Lewis, W., Cefn Brithdri (accepted).
[Lowest tender received.]

Montgomery.—For building new Calvinistic Methodist Sunday School, for the committee. Mr. Frank H. Shayler, Welshpool and Oswestry, architect. Quantities by the architect:—

Watkins, A., Welshpool	£498	0	0
Davies, E., Welshpool	478	0	0
Jones and Son, Shrewsbury	436	7	0
Evans and Jones, Montgomery	432	12	1
Southern, W. W. N., Shrewsbury	429	1	3

Mountain Ash.—For making Ynigs Merrich-road, Aberdare Junction, for the local board:—

Williams, E., Crebinddu (accepted) £243 13 0
[One lower tender withdrawn.]

Newcastle-on-Tyne.—For the erection of Bentinck junior board school:—

Bruce, A. (accepted) £4,150 5 0

Newcastle-on-Tyne.—For the erection of a school in Portland-road, for the city school board:—

Middlemiss Bros. (accepted) ... £7,151 0 0

Nuneaton.—For the erection of a police-court at Nuneaton for the Warwickshire County Council:—

Williams (accepted) £5,980 0 0
[Lowest tender received.]

Risca.—For alterations to the Copperworks bridge, for the local board:—

Pritchard (accepted) £48 0 0

Rochdale.—For the erection of two steel Lancashire boilers, each 30ft. by 8ft., at the sanitary works, for the town council:—

Oldham Boiler Works Co. (accepted).
[Lowest tender received.]

Rotherham.—For the furnishing and fitting up the kitchens and children's block, &c., at the workhouse, for the Guardians. Mr. H. L. Tacon, architect. Quantities by architect:—

Accepted tenders:—

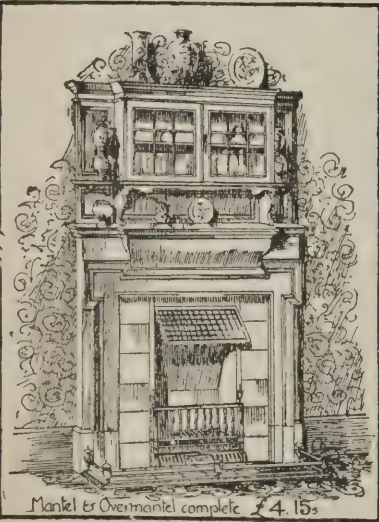
Woodwork and furniture—			
Johnson and Appleyard, Sheffield	£360	6	3
Brushes and mats—			
Johnson and Appleyard, Sheffield	15	3	3
Crockery—			
Johnson and Appleyard, Sheffield	10	13	9
Ironmongery—			
Smith Bros., Rotherham	44	10	5
Bedsteads—			
Smith Bros., Rotherham	183	12	0
Bedding—			
Beckett, Rotherham	270	19	0

Scunthorpe.—For making a trial bore for water 100ft. in depth at Rough Bottom plantation, for the local board:—

Cressey (accepted).

Sidmouth.—For a path at the west end of the Esplanade, for the local board:—

Radford, E.	£43	5	6
Northcote, J. G.	40	0	0
Darke, Z.	39	0	0
Courtenay, J. J.	32	12	6



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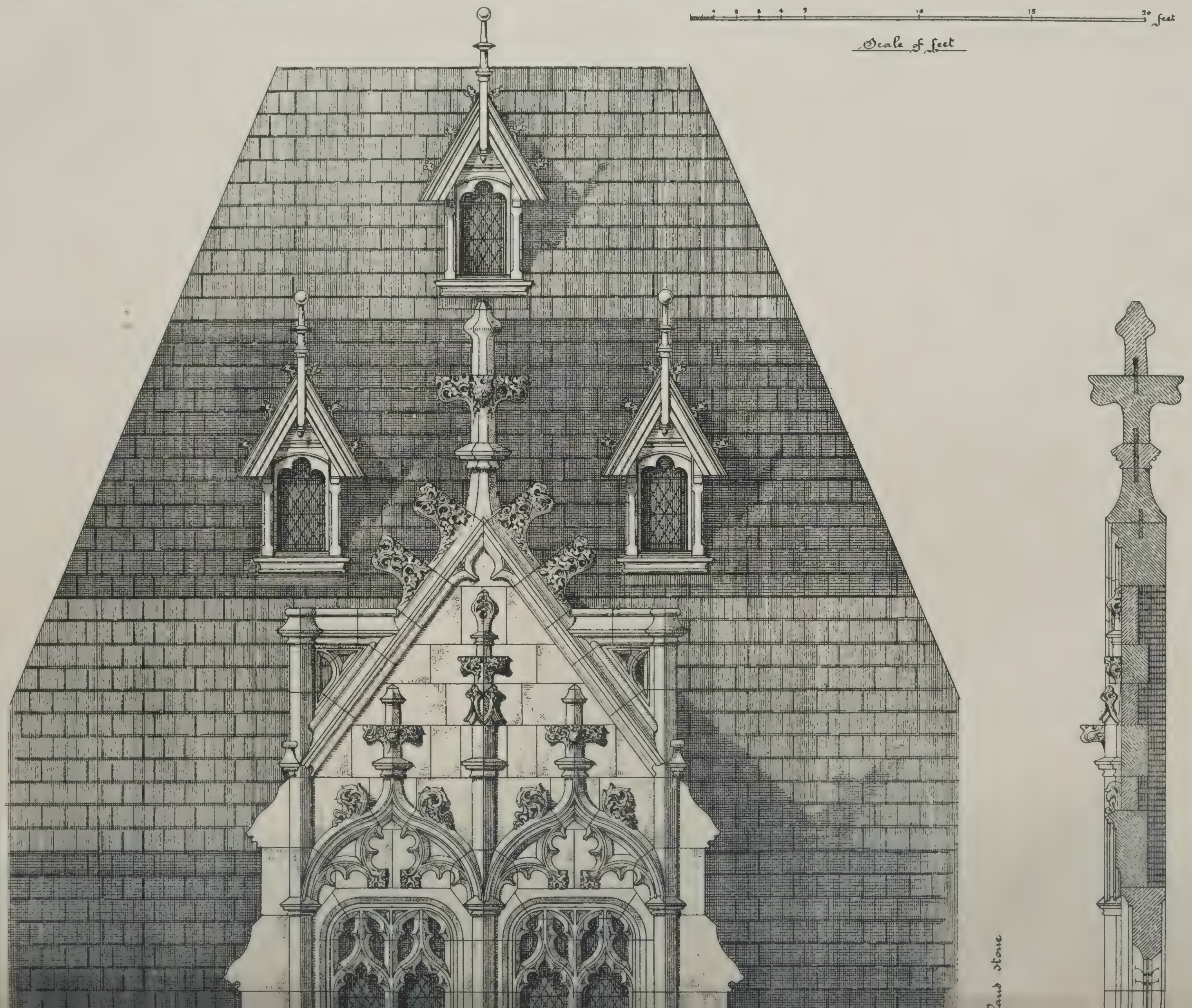
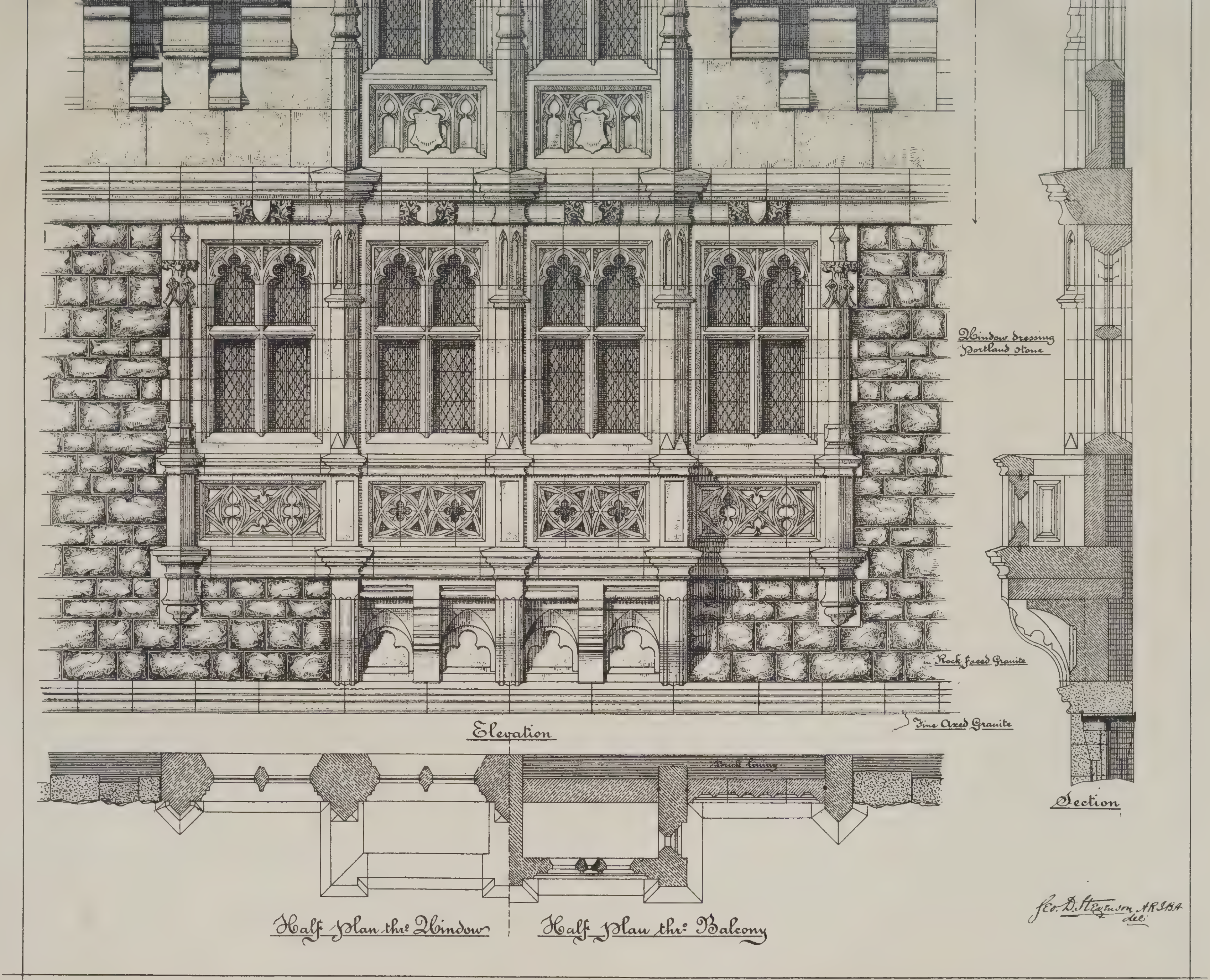
TOWER BRIDGE

Detail of Top Stage North & South fronts Main Towers





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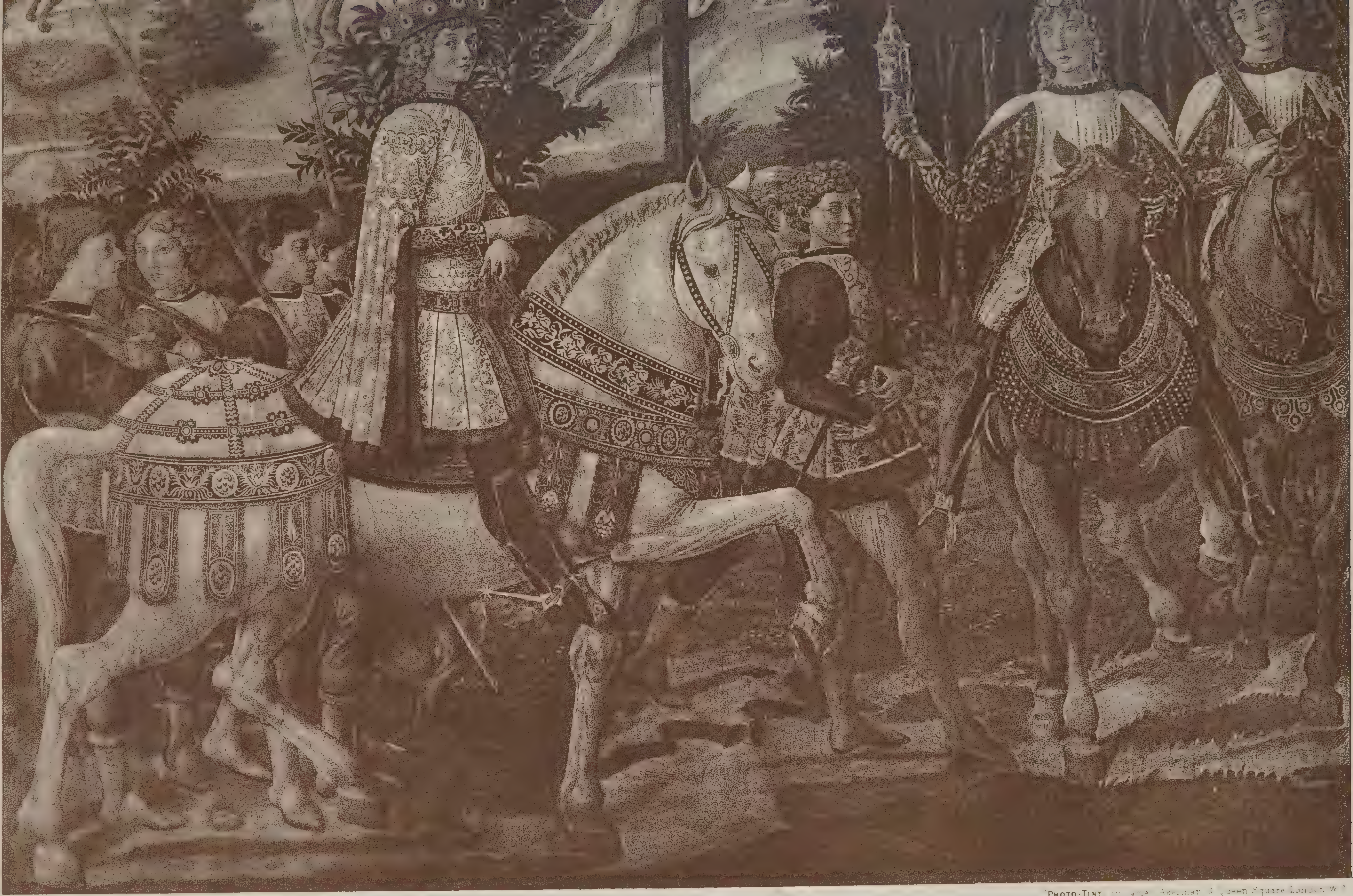
THE TOWER BRIDGE OVER THE THAMES.

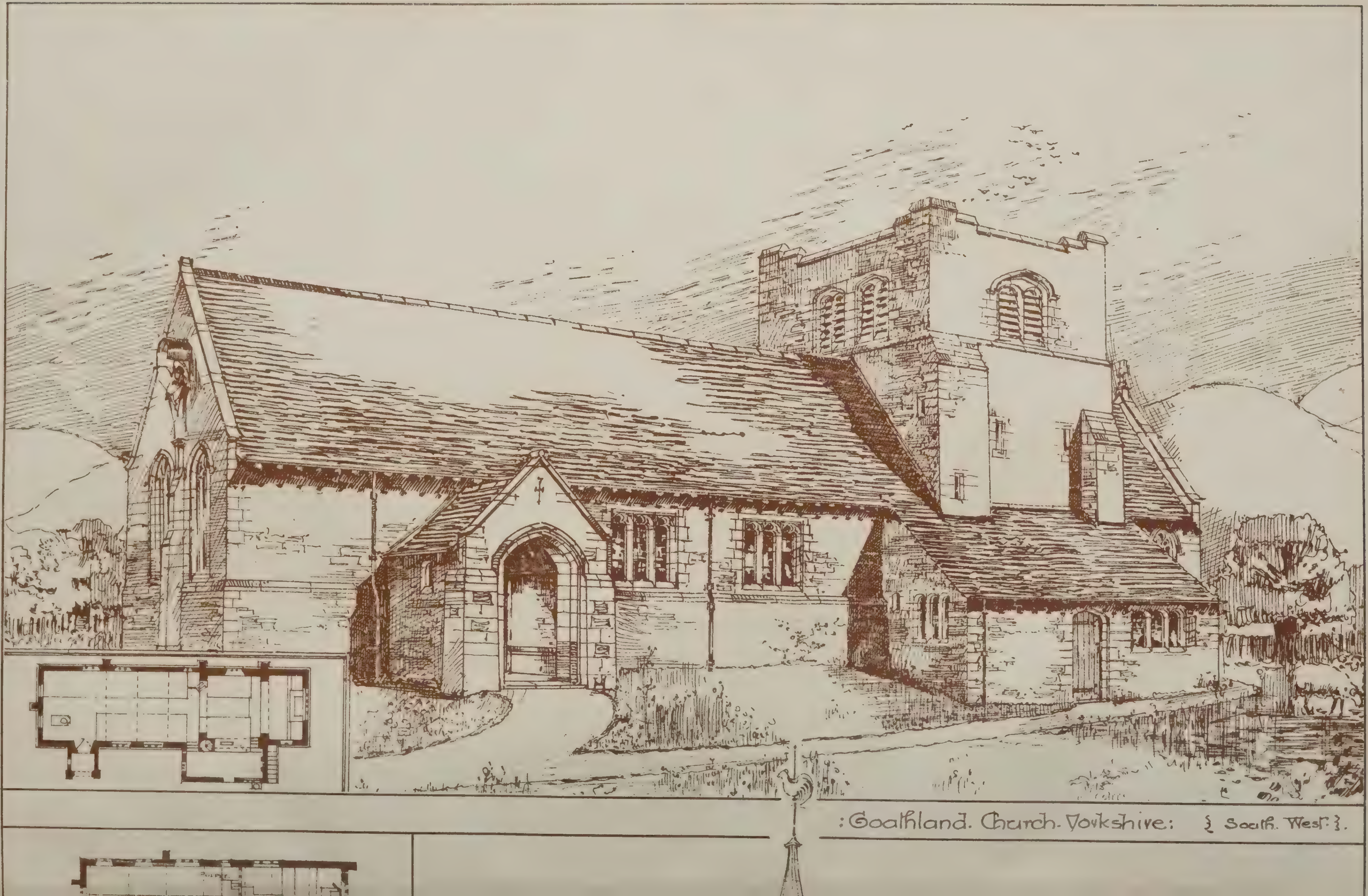
OPENED BY THE PRINCE & PRINCESS OF WALES, JUNE, 30TH 1894



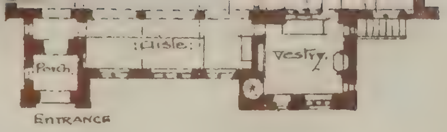
'PHOTO-TINT' by James Akerman 6 Queen Square London W.C.

OLD·MASTERS·ON·THE·CONTINENT·N° 7·

THE JOURNEY·OF·THE·MAGI·(FLORENCE) BY·BENOZZO GOZZOLI (B 1420 D 1498) TUSCAN SCHOOL



:Goathland. Church. Yorkshire: { South. West. }.



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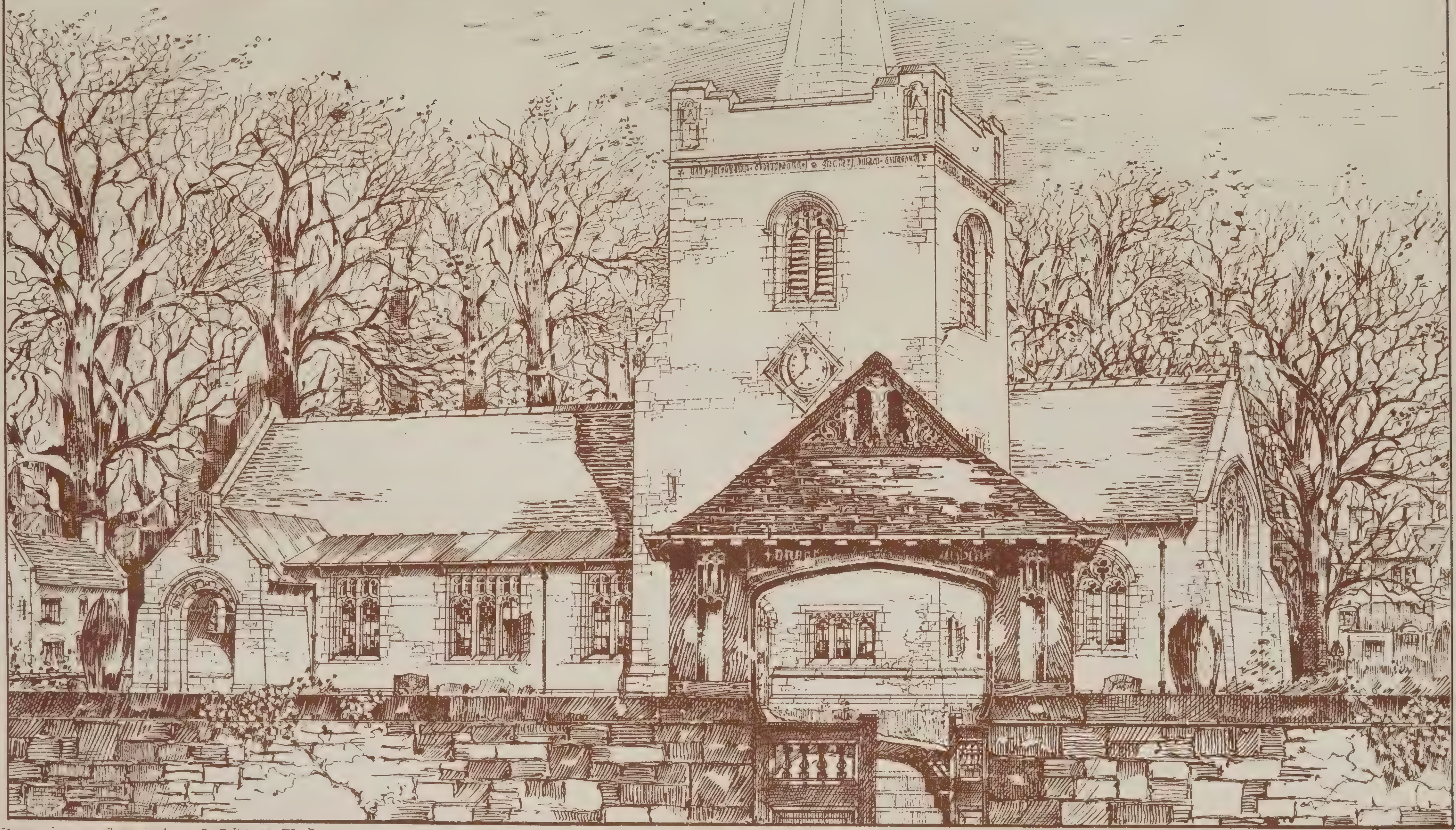

Demaine. and Brierley. Architects. York:

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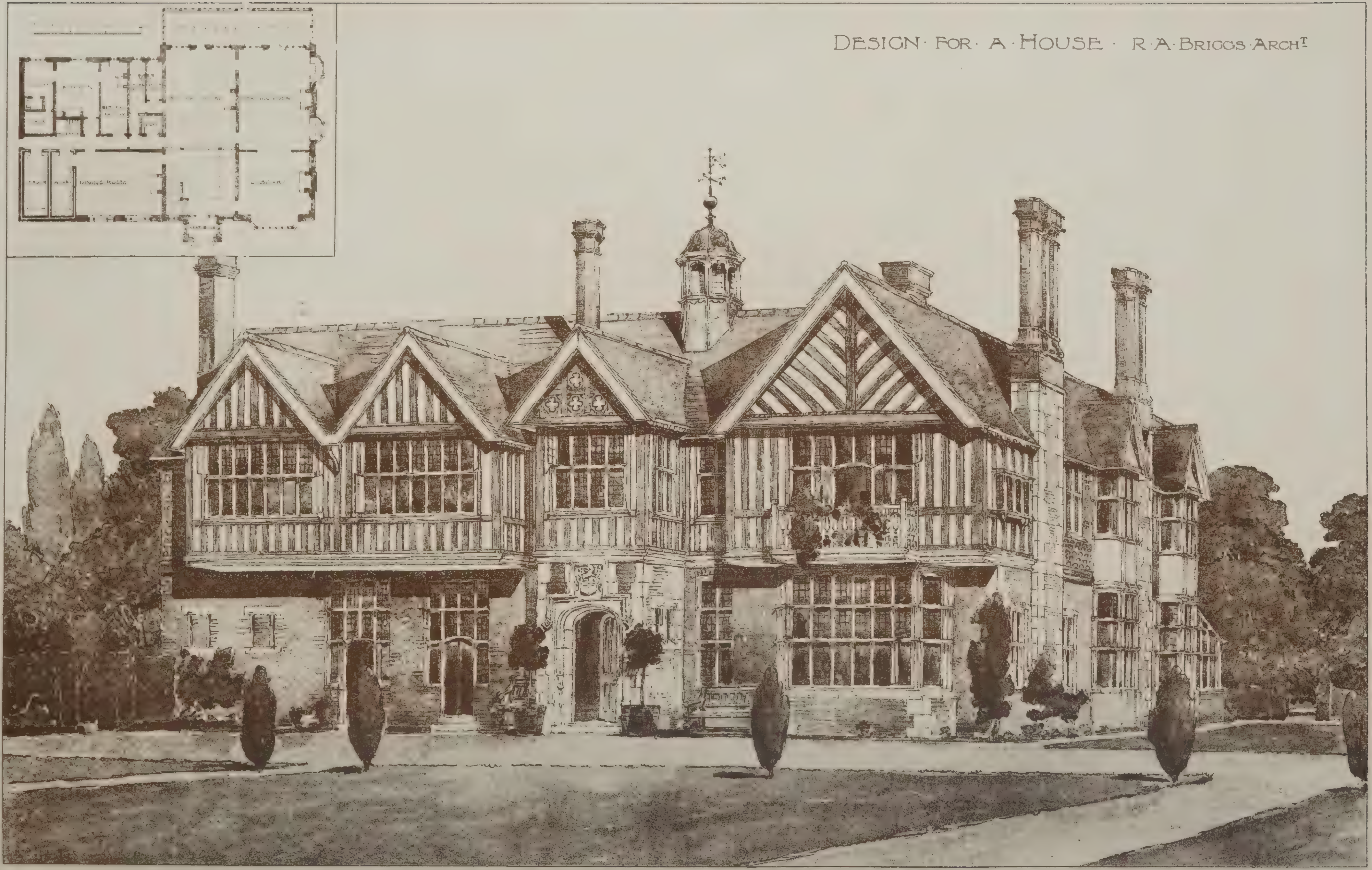
: All Saints Church : Rufforth : York :

DESIGN· FOR· A·HOUSE· R·A·BRIGGS·ARCHT.



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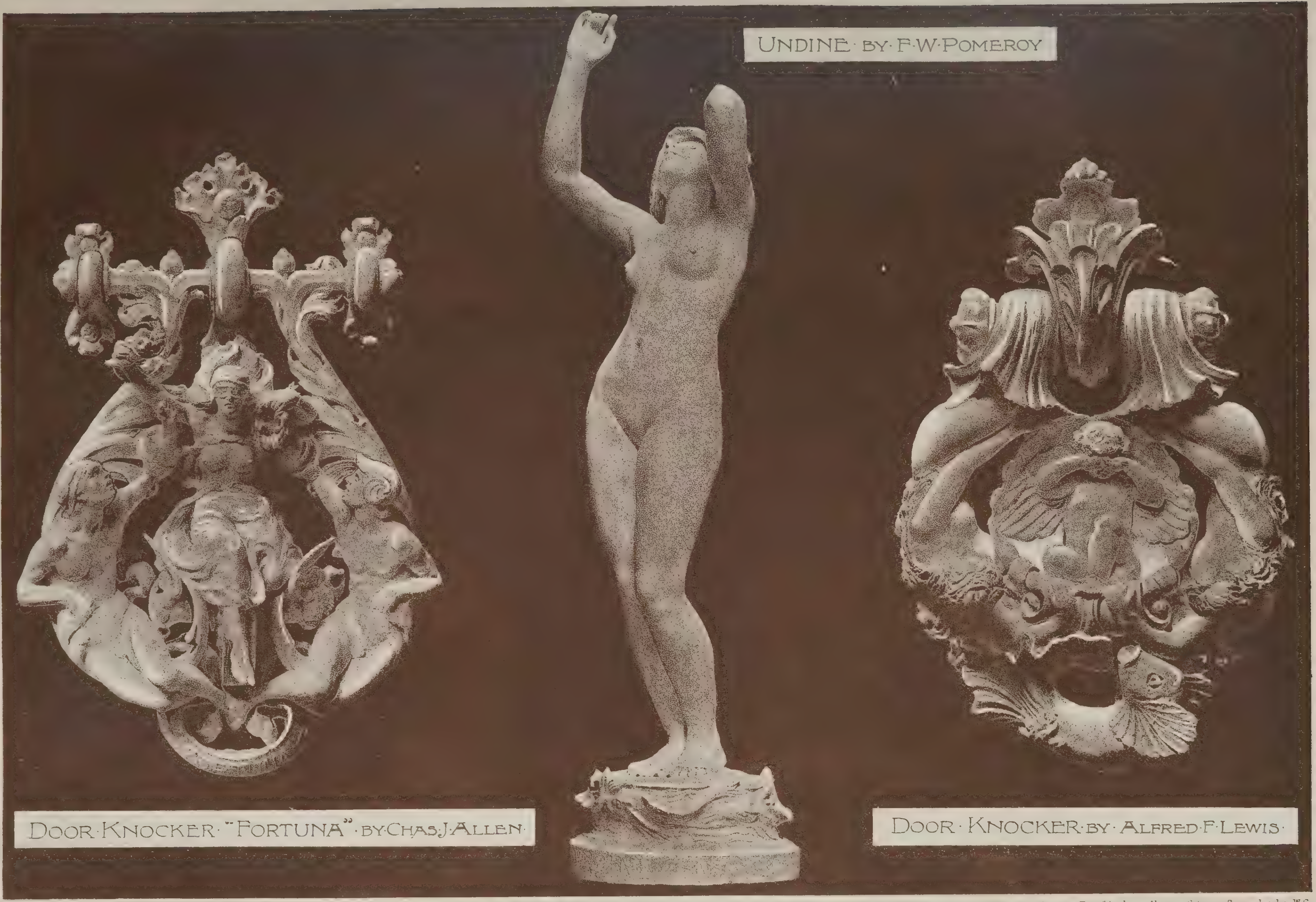

UNDINE · BY · F · W · POMEROY

DOOR · KNOCKER · "FORTUNA" · BY · CHAS. J. ALLEN ·

DOOR · KNOCKER · BY · ALFRED · F · LEWIS ·

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SCULPTURE · AT THE · ROYAL · ACADEMY · 1894

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2065.

FRIDAY, AUGUST 3, 1894.

INTERESTING AND UNINTERESTING ART.

IT seems strange but it is quite true, that for a century before the Gothic revival the great aim of architects was to make architecture uninteresting. They got hold of the idea that unless all life, all character, all individuality were carefully squeezed out of it, it could not be "pure." Their efforts succeeded. Like Mrs. General in "Little Dorrit," they produced a "surface"; and, like her, they left nothing below that surface which was worth a moment's examination. It is in this fashion that our art was treated during the time of the Georges, and the fashion reached its climax in the age of "the first gentleman in Europe." Then came the great reaction from Classic to Mediæval. But a change of style, like a change of creed, is not necessarily a change of spirit. The old insipidity remained. The revived Gothic, like the Georgian Classic, was mostly, to use a phrase of Swift's, "deadly dull and dry," and it is only now, when its outward vestments are being thrown aside, that we see many signs of the freshness and naturalness which should have been its highest distinction.

It is with buildings as it is with books: they may have many admirable qualities, and yet not be interesting. Such works remind us of Johnson's cruel remark about "Paradise Lost"—that nobody ever wished it longer. There are some great buildings, as there are some great books, which one studies mainly from a sense of duty. They are "faultily faultless, icily regular, splendidly null." We may learn from them, but we cannot love them. And there are others—full of imperfections, perhaps not half finished, perhaps even incapable from the first of ever being finished—which we never grow tired of. We visit them, and sketch them, and watch them from every point of view, till we end by liking their faults as well as our own. Perhaps it might almost be said that entire perfection is not interesting; the things that have attained are not for us. Human beings with endless possibilities before them are a little out of harmony with all that has found its goal and can go no further. "Things won are done—joy's soul lies in the doing." And so it happens that we turn away, ere long, from all that is quite complete and satisfactory, while we linger fondly over the problems that are only half-solved, and the promises that are only partly fulfilled.

The same building may be interesting in one aspect, and trite enough in others. For instance, it may follow a general type that is tame and commonplace, and yet its details may save it. Roman work, as our great-grandfathers knew it, may be grand; but can hardly be called vitalising or inspiring. It is too regular—too uniform—too mechanical. This, however, is not Roman work as it actually was in the time of the Romans, any more than a fossil skeleton in a museum is the bird or beast in his habit as he lived. It is simply that part of the building in one case, and that part of the animal in the other, which, by its durability, has happened to outlast the other parts. Classic architecture, as it was represented in the books of 50 or 100 years ago, consisted of little else beside columns and entablatures. The proportions varied slightly. In this temple the Corinthian order was so many modules high, while in that temple it was so many modules and a fraction. Our good predecessors of the last century thought that both could not possibly be right, so they held a sort of General Council, and settled, once for all as they supposed, the orthodox width and height, and section of every detail. This was one of the most successful steps they ever took towards making architecture uninteresting; or, as they would have said, towards making it regular and pure. But it would not have suited the Romans. Old Classic art never had the dulness and dryness of modern Classic. Its details redeemed it. There was not only its sculpture, which we partly know, but there was its painting, of which we know very little; there was its wall-decoration, its metal-work, its marble or mosaic floors, its woodwork, its ceilings, its lattices, and its glass. When by good luck we come across any of these, we understand how men of high intellect and imagination found the Classic world a home and not a prison. Its details saved it—the details which, for the most part, perished long before our days; the details which, by their freshness and variety, their freedom and naturalness, would have given a fatal shock to the makers of that abomination of desolation—the Classic revival of the Georgian period.

Arrangement and composition are what give interest to many buildings. In architecture, perhaps, they may be lacking; or, if not, their architecture may be of that cut-and-dried sort which nobody would cross the street to look at. Their designer was not great at details, but he had inspirations of his own about planning and general effect. This was where Wren's strength lay. To some people, perhaps, it is heresy to say so, for when a man's greatness is once admitted, it becomes the popular belief that he was great in every direction. So we have seen persons who ought to know better grovelling in slavish veneration before some of Wren's early productions, which he, probably enough, lived to wish "blotted from the things that be." But people should distinguish. Few designers have ever approached Wren at his best, in his own particular line. Few architects have ever invented so fresh and beautiful a tower as that of Bow, so skilful and novel an interior as that of St. Stephen's, Walbrook. But if we cannot reach the level of Wren at his best, we can all sink to the level of Wren at his worst. Yet even here his planning often saves him from utter inanity. We see that he had an idea to express, even when he could not find time, or would not take trouble, to express it properly. And though the idea may sometimes not be a very good one, as in the ground-plan of St. Antholin, Watling-street, or though it may be only half turned to account, as at St. Swithin's, Cannon-street, yet it is so refreshing to find a man with any internal impulse of his own, that we cannot help watching to see what he makes of it, or what it makes of him.

A work in which two streams of tendency meet is nearly always interesting. It is rarely perfect, or calm, or harmonious, but it is sure to be suggestive. Its very discords are an appeal to us to resolve them; its very mistakes are a question to us as how they could have been avoided. For the architect who wants to be original, transitional periods are the periods to study. The great mistake of the Gothic revival was, that the promoters set themselves to copy Gothic art—not in its nascent state, when it might have branched out into any of a hundred different directions, but in its finished growth and highest development. It is not at its full perfection that anything can be best transplanted. The gardener who wants to move a flower, moves it before its first buds expand—not when its petals lie open to the sun. Put into new soil, with the first stirrings of the spring it sends down fresh roots and throws up fresh stems, and so it takes full possession of its ground. Art has many nascent stages, when two contrary ingredients, like an acid and an alkali, are effervescing before they combine. There was the stage when Classic art first encountered Christianity. We know its productions as "debased Classic," for a "debased" style is the usual prelude of a new style. The vegetation of one year has to decay, that the vegetation of another year may have leaf-mould to grow in—and so it is with art. Then there was the stage when Romanesque architecture, in the time of the Crusaders, met with an influence from the East. We know what happened: it died, and the Gothic styles arose in place of it. But how suggestive the meeting is! How many possibilities seem to have lain in it, beside the one which actually became a fact. Look at the Later Romanesque of Germany; look even at the Transitional Romanesque of England, touched, but not yet destroyed by the grace and lightness of Asia. Note the infinite picturesqueness of Limburg; note the charm of those small western transepts at Peterborough. It was only for a little while that such things were built; the spirit of the 13th century asked for something wilder and more ambitious. But we in the 19th century are perhaps more in sympathy with their unaspiring beauty than with the "star-y-pointing pyramids" of Salisbury or Freiburg.

There are two phases in the architecture of Spain which are full of interest. One is where Gothic and Moorish tendencies met. It was not chiefly in the great churches they did so, though even in some of them traces of Mohammedan art may be found. It is rather in civil and domestic buildings—in carving, in brickwork, and in woodwork that we find them combined. The result, in these secondary features, is often very beautiful, and if our age were capable of profiting by suggestions, might put us on the track of a European style adapted for our works in India. But the subsequent history of Spain shows another and better-known mingling of opposite currents. There, as everywhere else in Europe, this happened in the time of the Early Renaissance. But in Spain, more than elsewhere, and longer than in the rest of Europe, the departing Gothic and the coming Classic did really coalesce. The Renaissance in England gives one the impression that the builders of that period wished to be wholly Italian in their style, but did not at first know how. They were like men learning a foreign language, using its words as far as they could, and filling up with their native dialect the blanks which their ignorance left. In Spain, on the contrary, it might be said that the change for some time only affected minor details. Look, for instance, at the central lantern of Burgos, or the great tower of Salamanca. At a distance they seem almost entirely Gothic. In general feeling and composition they remain characteristically Mediæval. It is only on a nearer view that we find their buttresses are changed into pilasters, their crockets into scrolls or acanthus leaves, and that their lesser features in general are modified in the same direction. We may see a parallel change going on in our own buildings at the present moment. The Gothic revival is meeting the Classic element in modern work, and is both transforming and being transformed by it. Take, for instance, the Imperial Institute. At a first glance, it—and still more, a photograph of it—strikes you as purely Mediæval. It is only on closer examination that you find a change in detail, analogous to that at Salamanca and Burgos.

The best English work of our day will perhaps strike posterity as more interesting than any that has for two or three centuries preceded it. It may be far enough from perfection; it may be anything but rounded, complete, and final. The idea of finality has passed away with the last generation. It fancied it could bring back the 13th century, and fix it for ever. Having caught its style at the climax, it only wished to keep it perpetually. So the men of Gotham tried to keep the spring, but neither spring nor style will stay, and we have learned the fact, as they did. Therefore our architecture at present is full of efforts and experiments, and everything is pardoned to it except tameness. The Romantic tendency, which makes for life and growth, is struggling everywhere with what is miscalled the "Classic" one, which tends to ossification and death. Is architecture still to be full of change and vitality, as it has been in every age and country where it flourished, or is it to be a cut-and-dried system of mechanical rules, as it was in the time —the almost unparalleled time—of the Four Georges? The works in which such a question is being fought out cannot fail to be interesting. May those which succeed them be equally so, and never lapse into the deadly dulness, the modern "Classic" monotony of later Spain.

THE NATIONAL COMPETITION PRIZE DESIGNS.

VISITORS to the National Competition Prize Designs and Drawings at the South Kensington Museum, when they come to the screens on which the prize architectural designs are placed, cannot fail to note two extreme schools of architecture which find favour amongst the students. On one screen they will observe the drawings of a Glasgow student—Mr. Thomas S. Purdie, who receives a silver medal—for an exchange, which might have been designed or erected, as far at least as style is concerned, early in the present century—a design displaying all the refinement of detail and Classical feeling of the best period of revived Greek architecture. It is in the Alexander Thomson's Neo-Grec manner—indeed, the design is for the Thomson Travelling Studentship. On a second screen they will see another Glasgow student's design for a college, which wins the gold medal, thoroughly academical in its plan and general treatment, but in a distinctly Late Gothic style, breathing somewhat the Renaissance spirit in its details, and in parts Seddingesque. It is by Mr. Henry Mitchell. Designs more opposite in style and sentiment it would be difficult to conceive: the one broad and severe in its lines and detail, the other elaborate and picturesque in its masses and features. The design for the exchange is thoroughly Thomsonian; there is a tetrastyle portico of the Ionic order on a platform of steps leading to the grand hall, with flights on either side, and then, through an octagon vestibule to the exchange hall, 115ft. by 70ft., a rectangular-shaped cella surrounded by a peristyle of the Ionic order. Side porticoes to the octagonal hall are recessed. The entrances are narrow. On each side of main staircase hall are the telephone and postal departments, and the other side reading-room, &c. Mr. Henry Mitchell's design for a college we have previously noticed in connection with the Soane Medallion competition of the Institute. There is some skill shown in the plan of each student's set of rooms with its study, bedroom, lobby, pantry, and stairs; these dwellings are disposed round two cloistered quadrangles. There is a well-arranged entrance gateway, with library and chapel projecting at each end, and two lofty flanking towers. The dining-hall is picturesque in its features, and the drawing and detail are masterly. But the chief interest in these designs is that they represent two extreme types of architecture. They may perplex the ordinary visitor; they show, at least, there are two deeply-imbued convictions in the minds of the younger architects, and that we are as far off as ever from one national school. A third Glasgow student, William Tait Conner, takes a silver medal for a design for a royal mausoleum—another design we have seen before at the Institute. A great octagon with heavy-ribbed dome, and coupled disengaged columns at the angles, having an apse on one side, and a massive, rectangular-shaped, two-storied building forming the entrance, and staircases in front—a heavily-outlined and inelegant combination of forms, treated in an Italian style with some boldness. There is a want of gradation in the parts and details, and in the domical composition. We may notice a few other designs.

A bronze medal is awarded to James H. Craigie, Glasgow, for a design for an exchange. A circular portico leads to an entrance and domed hall, with side pedimented entrances. The exchange hall is surrounded by columns of the Ionic order. A like prize is given to Charles D. James, Bradford, for a museum and public library, an elaborate Renaissance design of symmetrical elevation. The two orders in the entrance and the details of end pavilions are not pleasing, and the first-floor windows are meagre. A central tower and cupola rises over the entrance hall. A concert-room occupies the rear block in the axis of building. Another royal mausoleum design is by George Gunn, of Glasgow, submitted for the Tite prize. It has a large octagonal nave, and side apsidal recesses, with chancel and altar sarcophagus, a vestibule, and portico. Lateral colonnades and stairs down to crypt are shown, and the dome is a replica of that of St. Paul's. The design is pretentious and heavy, and takes a bronze medal. Albert H. Hodge, Glasgow, is the author of one or two able designs displaying considerable freshness and originality of conception in the detail and decorative treatment. The country residence for which a bronze medal is given is too broken and unrestful, especially the garden front. Red brick and green tiles are shown. The plan is cut up and irregular in outline. A large hall and staircase forms a principal feature, and the terracotta decoration and fresco, shown by a pencil detail, exhibit a masterly inventiveness and resource, though spoilt by a want of reserve and scale. The latter is conspicuous in the huge figures round hall and staircase. In another design for a market and corn exchange, by Albert Hodge, there is the same freedom and ability in the decoration of friezes. The author, in the exuberance of his invention has perched figures on chimneypieces. The pencil drawings are clever, and would be more intelligible if a less affected style of lettering were adopted. A Nottingham student (A. Bradshaw) sends a fair plan for a public hall with corner tower, having surrounding corridors and side exits. The front, however, lacks breadth. Another student there (J. P. Dixon) obtains a book prize for a design for a market-hall in the Georgian style, with a lofty tower at one corner. There are some good features and details, but the perspective is faulty. The tower is drawn at an acute angle, giving a distorted appearance to the drawing; the circular porch is equally wrong. Amongst other designs we can only notice R. Bedingfield's drawings for a suburban house, the elevations of which are better than the plans; a nice coloured sketch for a gate lodge in brick and tile; also a village school which takes a book prize. The bronze medal study for a church (No. 70) is poor; the pointed aisle windows and the square-headed clerestory windows appear in their wrong positions, and the details are not worthy of the careful drawing. W. C. Gregory's design for a small market-hall is simple and appropriate in plan, and shows artistic feeling, and is awarded a bronze medal. Other designs for a Perpendicular church and a college chapel lack a proper knowledge of Gothic architecture. We also notice a nice sketch for a chimneypiece for town-hall, showing a fairly good feeling for colour, but defective in detail.

The measured drawings are fewer in number this year. The fine marble rood-loft from Bois-le-Duc, which forms one of the entrances to the architectural court of the Museum, has been most faithfully drawn to an inch scale, and coloured by John H. Parkyn, who takes the honorary silver medal of the Training Class. Two other copies take a bronze and book prize. The work is a fine specimen of Flemish Renaissance of 1625. The coloured drawings of the rood-screen of Glasgow Cathedral are clever. Albert H. Hodge, of that city, takes the bronze medal, and evinces a true sense of the beauty of the original. The pierced Decorated tracery and the tombs are drawn with much feeling. Amongst the silver-medal drawings we notice the beautiful pulpit and arcade of Beaulieu Church, New Forest, Hants—a remarkable example of a corbelled stone wall-pulpit and arcade in the Early English style. The drawings and details are by a Birmingham student, James Alfred Swan, who sends also details of Temple Balsall Church, Warwickshire. The drawings of sedilia of All Saints' Church, Hawton, Notts, are awarded the same prize for a finely executed set. Four well-drawn doorways in ink, representing four periods of architecture, from Barfreston Church, Stone Church, Rochester Cathedral, cloister entrance of Canterbury, and other sketches from Kent receive the prize. The author is Harry P. Clifford, of the Training College. A gold medal is awarded to Benjamin J. Fletcher, Leicester, for pencil sketches from several Continental churches, very effective and broad in touch. Other measured drawings of merit include those of Lady Chapel, Lichfield, a fine Decorated example; screen of aisle, Dunster Church, Somersetshire; pencil sketches from Gloucester Cathedral, Lichfield, and Lincoln; south aisle of nave of Chester; Bloxham Church, Oxon, representing the interesting plan of church, all of which take bronze medals. In many of the drawings much labour has been wasted in repetitional features, and in mechanical drawing, that would have been better spent in other details of the same work. As pointed out by the examiners (Professor G. Aitchison, A.R.A., T. G. Jackson, A.R.A., and J. J. Stevenson), some of the measured drawings pretend to give the jointing of masonry, which is obviously incorrect. Other students waste their time in shading by ruled lines which could have been quicker and better done by a wash. As a sensible way of making a measured drawing, the examiners refer to staircase at Leicester by Stephen O. Taylor, which receives a book prize. The coloured drawings of this class are of commonplace interest. Another important remark is made by the examiners—namely, that the conventional way should be discouraged of representing by outlines ornament the effect of which depends entirely on light and shade. On this principle they have awarded the gold medal to B. J. Fletcher, of Leicester, for his pencil sketches of ornament from Bordeaux, Chartres, Troyes, &c.

In the studies of historic styles of ornament, a few meritorious drawings are to be seen. Evelyn G. Thompson, Southport, wins a gold medal for a series of studies in ornament. Many of these represent brocades and other textile fabrics, and this lady student has made an analysis of each kind, showing how the designer is to proceed. The examiners' commend this kind of study, and observe that they would like to see the analytical study more "generally pursued, instead of brainless copying." A silver medal is given to H. C. Wallis, Ryde, I. of Wight, for a very beautifully-drawn representation of a mosaic pavement in the Roman Villa at Bognor, Sussex; a bronze medal to B. J. Fletcher, the recipient of a gold medal for pencil sketches, for some clever studies of tracery and details.

Turning to design, we notice several designs for panels painted in monochrome, for which silver medals are given, as those by Frederick W. Clough, Bradford; Harry Kershaw, Heywood; J. Moore, Birmingham. The second of these is by a boy only 15, displaying much talent for naturalistic ornament, elegant, but rather crowded in the stems. The same prize goes to Jane Twiss, of the Training Class, for a nice frieze panel, with mask and foliage, also for a design for a mosaic pavement, by Geo. J. Carder, of Wordsley, in which peacocks and winged figures are cleverly introduced in border and centre, with wreaths and interlacing bands. The mosaic tile designs are few and inferior. No. 185 is bold in conception, and No. 36 has a silver medal; the design has a good motive, in which birds and strap ornaments are arranged in nice colour. In wall-papers little ability has been shown. No. 54 (silver medal) is bold, in which leafage and fruit have been cleverly adapted for a flat surface—two treatments are shown. No. 28 is well adapted for block printing, and the structure of pattern is good, and colour pleasing. The silver medal also is given to Caroline Thornhill, Blackheath, for a design for wall decoration, No. 22, in which there is a well-designed frieze and filling, the lines of which are agreeably arranged—the motives being fish and sea-plant forms. No. 184 is pleasing also in the structure of pattern. A bold pattern and border is No. 45 for a lace curtain. A handsome design for a hanging is No. 138, in which oak and honeysuckle are adapted.

Internal decoration is poorly represented, and the examiners complain that this section attracts very few students of any talent, and that the designs are commonplace. It is to be regretted that so important a branch of design has received so little attention. Two or three designs, with figures in chalk for stained glass, from Birmingham (Nos. 16, 79, 83) may be mentioned, in which talent is shown in decorative figure design, but hardly sufficient detail is given. In metal-work a gold medal is given to Eleanor L. Mercer, of Sheffield, for some designs for silversmiths' work, including a scent bottle, needle and cigarette cases, chatelaines, bouquet holder, &c. Beauty of outline and delicate detail are shown. The silver vase, No. 638, is extremely elegant in outline. The signs and door-plates in *repoussé* (618), and the boot-scraper (167) are spirited. For wrought-iron gates we see very little of merit; the gate piers in No. 100 are extremely meagre and small for the ironwork. In modelled work we must mention the gold medal design for book cover by Florence D. Steele, South Kensington, to whom the Princess of Wales's Scholarship has been awarded. All the precious parts of the design are protected, and the ornament is appropriate for the material and quiet. The gesso ceiling (64), and the design for frieze (65), silver medal works, are creditable examples. Another gold medal modelled design for a book cover is No. 624, in which the panelled ornament and figures are delicate and refined. Several clever book illustrations are exhibited, of which the menu cards and book plates (No. 192) are conspicuous. The gold medal is won by Robert Spence, Newcastle, for two original designs: one is a battle scene, the other a drawing of "George Fox in Carlisle Gaol," and the silver medal is awarded to Winifred Smith, Birmingham, for a cleverly-drawn series illustrating romances and fairy tales, children's singing games, &c., full of invention and spirited drawing.

THREE PERIODS OF ENGLISH ARCHITECTURE.*

WHAT our English architecture would have come to had not foreign influences checked its growth in the 15th century, is a question that has often been raised. The late Mr. Fergusson and others have speculated on the probabilities of living architecture and what might have happened had modern architects not turned it into a profession. Leopold Eidlitz, in his able work on "The Nature and Functions of Art," has shown the possibilities of the Mediæval styles, and has very justly observed that true and living architecture is a matter of functions, not one of forms. The same line of argument has been taken up by other leading authorities, and we have repeatedly in these pages inculcated the idea that it must be by evolution of pre-existing types, attention to conditions and requirements before mere results of previous ages, that progress can be looked for. Mr. Thomas Harris, F.R.I.B.A., has clearly been seeking a solution of this problem, and his work on "The Three Periods" is chiefly a repertoire of quotations from certain authorities which confirm this principle of growth. No one can dispute the proposition in its abstract terms, although many will differ from the author in his conclusions. The problem attempted is, "What form would the 16th-century Gothic have assumed at the close of the 19th century had its development been uninterrupted?" The discovery of a method is the one thing upon which all will not agree. Mr. Harris divides his work under three distinct periods: "At Work," "Asleep," and "Awaking," which euphemistically distinguish the living and historic art, the period of decadence and the Renaissance, and the Modern Revival. Under the first of these periods, and with the help of a catena of authorities, he refers to the regular steps in the domestic plan, how gradually it was developed from the earliest type, and had adapted itself to the requirements of each period, how the plan preserved its main features till the time of the Renaissance, when foreign influences prevailed over the indigenous Tudor. Several quotations are given from various sources—some of the authors will hardly be taken as authorities on questions of historical development—and plans and illustrations follow to illustrate the growth of domestic plan and design. One objection to these quoted passages is that they are often torn from their context, and can scarcely be said to favour the conclusions of the author, though in this portion of the book there is little to which exception can be taken. Mr. Harris observes that the Italian Renaissance arrested the brick development of the Transition period. Thus, speaking of terracotta, he says "its use died out with the Gothic Renaissance, and from this it would appear that this material was destined to play an important part had the development continued on Gothic lines; but, whatever the reason, the fact remains that the Italian Renaissance found no use for it, and consequently it was discarded." Again, he points out the "plan remained practically unaltered," the other features, doors and windows, roofs and pinnacles, retained their Gothic forms, "but as time went on, the influence of the Renaissance was more and more felt, for a strong German element had been introduced into the country soon after the Italian began to exercise its power. This was Italian work after passing through the alembic of the German mind, and consequently was more Gothic in feeling than the variety imported directly from Italy, or than that coming to us by way of France. The competition between these foreign styles continued until the Gothic element became subservient." Had it not been for the battle of these styles, the author thinks the "ultimate architecture of this transition would probably have gone on other lines," and have in the process of transformation passed through inconceivable developments before supplanting the indigenous style. But this natural evolution was lost in the German and Italian forms, and the three styles became at the close of the 16th century the "bastard" Elizabethan or Jacobean. Several examples are described to illustrate this period, among them Holland House, Kensington; Oxborough Hall, commenced in 1483; East Barsham, Norfolk, 1509 (which is illustrated by us this week); Hampton Court, commenced 1515, finished 1520; Layer Marney Towers, Essex, 1520. At the end of the 16th century Gothic Renaissance became extinct. After it Italian and German influences prevailed, sometimes one more than the other, and the Italian began to lose ground. Wollaton exemplified the former, Bramshill House, Hants, is mentioned to illustrate the latter influence, and a phototint of the last is given. Longleat, Wilts, and other examples are from the Building News.

In the section "Asleep," Mr. Harris is on less satisfactory ground: he has to assign a date to this intermediate period. While we may name an approximate date at which the Gothic architecture gave place to foreign elements, it is rather hard to say how long architecture has been in the dormant condition. The author assumes the third period to have commenced with the Gothic revival, and he credits the pioneers of that movement with the advent of the new architecture. In proof of this, he quotes a passage from Mr. T. G. Jackson's "Modern Gothic Architecture," and refers to his own brochure, published in 1860, on "Victorian Architecture," where Mr. Harris ventured upon the opinion, which practically his present volume is intended to revive, that, if "architecture is to have any meaning at all, a 'new style' is necessary." Many extracts are given from this work, the upshot of which is that we must be prepared to adopt new methods of construction, and new materials like iron, and to accustom ourselves to a new code of proportions. This new style must, he thinks, be founded on the last phase of Gothic, the Tudor, and external polychromy must be one of its chief characteristics. Numerous passages from the writings of Sir G. G. Scott, Viollet-le-Duc, Eidlitz, Professor Kerr, W. Emerson, T. G. Jackson, Jas. Fergusson, &c., are cited, though these differ much in their views of the development of Gothic. In the third and last period, "Awaking," reference is made to metal as the coming material, and its possibilities are sketched. The author alludes to the claims of aluminium as a new metal which is coming to the front, though we are unable to endorse all that can be said of it as a building material. The conclusions arrived at by Mr. Harris are, briefly, that architects are not advancing with or keeping abreast of the times, but are showing a tendency to hark back; that all attempts to invent a new style are abortive—it must grow out of something; that metal seems likely to be the most prominent building material of the future; that in combination with this material various kinds of vitreous manufactures, mosaics, &c., or granite and marble should be employed as panel-filling, and that colour will hold a high position. We agree with the author that metal is a material which demands recognition. It has already been adopted largely in construction; but we cannot believe that it will ever supplant stone, brick, or timber in the architecture of the future, whatever may be its value as a constructive material. A style, or styles, undoubtedly will be evolved in the future; but it or they must be based on a new system of construction, on modern requirements, rather than upon the use of a material which, whatever its value constructively, has fewer aptitudes for building and artistic effect than those in ordinary use. Old architectural forms may, as Leopold Eidlitz says, be dissolved into their elements, but these must be used as separate entities as a basis of new forms. Mr. Harris's book is illustrated by several blocks and plates,

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* Three Periods of English Architecture. By Thomas Harris, F.R.I.B.A., &c. (London: B. T. Batsford).

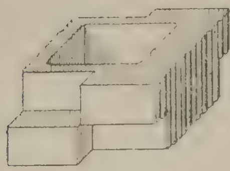


Fig 1

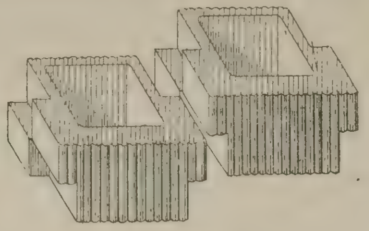


Fig 2

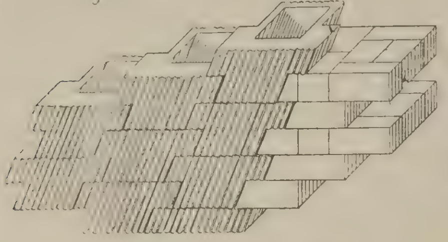
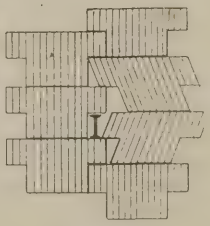


Fig 3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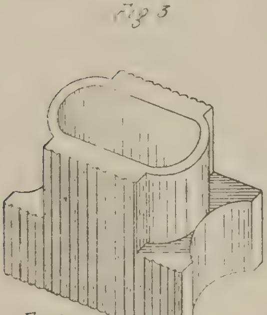


Fig 5

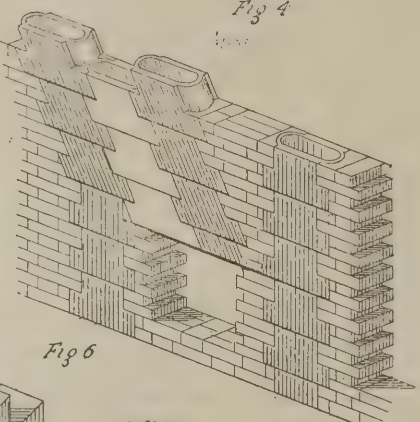
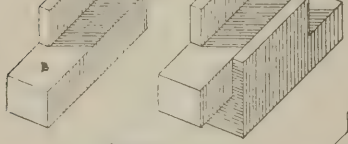


Fig 6


Figs 7, 8

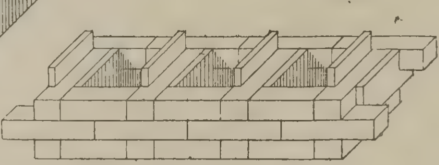


Fig 9

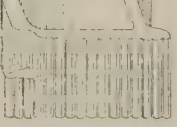


Fig 10

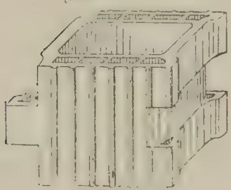


Fig 11

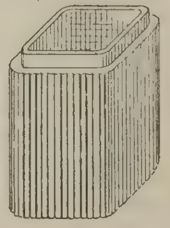


Fig 12

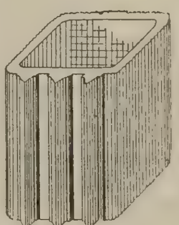


Fig 13

and is worth perusal if only for the labour he has taken to piece together the thoughts of those who have given the subject of architectural development their consideration. The drift of these quotations may be summed up in the advice that the architect must study functions instead of forms. It is premature to say on what particular phase or style of the past the future architecture will be founded.

NOTES ON METHODS OF CONSTRUCTION AT PARIS.

CHIMNEY FLUES AND PIPES.

THE use of earthenware pipes for the building up of chimney flues is now universal at Paris and in the larger French towns. Rarely, except in the case of party-walls or in the case of small houses, are the flues built of brickwork. The pipes are considered to permit much more rapid work, the flues are clean and thoroughly sound, and pargetting is unnecessary. Again, in the case of a flaw it is generally an easy matter to replace the broken portion of piping. The chimney-breast is not employed, and there is, therefore, no necessity for foundations for the latter.

There are a number of different systems of piping, each one claiming perfection and having its partisans. It will, therefore, be interesting to remark a few of those most generally employed at Paris, as shown in Figs. 1, 5, 10, and 11.

All of these are roughly fluted on the two outer surfaces, in order to firmly hold the proper thickness of plastering. The interiors are purposely left rough, to afford a proper hold for the soot, and in the case of the rectangular pipes the corners are slightly rounded.

Some years ago it was the custom generally at Paris, on the construction of a new building, to form the necessary flues in the thickness of the party-wall, the first owner of the wall building at the same time as his own flues a similar number of flues for the use of the building which would eventually be built against the party-wall. This manner of building flues in the thickness of the party-wall was soon, however, forbidden by the building regulations; but after a certain time the prohibition was withdrawn, and it was left to the party-owners to construct the joint wall as they might agree upon. The insurance companies, however, then decided that they would take no responsibilities for houses of which the party-wall was thus built, for it was evident that a wall pierced in a large portion with chimney flues was not sufficient protection against fire, and did not form a sufficient division between two properties.

This being the case, although the construction of flues in party-walls is not forbidden, and is in some cases found necessary, it is now the custom to build the chimney flues against the surface of the wall by means of the hanging pipes shown in Figs. 12, 13, and 14.

The "wagons," or pipes for building into walls, are made of dimensions suitable for walls of the thickness of one brick to two and a half bricks. The walls of the Paris houses are generally built of a thickness to allow a 14in. by 9in. flue; in the case of other walls the hanging pipes are generally employed.

Fig. 1 is a system of pipe made by the Vaugirard Brick Co., and presents many advantages over some of the other systems. The flue is rectangular, with rounded angles, the exterior is provided with projections the size and shape of an ordinary brick. These projections are so arranged as to allow one pipe to fit against the other, as shown in Fig. 2. The joints, as will be seen by Fig. 3, representing the grouping of three inclined flues, are broken horizontally and vertically. These pipes in all systems are made for inclination at various angles; the angle may not, however, be more than 30° from the vertical. The system as shown in Fig. 3 has many merits; the putting together is very simple, the pipes are well bedded together; the joints being well broken, there is little danger of leakage. Again, the rectangular projections allow proper bonding with the brickwork of the wall. In the case that any of the iron joists of the floor require support on the portion of the wall pierced by the chimney-flue, by employing two inclined pipes, Fig. 4, sufficient room is obtained for the passing of the joists, and a firm bedding is obtained on the projecting edge.

Another system (Fig. 5) is the "wagon solidaire Lacote," having a height equal to four bricks. The ends are alternately convex and concave, the pipes are fitted together as shown in Fig. 6, where two flues, one inclined and one vertical, pass up from the floor below, and two others inclined, supported by a bar, take the smoke from the two chimneys on either side of the wall. This system is much employed, but an inconvenience is that of joining the rounded end of the pipe with the square brickwork of the wall.

Another system is that of Fig. 10. The objection that the projecting ties are weak disappears when the pipes are placed together and well jointed.

Fig. 11 shows the system Duprat, of the height of three bricks. The outer walls are hollow, and are supposed to afford greater protection and solidity. In these last two examples the horizontal joints are not broken.

The system of chimney-bricks Lacote is also much employed. This brick (shown in Fig. 7) is of the height of two bricks, the upper vertical projection forming the thickness of a brick. The length of this brick is of the thickness of the wall less one half-brick. When two are fitted together, as in Fig. 8, they form the thickness of the wall, the extremity of each resting on the wall, the remaining portion on the lower one. This special brick forms a secure joint, and has the advantage of making a neat jointing in cases where the wall is left unplastered.

Hanging pipes, or pipes fixed to the wall, are much employed, and are most useful and convenient, either in the case when the available portion of the wall is already filled with flues, or in the case of thin partition walls, or, if necessity is found, to add one or two flues to those already existing. The regulations allow these pipes to be fixed to walls of not less than one brick thick; for the topmost story, however, they may be fixed against partitions of ½in. thickness. The ordinary form known as the "Boisseau Gourlier" is that of Fig. 12, of the height of six bricks, with rough surface for plastering and ribbed end. That of Fig. 13 is known as the "Lacote," and has, on the side towards the inside of the wall three angular projections, called witnesses, intended to oblige the plasterer to cover with the regulation thickness of plaster. This regulation thickness is a little over 3in., including the thickness of the pipe. These pipes are fixed against the wall with plaster, as in Fig. 14, showing three flues from the lower floors, and one to take the smoke from the chimney of that floor.

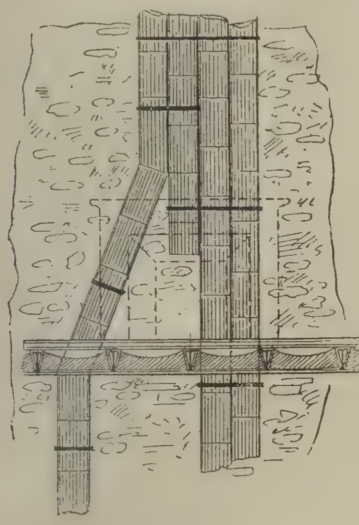


FIG. 14.

The pipes are further firmly fixed to the wall by means of iron straps, placed about every 5ft., and the whole is properly covered with the regulation thickness of plaster. These pipes are most convenient, for they can be inclined in any direction to avoid doors or windows; they are very light, and economise space. Most of these systems are patented in France and abroad, and form a source of large profits to brickmakers. The wall pipes cost from £3 to £4 10s. per hundred, and the hanging pipes from £2 to £3 10s. per hundred, less trade discount. There is, therefore, a great economy in employing them, both as regards cost and labour.

ARTHUR VYE PARMINTER.

PUBLIC HEALTH CONGRESS IN LONDON.

WE continue from our last issue, page 106, and complete, our report of the Congress of the British Institute of Public Health, held during the past week at King's College, London, and which, notwithstanding some misunderstandings and withdrawals at the outset, has passed off very satisfactorily, and has drawn together large audiences.

On Friday there was at noon a general meeting of all sections of the Congress in the large hall, under the presidency of the Bishop of London, when a discussion took place on

THE HOUSING OF THE WORKING CLASSES.

Cardinal Vaughan, in introducing the subject, remarked that there were two main views as to the best way of improving the dwellings of the poor—viz., the block system and the cottage system. Believing as he did that the wellbeing and civilisation of the people depended largely upon their home surroundings, especially in regard to the up-bringing of the children, he could not look upon the proposal to crowd together masses of people under one roof as in any way meeting the difficulty, nor could he believe that the rooms so provided could in any sense take the place of home. The advantages of the block system had reference chiefly to the necessity of living not far from the place of work, and there could be no doubt that for artisans, mechanics, and the lower middle classes these advantages were very great; but for the lowest class of all, and most needy, the most helpless, and often the most vicious, it was an injudicious thing to crowd them together in these blocks. The problem of housing the working classes was in his view to be solved by extension outwards into the country, and by the building of cottage homes, where there would be light and colour and fresh air, and each man's home would be his castle. For the attainment of this object the railway companies might be of great assistance by purchasing land along their lines and building, owning, and managing large cottage towns. In the discussion which followed, Sir Charles Cameron, M.P., argued that artisan dwellings were a mistake, and that what was wanted was a provision of decent accommodation for the very poorest class of all. It was unanimously agreed, on the motion of Cardinal Vaughan, "That while the necessary provision of block dwellings for the housing of the artisan class is being pushed forward within the Metropolis, it is desirable that every effort should be made to increase the number of cottage dwellings in the more accessible suburbs of London and all other large towns, in connection, especially, with the railway system."

Some interesting papers were read on the same day in Section D, Engineering and Architecture, presided over by Professor Banister Fletcher, F.R.I.B.A. In an address on

SEWAGE EFFLUENTS,

Mr. W. Kaye Parry, of Dublin, directed attention to some of the practical aspects of the pollution difficulty, and propounded a series of questions to which he said authoritative answers were demanded. He next referred to the possibility of safely discharging crude sewage into rivers of relatively large volume, and in this connection touched on the Massachussets experiments on the vitality of the typhoid bacillus in river water. He insisted on the necessity for legislation for the protection from pollution of the foreshore of seaside health resorts, and advocated the establishment of standards of purity for effluents. Analytical data were, in the writer's opinion, somewhat illusory, as evidences of the propriety of permitting the effluents which had been analysed to be delivered into rivers and other watercourses.

A LONDON ARCHITECT'S TROUBLES WITH THE LOCAL SANITARY AUTHORITIES.

Mr. Lewis Solomon, F.R.I.B.A., read the following paper:—There are two totally different ways of executing drainage work for an occupant of a London house. One is to do the work in a thoroughly satisfactory manner; and the other to do as little as possible—merely sufficient to comply with the orders of the local sanitary authorities. I assume that an architect has been consulted by a client who requires the sanitary arrangement of his house made thoroughly sound, and that the work is to be done in a complete and economical way, without any special fads, and that the architect has the fullest intention of doing the work thoroughly. The architect's first step, after survey, is to make a plan of the drains, and submit that to the local authorities. Each parish has its own rules for constructing the drainage of houses, and some parishes require the drain plan to one scale, while others require it drawn to a quite different scale. I submit that a uniform scale is desirable, as long as any parish has the power to ask for any particular scale. Some parishes require the position of all closets above the lowest floor to be shown on the drain plan, in addition to those on the lowest floor, while other parishes do not. On the other hand, some parishes require the position of all basement sinks to be indicated, in addition to water-closets and gullies, while others do not require this. A uniform regulation should be issued. Assuming the plans passed by the authorities, the next trouble is the size of the pipes. Most parishes allow 6in. pipes to be used, but I have before now had to take up a new and perfect 6in. pipe drain and replace it by a 9in. pipe, because the sanitary authorities refused to sanction so small a pipe as 6in. If the main house drain passes under the house most parishes insist upon its being 6in. in diameter, whereas if it has to receive only one or two sinks and rain water at the further end 4in. diameter pipes are far better. In some parishes nothing whatever is demanded as to the bedding of pipes in concrete. Some require the pipes to be laid on concrete; some require the concrete to go half-way up the pipes, and others require the pipes to be entirely bedded in concrete. The next trouble is the inspection chamber. Some parishes insist on every house having a chamber at the front, while other parishes require one at the back of the house as well. Some require also a chamber where an entry into the drain occurs in the middle of its length from a soil-pipe. On the other hand, not long ago I had to remove a chamber from such a position, because in that particular parish the sanitary authorities would not sanction internal chambers at all. Some parishes approve of air-inlets at every soil-pipe entry; others will only allow one air inlet. One parish approves of an air-inlet at the front chamber, and a second inlet at the highest point of the drains, whereas in another case two air inlets were objected to, and the authorities insisted on one being removed. Some parishes insist on an outlet ventilator being put at the topmost point of the drains, in addition to outlet ventilation afforded by the continuation of the soil-pipes above the roofs. Some will have the ventilation pipe the same bore as the soil-pipe, whereas in other parishes a 3in. ventilator is considered sufficient for a 4in. soil-pipe. Among recent troubles thrust upon architects by some parishes is the use of certain special water-closet apparatus. Recently I specified that a Sharpe's flush-rim basin should be used for a servants' w.c., and the authorities told my builder that such a w.c. was not allowed in that parish, as they required a special straight-back closet-basin to be used, and would not permit any other. Some parishes allow the drains to be connected to the sewer under the road by the builder doing the drains, other parishes will not give this permission. There is no uniform regulation as to testing drains. Some parishes do not test at all; others test the drains, while others again test the drains and chambers also. A very annoying matter to an architect is the red-tape of some of the vestries, who refuse to acknowledge a letter not addressed to the particular branch of the same department which has to superintend the drains. For instance, lately I applied to the surveyor of a parish to send his sanitary officer to see the drains tested in my presence, and I would make my time suit his. The man came, but refused even to look at the drains, although they were charged, as that was not in his department; he said he belonged to the medical department, instead of the surveyor's, and had been wrongly sent. All I asked him to do was to look, as I was prepared to show him the drains were sound, but as his time was paid for by the parish, he preferred wasting mine to giving himself any trouble whatever. One other matter has come under my notice since writing the above, that while some vestries insist on a sanitary certificate being obtained before the house is occupied, others refuse to grant such a certificate when asked for, although every detail has been carried out under the personal supervision of the local sanitary inspector. It may be said by anyone not accustomed to architect's practice: "If you object to any certain parish requirements, and believe them to be foolish and causing waste of your client's money, why give way, instead of standing on your rights on your client's behalf?" The answer is simple. Under clause 83 of the Metropolitan Local Management Act any person inserting a drain, or water supply, or sanitary apparatus not made according to the directions or regulation of the Vestry, is subject to a fine of £10, and further, if he does not remove such drain or water supply or sanitary apparatus, the vestry have the power to demolish it, and may cause the work they require to be done, and the expenses thereof shall be paid by the parties who have so offended. It will be seen from this that the powers of the vestry are absolute, and although they are generally used fairly, I have known threats to be used where any attempt has been made to argue against the surveyor's dictum For instance, where I had to put a 9in. drain to take two w.c.'s and two rain-water pipes, in place of the 6in. pipe I had inserted, the surveyor threatened to enter the premises and pull up the 6in. pipe, so I was forced to change it with my client's reluctant consent. Again, if any question is disputed, the architect probably has either to give his time and expenses gratis, as the onus of proving his ability is thrown upon him, or else his client has to be mulcted heavily in proportion to the benefit obtained, whereas the expenses of the sanitary authorities are paid by the ratepayers. These powers are more than confirmed by the Public Health London Act, 1891, which says: "If, on examination, any water-closet, sink, or pipe *appears* to be in bad order or to require cleansing, the sanitary authorities, if they think fit, may enter on the premises and execute the works, and the expenses incurred by them in so doing shall be paid to them by the owner or occupier of the premises." There is no doubt that this power is on the whole sensibly used; but it gives a busy-body the opportunity of annoying a perfectly innocent person. Suppose, for instance, after washing up the plates the sink is dirty, the sanitary authorities may cause considerable worry to the owner of the house. Those in good circumstances laugh at this as an absurdity; but in weekly properties the owner is often worried over matters which only *appear* to be out of order, but really are not. I have myself seen a notice served on the landlord because the weekly occupant had removed the cover of a bell trap, and not put it back at once. It might have been advisable to call for the replacement of the bell-trap by a gully, but the notice merely required the reinstatement of the bell-trap cover, which was possibly lying in the sink alongside. The object of these few words is to get some expression of opinion from this meeting that there should be uniform regulations for every parish in London in regard to the main sanitary requirements of the drainage of a house, whilst with regard to the minor requirements, these should be left to the discretion of the house owner or his architect. By main requirements I mean the necessity of every house having its drains of suitable materials, such as earthenware or iron pipes, that the diameter of such pipes should not be less than 4in., that they should be bedded on concrete, that the joints should be of cement if stoneware pipes are used, that there should be inlet and outlet ventilation to the drains, that there should be on intercepting trap to shut off the house drains from the main sewer. Minor matters are the shape and pattern of the various fittings and apparatus, and such matters as only affect the occupier of the house. Some items should be discretionary up to a certain point. For instance, houses under the value of £20 should not be compelled to have inspection chambers; but intercepting traps should be sufficient, as sanctioned in certain parishes, provided they can be cleared without too much trouble and expense. In conclusion, I would suggest to the meeting to consider whether or not it is advisable that a committee be appointed to submit this question to all the London vestries, and get their consent to a uniform set of regulations for the sanitary requirements of a London house.

In the evening the annual dinner of the Institute was held at the Lincoln's Inn Hall, Professor W. R. Smith, the President, in the chair. The Duke of Cambridge was the principal guest.

On Saturday the members of the Congress made an excursion to Hatfield, and in the evening a popular lecture on microbes was delivered by Professor Crookshank, at King's College, before a working men's audience. Having described various forms of bacteria and their destructive powers, he urged as preventive measures pure air, pure water, pure food, and pure surroundings. The address was profusely illustrated by apparatus, cultivations, and lantern slides.

On Monday a general meeting of the Congress was held, under the presidency of Professor W. R. Smith, to discuss

THE PROVISION OF ISOLATION HOSPITALS.

Councillor Dick, chairman of the Glasgow Hospital Committee, who opened the discussion, moved a resolution calling upon the Executive of the Congress to press upon the Government to make the provision of rate-supported hospitals compulsory.—Dr. Sargeant, Medical Officer of Health for Lancashire, seconded the motion.—Dr. Collins, Medical Officer of Health for Kingston-upon-Thames, spoke of the great difficulty experienced by local authorities in obtaining sites for isolation hospitals, and urged that compulsory powers for purchasing land for the purpose should be given to local authorities.—Sir Charles Cameron, of Dublin, said that that city had a perfect craze for erecting hospitals. That was an example that might well be followed by other places, as he was strongly of opinion that infectious cases should not be treated in general hospitals. After further discussion the resolution was carried, with an addition that powers should be given for compulsorily acquiring land.

Mr. Acworth, chairman of the Small-pox Committee of the Metropolitan Asylums Board, moved "That in the opinion of this Congress the Local Government Board is not justified in affording to the owners and occupiers of land in the vicinity of a site proposed to be purchased by a public authority for infection hospital purpose any protection beyond that given them by the action of the general law."—Mr. Scovell, of the Asylums Board, considered that the power of the President of the Local Government Board to make arbitrary decisions as to whether certain sites should or should not be taken should be put an end to.—The motion was carried.

The Lord Provost of Edinburgh (Sir James Russell) presided over the Municipal and Parliamentary Section, at which Mr. Stanley Boulter read a paper on "Municipal-aided Purchase of Artisan Dwellings." Mr. Boulter said it had been objected that there would be considerable loss on such an undertaking, but he quoted figures to show that, while the rent-roll of the Peabody Buildings and of the Industrial Dwellings Company was £24,000 per annum, the annual loss was only £70.

The Earl of Meath read a paper on "Municipalities and Popular Recreation." He hoped soon to see our Metropolitan parks and gardens lighted by electricity; at present some of our public parks, like Hyde Park, were a disgrace to civilisation after dark. He moved "That municipal authorities should be empowered to establish and maintain winter gardens, with wholesome entertainment for the people." Cardinal Vaughan seconded the motion.

In the Engineering and Architectural Section on Monday, Professor Banister Fletcher in the chair, Mr. Campbell Douglas, F.R.I.B.A., of Glasgow, read a paper on

THE PLANNING OF FEVER HOSPITALS.

He laid down some general principles which he considered should be attended to in any well-considered plan for such an institution. As to locality, if provided for a large town where the interests of a school of medicine had to be regarded, the hospital should not be at too great a distance. It should, in any case, be placed in a secluded locality, provided it were not very far remote, and he did not think this distance need be great to prevent risk to the public health. While it was true that that hospital showing the greatest percentage of cures was the cheapest, it did not follow that the most expensive hospital was the most efficient. As to arrangement, the wards should be placed with the long axes lying north-west, and south-east, and he would not lay down any hard-and-fast rule as to the relative distances between wards. Much depended on whether natural displacement or mechanical propulsion were the means adopted for ventilation; but it might be laid down that the air could hardly be pure enough. The lecturer compared the Belvidere Hospital at Glasgow with the old City Fever Hospital in the centre of Edinburgh. The Glasgow institution contains 13 double pavilions of one-story wards, each half containing 15 beds, or 390 in all. Although ventilation is well attended to on the non-propulsion system, and the situation is comparatively rural, the death-rate is higher than in the old-fashioned, almost antiquated city fever hospital at Edinburgh, where the patients are treated in two- and sometimes three-story buildings, the relative rates being less than 6 per cent. deaths in Edinburgh to more than 10 per cent. in Glasgow. Having described the Hamburg Hospital and the Urban and Virchow's hospitals at Berlin, he urged that the great point in planning was to provide plenty of cubic space per bed. About 2,000c.ft. of space should be allowed per bed, and not less than 3,000c.ft. of fresh air delivered per hour. The wards should stand above a thorougly dry and well-ventilated under-story, the whole surface of which should be laid with concrete and asphalte. The walls should be built of hard, dense, non-porous stone or well-burned bricks, and should be solid for 5ft. above the ward floor level. The lower walls might be lined with glazed tiles of ivory yellow or pale green colour, and the upper portions covered with non-absorbent plaster, such as Keen's cement, all being finished flush. The floors might be of good red pine in narrow breadths and waxed, and the ceilings should be kept flat or level. The windows should be double-hung, and reach as near the ceiling as possible; the tables should have metal stands with tops and shelves of glazed earthenware and polished glass, and the bedstead should, of course, be of iron, with hair mattresses. The water-closets should be abundant, and classified, and the heating by open fireplaces, unless the wards were too large to allow this, when hot-water or steam pipes should be employed. In conclusion, Mr. Douglas suggested that hospital accommodation should be provided for every one per thousand of the population in a normal state of health.

ARCHITECTURE AND HYGIENE OF SCHOOLS.

Mr. Thomas J. Bailey, F.R.I.B.A., in a paper on this subject, remarked: The crowding together of large numbers of families on small areas of land has led to the necessity of erecting, in some cases, schools of an exceptional size, and before describing a typical one in detail, it may be well to carry our minds back to the schools built in the earlier days of the school boards, and to observe the growth in this direction, as in others, during the last 21 years, that being just the time since the first school built by the School Board for London was opened. However diversified the arrangements of the buildings of these earlier schools were to suit the sites and surroundings, the buildings themselves were, as a rule, planned with a long central room, and one or two smaller classrooms at each end. The central room, or schoolroom, crowded with children, was a passage to reach the classrooms, and was arranged with desks all along the back wall, the principal windows being in this wall, behind the children, and necessarily full in the eyes of the teachers. These rooms were only 21ft. or 22ft. wide, the desks occupying 12ft. to 13ft. from the back, and the space in front used as a passage and full up with teachers' desks, blackboards and general teaching paraphernalia. The classrooms were, from their position, enabled to be lighted from the side. The staircases were generally narrow, ill-lighted, and, opening almost immediately into the schoolroom, fed it with a supply of cold air in the winter which was sufficient to counteract any warming power supplied in the room. There appears to have been rather a haphazard arrangement for cloaks and lavatories, the accommodation for the purpose having been, generally, very meagre and insufficient, and calling forth many requirements from H.M. inspectors for their improvement. The requirements of the Education Department were then, however, very different from what they are at the present day, as a reference to the Code of only about twelve years ago will show, and it is interesting to notice that the Code at that time, as for many years before, published model plans for schools of varying sizes, which plans, if now sent to them for approval, would receive distinct condemnation. It is sometimes said: If the Department sanctioned these plans, why do they now require alterations in the buildings? But, surely, if the Code for teaching has advanced, greater perfectness in the buildings where such teaching is carried on is also requisite, and it must be remembered that the more advanced Code is applicable everywhere. The weak points of the schools described became apparent in their working, and were found to be:—(1) The want of access to the class-rooms independent of the way through the main room, to avoid disturbance of the classes. (2) The need for dividing up the main room to isolate the classes. (3) The distressing and bad effects of back-lighting. With regard to (1), this led to the construction of corridors outside the main room to reach the end classrooms; but at first these were built narrow, were used as cloak-rooms, and were not warmed. Such corridors, although better than none at all, have long received their condemnation; they were widened from 4ft. to 8ft., then to 12ft., then to 20ft., and then, as will be seen, by a process of evolution, the hall became developed. As soon as the corridors were widened, separate cloak-rooms, independent of these, were built; a system of warming other than open fires was established, and extended to the corridors and cloak-rooms, and thus the discomfort occasioned by the cold draughts from the staircases was obviated, the latter being shut-off by swing doors. As soon as the hall became recognised as a necessary part of a school, when the class-room system was entirely adopted, (2) and (3) became cured, as the main teaching-room I have described ceased to exist, and the school then consisted of the requisite number of independent classrooms, each properly side-lighted, and having its separate access directly into the hall or corridor. The sites themselves need a word of remark, for many of the earlier schools were built on such small plots of land, frequently almost entirely back land, that their light and air suffer seriously. This is not likely to occur in future, as the Education Department now require that there shall be a minimum of 30sq.ft. of open playground for each child, and this requirement insures that the site will be sufficiently open and airy for its purpose, and to secure that the offices are far enough away from the main building as not to constitute a nuisance. This requirement with regard to areas of open playground must be looked upon as a public benefit beyond that accruing to the school itself, as it may be taken generally that the larger the school, the greater density of the population around it, and, consequently, the greater need for these open spaces; and where the playgrounds are properly used for drill, organised games, &c., where children are brought amenable to discipline in recreation as in work, it must be an incalculable benefit, and the playground thus becomes, as Mr. Stow designated it, "the uncovered schoolroom." The comparison between the earlier and present schools would not be complete without a reference to the offices or latrines. As these had to be erected as separate blocks away from the main buildings, and, therefore specially subject to the influence of frost, they were not fitted with single pans, but the only alternative at that time—viz., iron troughs with plug outlets. The buildings in which they were placed were small for their purpose, entirely roofed in, and usually connected by a shed, roof, or covered way with the school. This was found to be so insanitary that the connecting roofs have been removed, as also the roofs over the passages and urinals, and when the automatic flushing tank and stoneware trough (glazed) was invented, a new and more wholesome order of things prevailed. Although, even yet, perfection has not been attained in this direction, experiments are now being made in order to get rid of the trough system altogether, and yet to avoid the inevitable repairs which would be consequent upon such a large number of single apparati. And now for a short description of the Hugh Myddelton School,* which I have taken as a modern type, a large, important school in the centre of London, opened by H.R.H. the Prince of Wales in December last, and named to perpetuate the founder of the New River Co., in his own district. As is well known, the school stands upon an historic site, taking the place of the old House of Detention in Clerkenwell. The area of the site is 95,832sq.ft., or upwards of two acres of land, and, being surrounded by streets, is well off for light and air and playgrounds in such a crowded district. The school is built for 2,000 children in three departments. There are also on the site a separate school of twelve classrooms—six on each side of a corridor, 20ft. wide, for the instruction of the deaf. Also a centre for cookery instruction, and a centre for laundry work. The main school is three stories high, the infants' being on the ground floor, and consists in each department of a central hall 80ft. by 40ft., lighted at each end by large windows. On each side of the hall are classrooms—10 in all—with an average seating accommodation of 60 each in the boys' and girls' departments. It may be here remarked, that the method of calculating the accommodation in the infants' department is 8 superficial feet for each child, and therefore, on the lower floor of a three-story school, each classroom seated for 60 in the graded departments is reckoned to give infants' accommodation for 75 to 80. There are four spacious staircases, well lighted, giving access to the upper floors; and in proximity to these are ample cloakroom and lavatory accommodation, and also large rooms for the use of the staff of teachers in each department. The halls and classrooms on the two lower floors are 15ft. clear height, and on the upper floor are more as they run into the roof. The system of warming adopted is low-pressure steam, with ventilating radiators; and the hall, being amply warmed, and being a large area, not seated for teaching, and therefore unoccupied while the classrooms are in use, provides a plentiful supply in winter of warmed uncontaminated air to the classrooms. Means are also provided in these for inlet of fresh air directly from the outside, both by shafts in the corners of the rooms, where stagnant air is apt to accumulate, as also by the ventilating radiators and sills of the windows. Extracts for foul air are provided in brick shafts at the ceiling level, an open fire is provided in the babies' room, both for the required cheerfulness and the promotion of the greater ventilation required here. These means have proved amply sufficient in their results. I have been in and out of this school many times during the last winter, and I am sure the teachers will bear me out in agreeing that there is an entire absence of what is known as the "school smell," with which, I am afraid, we are all familiar in the schools of twenty years ago. The cloak-rooms are warmed by rows of steam pipes, and ventilated by a current of air from end to end. The boys occupy the top floor, and at the two ends of the building, over the further classrooms, are a drawing-class room and a manual training-room respectively. I am afraid this latter is a source of disturbance to the classroom beneath it, and as the Board have now decided that this shall be one of the selected schools where higher standards are taught, a chemical laboratory or science room will be required in this position, and a manual training workshop can be erected in the boys' playground, for which there is ample room. The playgrounds, like all those under the Board, are laid to gentle falls, properly drained, and the surface covered with tar-paving, so that it is always available, part being covered in for use in wet or bad weather. This description of the Hugh Myddelton school applies generally to all the schools now being erected by the School Board, except where the sites are sufficiently large to allow of one-story buildings, in which cases the classrooms for boys and girls are grouped round a central hall common to both, and can be worked either as mixed or separate schools. The infants' department in these cases is usually in a separate building. This system of building is obtaining more in the suburbs of London, where land is comparatively cheap, and, in such cases, sites of about two acres are being secured, experience having shown that, where a school is built for, say, 800, on a proportionate site—*i.e.*, one quarter of an acre for every 250 children, as required by the Code, the development of the neighbourhood has necessitated an enlargement of the school, and more land has had to be subsequently acquired for the purpose at an enhanced cost. It is not much to be surprised at, considering what schools were when school boards began their work, that so much development has taken place in so short a time, and, the contrast between earlier schools and the more modern ones being so marked, should lead to considerable expense in alterations and improvements in the former, especially considering that the same teaching results are not only expected, but actually required from ill-adapted, and in many cases, overcrowded, draughty, and unventilated buildings, as from the new roomy, healthy schools which, I venture to think, fulfil all requirements of the present day. And if any further evolution takes place, it is only likely to be in the direction of an alteration in the 60 unit for classrooms. Although, even if this is reduced, there will be an advantage in a little more elbow-room, and an increase in the cubical air supply per scholar in classrooms of the present size, calculated for a smaller number of children. And, remembering that, 15 years ago, a classroom as now calculated for 60 with a cubical space of 150ft. per scholar was allowed for 70 with a cubical space of 128ft., this would be a further step in the right direction.

The members of the section afterwards visited the subways of the Holborn Viaduct and the City Destructor at Letts's Wharf, under the direction of Mr. F. G. Burmaster.

In the evening the Master and Wardens of the Carpenters' Company entertained the chief members of the Congress at dinner in their hall.

The closing meeting of the Congress was held on Tuesday at King's College, Professor W. R. Smith in the chair. The report presented by Professor Banister Fletcher, of the Engineering and Building Construction Section, was referred to the Council of the Institute for further consideration. The report stated that the present want of uniformity in the regulations and by-laws of local anthorities in relation to sanitary construction and appliances was detrimental to sanitary progress and injurious to the health of the people, and should, therefore, be amended; and that it was desirable that the Local Government Board should frame a model set of rules and regulations. Every sanitary inspector should have a practical knowledge of building construction, as he could not fulfil his duty unless he had the trade technical knowledge. The Section deeply regretted the want of uniformity in the decisions given by judges and magistrates, and believed that the only remedy was the appointment by Government of a special tribunal which should deal with all questions of building construction and sanitary appliances. Whilst fully recognising the wise application by the Corporation of the City of London of the funds in their hands in the building of the Tower Bridge, the Congress could not but express its hope that municipal baths should now engage their attention, and thus remove this stigma from that great City.

In the evening a dinner was given to leading members of the Congress by the Sanitary Committee of the City Commissioners of Sewers, Professor Banister Fletcher in the chair; and a conversazione was held by the Corporation at the Guildhall, and was attended by over two thousand guests.

BUILDERS' BENEVOLENT INSTITUTION.

ANNUAL MEETING.

THE 47th annual meeting of this institution took place on Thursday, 26th July, at the offices, 35, Southampton-row, Bloomsbury. Mr. George Plucknett, J.P. (hon. treasurer), occupied the chair, supported by Messrs. Thomas Stirling, C. Bussell, Robert Perkins, and other friends of the charity.

Major Brutton (the secretary) read the annual report, which states that the committee consider the institution is prospering; but they do not withhold the fact that it needs increased income, so as to provide for all those who, from unavoidable causes, are of necessity obliged to seek its benefits. Thus for want of sufficient income the committee are unable to recommend for election all who apply and are eligible; this being the more to be regretted, as most of them are of an age which pleads for immediate relief. There are doubtless many builders in the metropolis and its environs who are in easy circumstances, but who have never contributed to the finds of the charity; nevertheless the committee hope such persons may be induced to subscribe, as contributions from them would secure provision for all fit applicants. There are now fifteen men and thirty-three women depending upon the institution. The preponderance in the number of females is in consequence of the widows of pensioners having been made pensioners on the decease of their husbands, in accordance with the rules. During the past year five male and two female pensioners had died; one male and three female pensioners had been elected. The late Mr. Thomas Robinson, formerly a partner in the firm of Messrs. William Cubitt and Co., has bequeathed £1,000 to the institution, which according to the rules affecting legacies, will be invested in Consols, and added to the other funded property belonging to the charity. The committee also express their thanks to Mr. George Haward Trollope for the successful exertion he made in his presidential year to obtain a substantial sum for the institution, this object having been accomplished by Mr. Trollope's influence and liberality. The committee had the gratification to intimate that Mr. Basil Pym Ellis, of the firm of Messrs. Lucas and Aird, had consented to be the president for the ensuing year, and that he would preside at the annual dinner to be held on the 15th of November next, in the hall of the Worshipful Company of Carpenters, London-wall.

Mr. Thomas Stirling moved the adoption of the report and balance-sheet. Mr. Robert Perkins seconded the motion, which was agreed to unanimously.

The thanks of the meeting were given to Mr. G. H. Trollope for his support and services during the past year, and votes of thanks were also passed to the vice-presidents and trustees, and to Mr. Plucknett for his valuable services, he being again re-elected treasurer.

A vote of thanks was passed to the committee, and the retiring members re-elected, with the addition of Mr. Trollope. Thanks were also voted to the auditors, who were reappointed.

On the motion of Mr. Stirling, Mr. Basil Pym Ellis was appointed president for the ensuing year, and a vote of thanks to the chairman closed the proceedings.

NATIONAL ASSOCIATION OF MASTER BUILDERS.

THE half-yearly meeting of the National Association of Master Builders of Great Britain was held last week at Bolton. The president of the association (Mr. John Bowen, Birmingham) occupied the chair, and 75 delegates were present representing the principal cities and towns of the kingdom. The report and treasurer's statement presented to the meeting by the secretary (Mr. J. A. S. Hassall, Liverpool) and treasurer (Mr. C. W. Green, Liverpool) showed the association to be in a flourishing condition. A report of a special sub-committee dealing with a suggested formation of a central fund, by means of a levy upon each member, was discussed. The report was received and its consideration left over until the next half-yearly meeting. The present position of the "Temperton v. Russell" case was explained, and further sums were promised by members, and a sum voted by the association towards the costs of the case. On the proposition of Ald. Jessop, of Huddersfield, the following resolution was passed:—"That the National Association of Master Builders of Great Britain use their best efforts to get the obnoxious rule relating to worked stone being imported into all towns in Great Britain expunged if the stone is prepared at standard rate of wages." This rule was considered most objectionable and unreasonable. The meeting expressed itself determined to contest the insertion or continuance of such a rule as named. Correspondence with Her Majesty's Office of Works and other general business was transacted, and the meeting terminated after three hours' deliberations. After the termination of the meeting, the Bolton Association entertained the delegates to dinner at the Commercial Hotel. Subsequently the company returned to the Mayor's Dining Room, in the Town Hall, where a social evening was spent. The chair was occupied by the local president (Mr. Wm. Lee) and the vice-chair by Mr. Bradbury (vice-president). Mr. Marsden (treasurer) supported the chair. The Mayor of Bolton, Alderman Nicholson, attended and received a hearty welcome, and responded in a practical speech. The toast of the National Association was proposed by Mr. Marsden, and responded to by the president of that body. "The Bolton Master Builders' Association" was proposed by Mr. Walker (Derby), and responded to by Mr. Townson. "The Mayor and Corporation of Bolton and local governing bodies" was given by Mr. Ratcliffe. The "Building and General Trade of Bolton" was proposed by Mr. Cuerden, and responded to by Mr. A. Atherton. Mr. Maginnis proposed "The Architects," which was responded to by Mr. Robert Neill. "The President and Officers of the Bolton Master Builders' Association" was given by Mr. Humphreys (president of the Bristol Association), and was responded to by Messrs. Lee and Bradbury, president and vice-president.

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* The plans, elevation, and section of this school, exhibited by the author at the Congress, were published in the Building News for March 11, 1892.

* * *

THE THRUSTS ON WALLS AND ARCHES.*—VI.

By G. A. T. Middleton.

RESISTANCE TO SLIDING.

FAILURE by sliding, though not very common, is yet possible, and of occasional occurrence, and so must be provided against. Of course, were all substances perfectly smooth, and so perfectly frictionless, sliding would inevitably take place, and the more nearly two adjacent surfaces approximate to perfect smoothness, the greater is the possibility of their sliding upon one another.

Fig. 19.

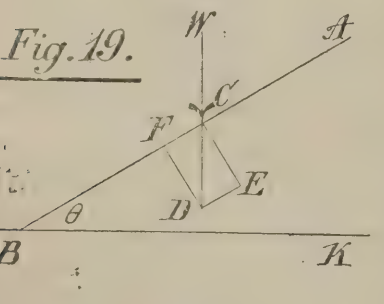
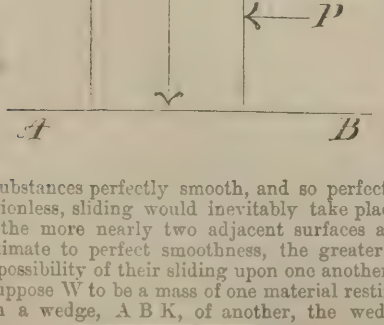


Fig. 20.



Suppose W to be a mass of one material resting upon a wedge, A B K, of another, the wedge being such that sliding is just upon the point of taking place, the angle A B K or θ being the angle of repose between the two substances. The weight of the mass W can be represented to scale by the vertical line C D, and under these circumstances it is being held in position by the normal resistance of the wedge A B K, as represented by the line C E at right angles to A B, and by the friction, as represented by the line C F along A B—the lengths of these lines being determined by forming a parallelogram of forces round C D, resolving it into forces, C E and C F, normal and parallel respectively to A B.

F C is the value of the friction between the two substances under consideration, which has to be overcome before sliding can take place. Under the present circumstances, it is just met and equated by the component of W which acts along A B, and its value is constant for these two substances, being equal to the normal component C E, multiplied by the tangent of the angle of repose (tan. θ).

This is readily proved, for the angle D C E is equal to the angle θ, and D E = F C.

Therefore—

$$\begin{aligned} \frac{DE}{CE} &= \tan. DCE \\ &= \tan. \theta \\ \therefore DE &= CE \tan. \theta \\ \therefore FC &= CE \tan. \theta \end{aligned}$$

Tan. θ is known as the *coefficient of friction*, and is a constant multiplier for any two materials the angle of repose between which is known.

Thus, if W be the weight of a block of one material resting upon a horizontal surface, A B, of another, the coefficient of friction between the two materials being known, and the normal component of the weight being in this case equal to the weight itself, then the friction is represented by—

W × coefficient of friction.

and the pressure P, parallel with the surface A B, which is necessary to overcome this friction and cause sliding, must consequently be greater than W × coefficient of friction.

The following table gives the generally accepted angles of repose and their tangents (or the coefficients of friction):—

	Angle of repose.	Coefficient of friction.
Masonry and brickwork, dry	31° to 35°	·6 to ·7
Ditto with wet mortar	25½°	·47
Ditto with slightly damp mortar	36½°	·74
Ditto on dry clay	27°	·51
Ditto on moist clay	18¼°	·33
Wood on stone	22°	·4
Metals on stone	35° to 16⅔°	·7 to ·3
Wood on wood, dry	14° to 26½°	·25 to ·5
Metals on metals, dry	8½° to 11½°	·15 to ·2
Smoothest and best greased surfaces	1¾° to 2°	·03 to ·036

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* * *

OBITUARY.

Mr. Lawrence Booth, F.R.I.B.A., of Oxford Arcade, Manchester, died at his residence, Crumpsall Green, Crumpsall, on Wednesday night, in his 58th year. For a long time Mr. Booth had been in failing health from consumption, which was the main cause of death. A native of Bury, Lancashire, he served his time with Mr. Joseph Stott, architect, of Oldham, and afterwards commenced practice at Union Churches, Bury. Some years later Mr. Booth removed to Manchester, and became senior partner in the firm of Blackwell and Booth, and on the death of Mr. Blackwell he took over the business, and took as partner his chief clerk, Mr. Thomas Chadwick. Mr. Booth's works include the Bury Infirmary, Hope Hospital (Salford Union), the largest building he was ever engaged upon; enlargements in connection with the Royal Infirmary, Manchester, and Barnes's Convalescent Home, Cheadle. We may also mention the Jesse Haworth Memorial Church at Walshaw, consecrated February 17th, 1892; St. Thomas's Church (1867) and Schools, Bury; St. Andrew's (Dundee) Presbyterian Church, Ramsbottom; the Lancashire and Yorkshire Bank, Silver-street, Bury; the Prince's Club, Manchester-road; the Union Club, also at Bury; the restoration of Bury Parish Church; part of the Bury Union Workhouse; Helen's Holme, Chesham; The Brooklands, and a house near Whitefield. Mr. Booth designed the headquarters of what was then the 2nd Manchester Volunteer Battalion at Ardwick (opened by the Duke of Cambridge); St. Mary's large schools and the vicarage, Rawtenstall, and the restoration of the church; he had some connection with the erection of the Winter Garden, Southport; designed and erected the Newton Heath public baths, hall, and free library; Salford Baths, Middleton Free Library, and a large number of warehouses and other buildings in the city of Manchester. As an arbitrator in property disputes, Mr. Booth was very frequently engaged. He joined the Royal Institute of British Architects as an Associate, in 1864, and six years later became a Fellow. The firm of Booth and Chadwick last year obtained the first prize of £300 offered by the Stockport Union authorities for the best design for a new workhouse. Along with a number of other gentlemen, Mr. Booth joined in the purchasing of the Colwyn and Pwlly Crochon Estate, Colwyn Bay, and the floating of it as a company under that title. Many of the buildings on that estate were designed by Mr. Booth's firm.

* * *

CHIPS.

Mr. C. E. Mallows, whose pen-and-ink work is well known, has been for fully a year past laid aside by very severe illness, and now that he is slowly recovering, some of his friends propose to present him with a token of their esteem and sympathy. For this purpose Messrs T. E. Collcutt, Aston Webb, and Leonard Stokes are willing to receive subscriptions up to the 7th of August. It has been decided that the presentation shall consist of a purse of sovereigns.

Alvaston parish church, Derbyshire, has just been enriched by the addition of a large chiming clock and peal of bells, the whole being the gift of Mr. W. Bradshaw. The clock is fitted with all the latest improvements, and was made by John Smith and Sons, Midland Clock Works, Derby.

The St. John's School, Bristol, is being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

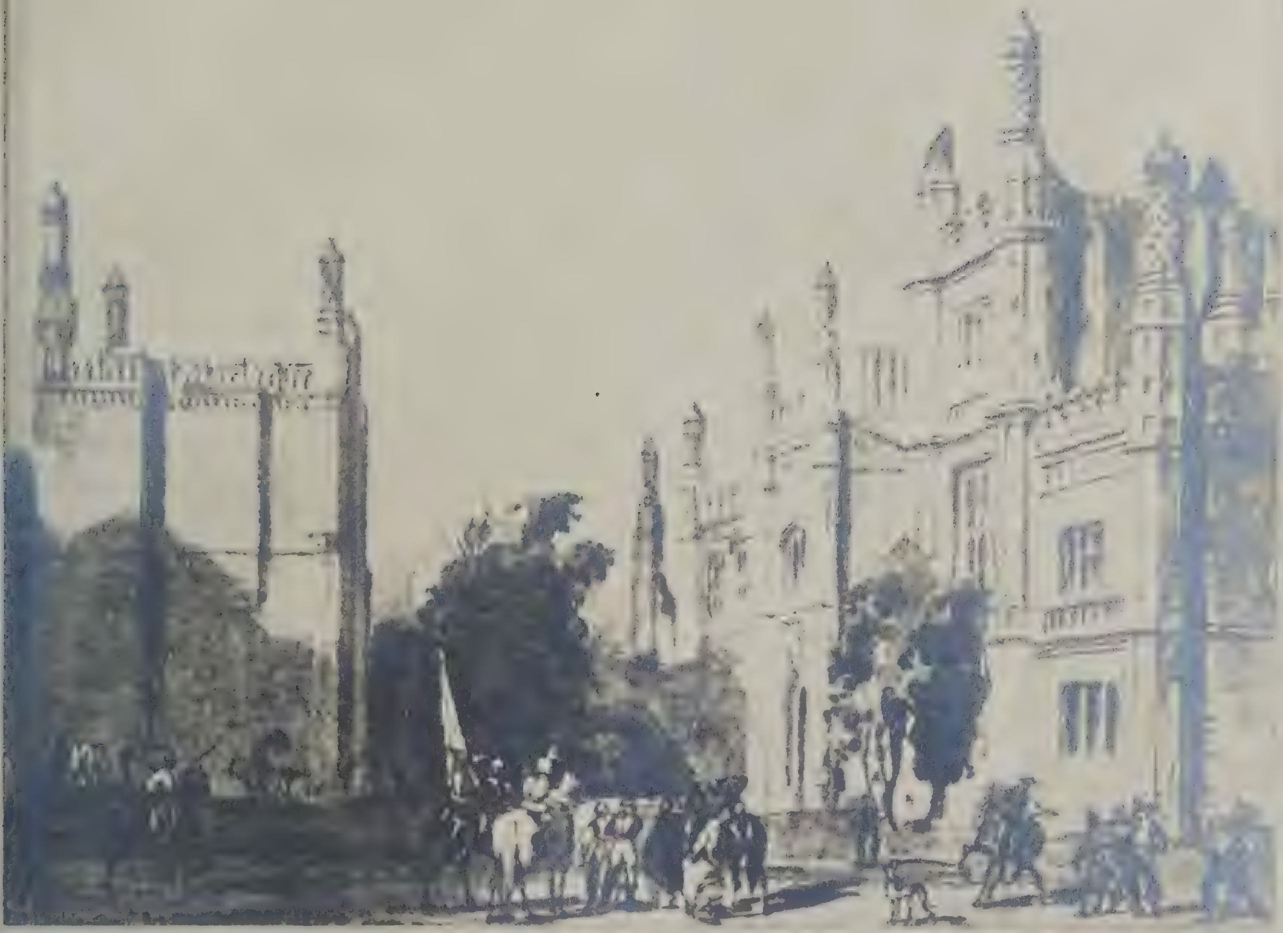
It is proposed to restore the parish church of St. Michael at Michaelstown-y-Vedw, near Cardiff, at an estimated cost of £1,000. Messrs. Seddon and Coates Carter, of London and Cardiff, are the architects.

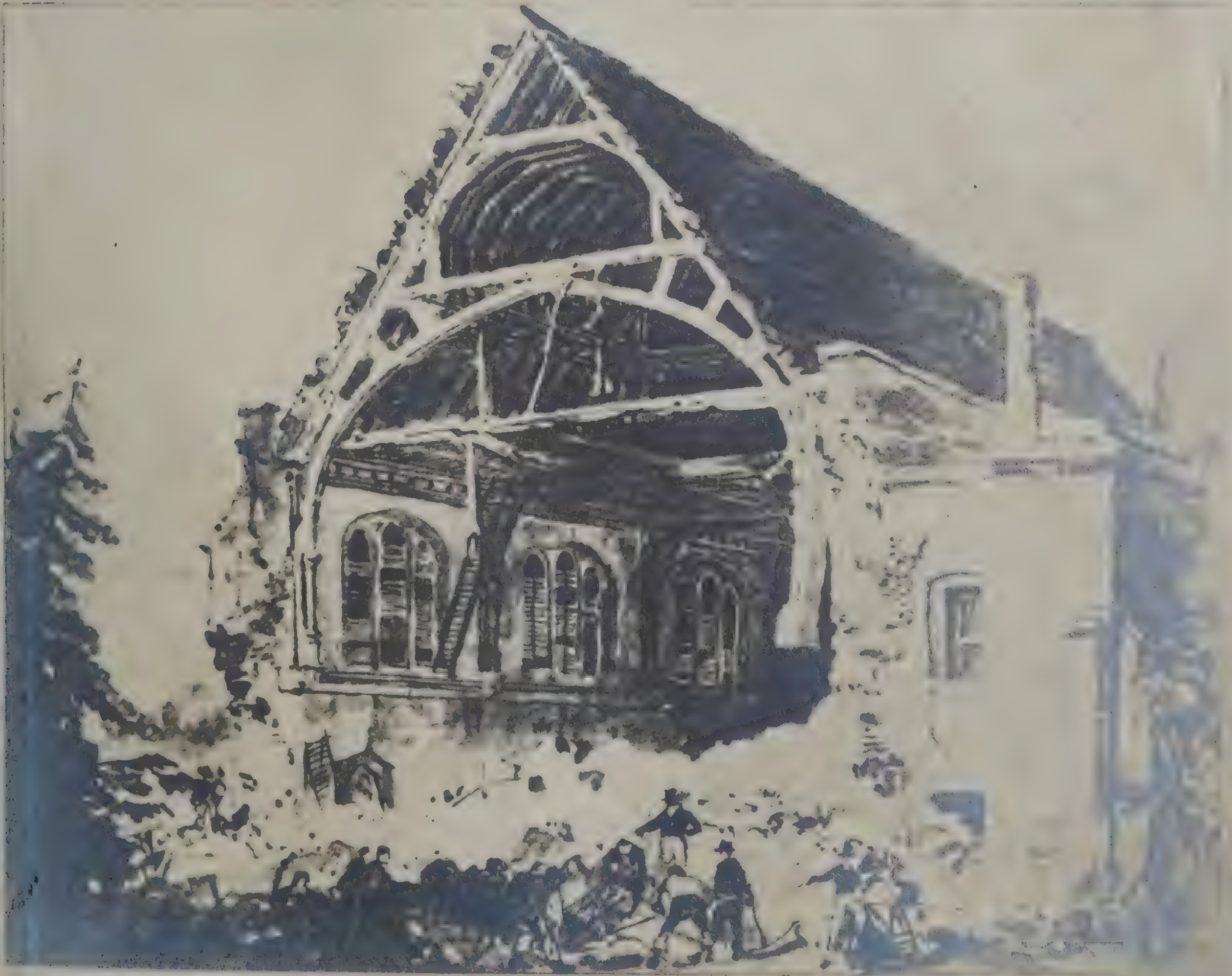
On Saturday memorial stones were laid of a Baptist chapel which is being erected in Arthur-Road, Saltley, Birmingham. The chapel will cost about £2,500. It will be of red brick, with stone facings, in a Gothic style; the dimensions will be 75ft. by 35ft., and will give accommodation for about 500 persons. In the rear of the chapel there will be three vestries, one 17ft. by 13ft., the other two 13ft. by 10ft. The school will be 70ft. by 39ft., with infants' room at the rear with separate entrance, the whole school to accommodate 500 children.

The Carnarvon Corporation met on Monday night for the election of a borough surveyor, in succession to Mr. Wynn Roberts, who has accepted a similar appointment at Oswestry. The candidates were Mr. Davies, surveyor to the Newton Local Board, in whose favour the selection committee were unanimous out of 40 candidates, and Councillor R. Lloyd-Jones, who for some years held the office, and in favour of whom 459 ratepayers petitioned. Alderman B. Williams protested against an attempt to ignore the action of the committee who had not even named Mr. Lloyd-Jones. On a division Mr. Lloyd-Jones was temporarily elected by ten votes to nine, the mayor not voting. A vacancy on the council is thus caused.

Messrs. Debenham, Tewson, and Farmer offered for sale, at the Mart, Tokenhouse-yard, on Tuesday, the fabric and site of the church of All Hallows the Great, Upper Thames-street. The principal features of interest and various adornments have been removed to the church of St. Michael Royal, on College-hill, with which parish All Hallows is in future to be united, and the old oak panelling and pewing were withdrawn from the sale. The site of the church covers an area of 4,130sq.ft., with a frontage of 87½ft. to Thames-street, and a depth of 48ft. Part of the proceeds of the sale are to be devoted to the erection of a church in a densely-populated part of St. Pancras. The property was knocked down for £13,100, or a little over £3 per foot, to Alderman Sir Francis Truscott.

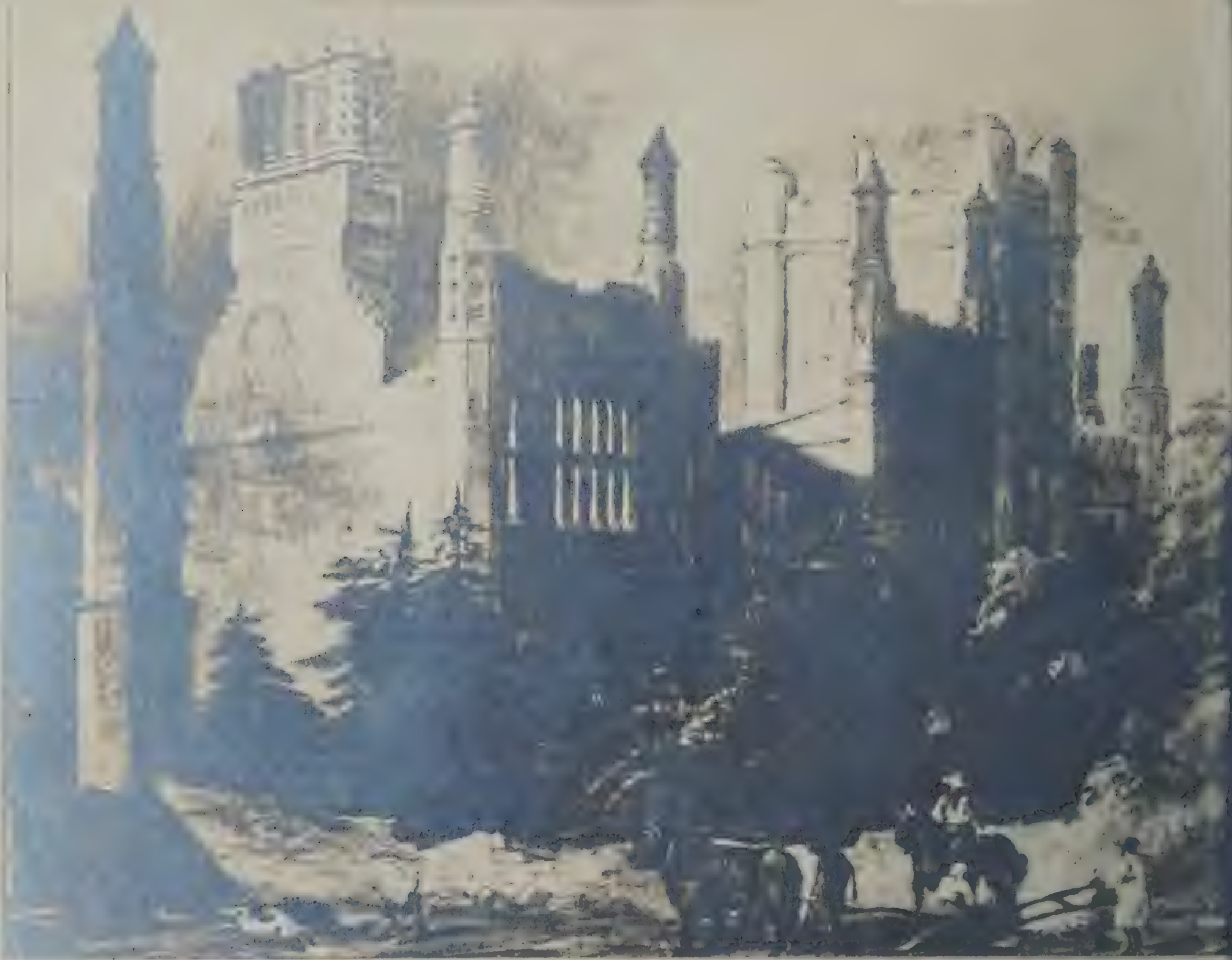
Alterations are being made to South Mims church, Barnet, from the designs of Mr. J. C. Traylen, architect, Stamford. The ventilation of same will now be effected on the Boyle system, consisting of the latest patented improved form of the self-acting air-pump ventilators, for the extraction of the vitiated air, and improved air inlets for the admission of fresh air.



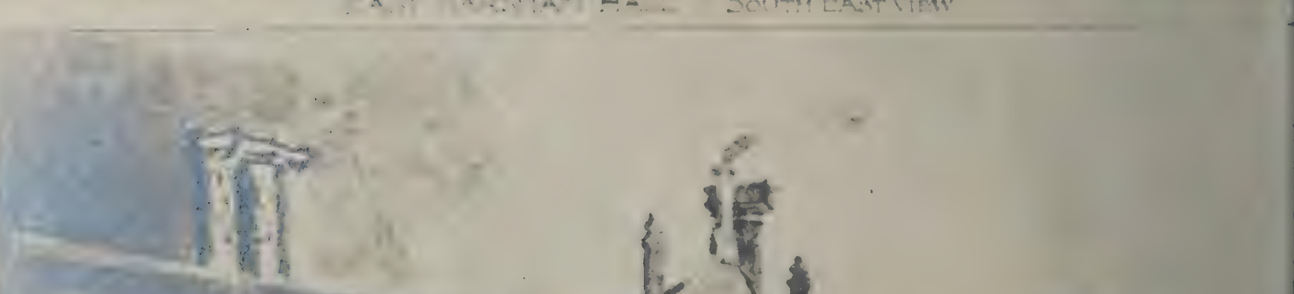


LENT BY THE EXECUTORS OF TH

EPISCOPAL PALACE · CROYDON VIEW OF HALL AFTER FALL OF WALL JUNE 6 1830.



EAST BARSHAM HALL — SOUTH EAST VIEW



From the Original Drawings by the Late John Nash

THORPLAND HALL NORFOLK

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EAST BARSHAM HALL, NORFOLK.—THORPLAND HALL.—THE PALACE AT CROYDON AFTER THE FIRE, 1830.—"SOANE" MEDALLION DESIGN FOR A COLLEGE. — "PASSMORE EDWARDS" FREE LIBRARY, REDRUTH. — TEACHERS' TRAINING COLLEGE, CAMBRIDGE.—NO. IX. CAVENDISH-SQUARE. — BIRMINGHAM ARCHITECTURAL ASSOCIATION EXCURSION SKETCHES.—COUNTY BOROUGH OF BLACKBURN FEVER HOSPITAL.

Our Illustrations.

AUTOGRAPH DRAWINGS BY THE LATE JOSEPH NASH.

We are indebted to Mr. Wyatt Papworth for the loan of this interesting group of original sepia sketches by the late Joseph Nash, which form part of a small set of studies now belonging to the executors of the late Mr. Alfred Morant, C.E., and who kindly consented to this selection which we have made for our representative series of reproductions of drawings by this famous master of the pictorial rendering of architectural subjects. All the specimens included in the accompanying pictures are examples of brick building, three being from Norfolk and one from Surrey. This last shows the historic Palace Hall at Croydon as it appeared in 1830, after the fire which partly demolished the place that year. The hall is, of course, chiefly remarkable for its fine roof, which Nash's sketch clearly displays, showing the open framing up to the ridge, very similar in construction and design to the celebrated roof over the hall of Christ Church, Oxford. It dates from the reign of Henry VII. or VIII., and has good arched principals, with pendants and angel corbels. The hall was long used as a bleaching-house in connection with a laundry. The windows, like those of the Archbishop's Palace Chapel, are of a debased form of Perpendicular Gothic, and the walls of brick have stone dressings. Details of the building figure in Pugin's "Examples." The screen and stalls in the chapel are of James I. date. Thorpland Hall, of the Tudors, was erected when Henry VII. was king. Its builders were the Fermors, and it stands about three miles from East Barsham, in Norfolk. The walls, partly of flint, have brick and moulded terracotta dressings, with ashlar copings and window framings in stone. The chimney-shafts are good brick ones, and the house, though small, has characteristic gables. Wolterton Manor House, as East Barsham Hall is sometimes called, supplies the two subjects of the remaining studies. Plans and geometrical elevations of this extremely interesting mansion were published in the Building News for Nov. 1st, 1889. Sir William Fermor erected the house about the same time as Thorpland Hall; but it is a much finer and richer example of Domestic architecture, of course, and ranks as one of the most notable examples of the use of elaborated terracotta in England of its date and style. The griffin and greyhound over the gateway support the arms of France and England, and are unsurpassed for freedom of treatment and boldness of design. The chimneys also are exceptionally beautiful. The buildings have long been partly ruined, and are used as a farmhouse. These drawings by Nash were exhibited at the Burlington Fine Arts Club, in Savile-row, in 1884.

R.I.B.A. SOANE MEDALLION PRIZE DRAWINGS: DESIGN FOR A COLLEGE.

We now complete the series of illustrations which we made from the prize set of designs by Mr. Jas. H. Tonge, who won £100 and the Soane Medallion with them last winter. Our other plates, giving views, details, and plans, will be found in our pages for May 25th and June 15th this year.

"PASSMORE EDWARDS" FREE LIBRARY, REDRUTH.

This building is the gift of Mr. J. Passmore Edwards, who was born within three miles of Redruth. In addition to the accommodation shown on the plans, there is a basement floor containing heating chamber, stores, and living-rooms for a caretaker. The external walls are of granite raised from quarries on the carn close by. All the dressings are also of granite, finely dressed. The fittings internally are of pitch-pine. The work has been intrusted to Mr. John Symons, of Blackwater, an old schoolmate of Mr. Passmore Edwards.

TRAINING COLLEGE FOR WOMEN.

The Cambridge Training College for women was incorporated on January 26th, 1893. Its object is to give a professional training to educated women who intend to teach. In addition to the course of training, it offers the advantages of a college life, and one year's residence in Cambridge. The students are allowed to attend university lectures on teaching, and have ample opportunity for teaching in various schools in Cambridge. The building provides accommodation for about 50 students, most of them having separate rooms, and a few larger rooms are provided where two friends may be together. The lecture-room, library, &c., are on the ground floor, and the dining-hall, kitchen, and offices connected with it are on the first floor. The building is carried out in red brick, and the ornamental portions in terracotta. The roof is covered with red tiles. The college was commenced about ten years ago, in small premises, and has since grown steadily in numbers and importance, under the able management of Miss E. P. Hughes, the lady principal. A bequest from the Pfeiffer trustees of £3,000, with assistance from other friends of the college, has enabled the governing body to commence the present building.

NO. IX. CAVENDISH-SQUARE.

The building at the corner of Cavendish-square and Chandos-street, which we illustrate this week, is a block of flats on a somewhat more elaborate scale than those in most other situations. Several of the flats, in addition to the three usual reception-rooms and a large smoking lounge-hall, have eight or nine bedrooms, a kitchen, a scullery, and all the usual domestic accommodation. Every flat has its own bath, hot water, and double set of closets. The suites are approached from Cavendish-square by a semicircular stone staircase with very broad landings, and the passenger lift and service lift go to every floor of the building. The floors are fireproof, and boarded over the fireproofing. Both the fronts to Cavendish-square and Chandos-street are of Portland stone and Ibstock red brick, and the porch is entirely of Portland stone, in keeping with the other mansions on the north side of Cavendish-square. The building has been erected by Mr. Thos. Boyce, of Hart-street, Bloomsbury, at a cost of considerably over £30,000, from the designs of the joint architects, Mr. Lewis Solomon, F.R.I.B.A., and Mr. E. Carrington Arnold, of 55, New Broad-street, E.C.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

An experimental sketching excursion has been made by this association, and with such satisfactory results that it is hoped it will become an annual affair. Evesham was the first place visited, where the members met on Friday afternoon, July 13, driving in the evening to Broadway, which was made the head-quarters until the following Tuesday, when the members dispersed, taking various routes back to Birmingham. On Saturday morning a drive of some five miles through a beautifully wooded country at the foot of the Cotswold Hills brought the party to Stanway House, the seat of Lord Elcho, who kindly gave access to the house, and hospitably entertained the visitors. This house is remarkable for its west front and forecourt, containing the gateway said to be designed by Inigo Jones, also the gateways leading into the churchyard and stables, views of which may be seen in Mr. Gotch's book, which show the fine bay window to the hall. There is a tithe barn in the grounds, formerly attached to the abbey of Tewkesbury, and now used as a tennis court. A move was made at 1.30 for Sudeley Castle, a larger house forming three sides of a quadrangle, for many years in a ruinous condition; but restorations have been made from time to time, until now the whole is practically inhabited, except the banqueting hall, which reminds one of that at Kenilworth. The house is well worth seeing, and contains a perfect museum of valuable pictures, furniture, and curiosities of great historical interest. Winchcomb, an old-fashioned market town, situated just outside the park, has a fine Perpendicular church, containing a good sedilia, and Renaissance organ case and candelabra, and the town possesses many picturesque bits. Broadway occupied the whole of Sunday morning, when a good number of sketches were made of the numberless groups of cottages lining the straggling village street. The old church, now used as a cemetery chapel, is of various dates, and has a Late central tower with a quaint square turret springing from the east wall of the north transept. The absence of buttresses is a notable feature, giving breadth to the wall surfaces of the small church. After luncheon a walk along the hills brought Buckland in sight, a village having a small church, with manor house adjoining. The rectory is also a stone house, and contains a 14th-century hall, with hammerbeam roof truss and half-timber gallery front, which is shown with much readiness by the rector, who does not object to sketching on Sunday. The next village, Stanton, contains an unrestored church of great interest, and the stone cottages are some of the finest in Worcestershire. Monday morning was inclined to be wet, which prevented very much being done at Weston Subedge, the first stopping-place. Here are more stone cottages of great variety and character, and well worth careful study. Aston Subedge, about two miles off, has an L-planned manor house, containing a good staircase leading up to rooms now used as a granary. Chipping Campden was the principal feature of Monday's programme, being noted for its long wide street with market house, town hall, and houses built at intervals up the centre. Many of the inns have their old signs still swinging on their fronts, making a picturesque and fretted skyline. Not a few of the houses are of great interest, especially the wool-staplers—now used as a priest's house—and the almshouses, making a fine group with the church and ruins of Campden House. The latter has been freely illustrated in the A.A. Sketch Book. A drive of some six miles back to Broadway over the hills, in order to see the remarkable views, brought the day to a close. Several members were compelled to return direct to Birmingham on Tuesday morning; the remainder, driving with them as far as Evesham, started for Moreton-in-Marsh to see the Redesdale Memorial Hall and Batsford Park, lately built at the cost of Mr. A. B. Freeman-Mitford, M.P., from designs by Messrs. Ernest George and Peto, and illustrated in the Building News of May 13, 1887, and Jan. 4, 1889. Both are certainly very remarkable works, and particularly interesting to carefully examine after a course of stone mullioned old work, upon which the designs are based and executed in the materials of the locality. The stables of the house are unfortunately not by the same architects. The afternoon was spent in rambling through Chastleton House, a drawing of which, by Mr. E. Guy Dawber, appeared in the Building News for May 12, 1893, and also illustrated in Mr. Gotch's book. The house is only occupied at the present time by a caretaker, but contains the old furniture, china, and tapestries, in this respect resembling Haddon Hall, and affording subjects for measuring and sketching for several days in itself.

Charles E. Bateman.

BLACKBURN FEVER HOSPITAL.

(For description and block-plan see p. 161.)

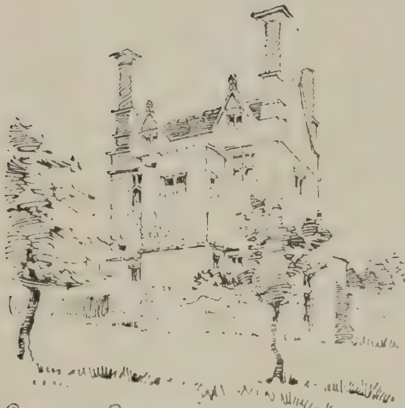
* * *

In the case of Abraham Steer, Marlborough Mansions, Victoria-street, S.W., St. Ermin's Mansions, Caxton-street, S.W., and the Grange, South Norwood-park, S.W., builder and contractor, the discharge has been suspended for six years ending Jan. 24, 1900.

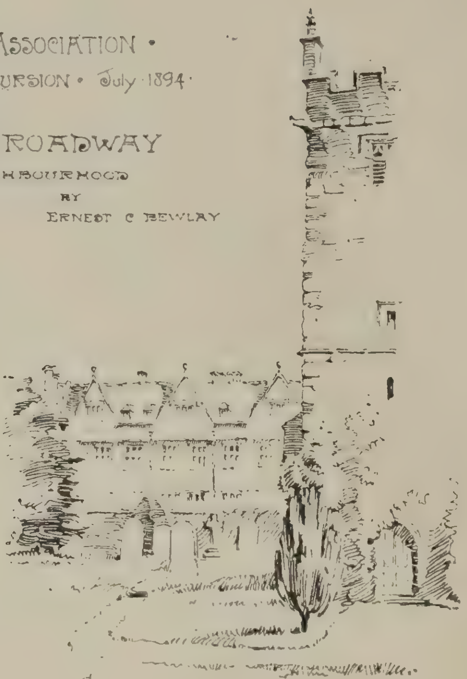
BIRMINGHAM · ARCHITECTURAL · ASSOCIATION ·
· SKETCHING · EXCURSION · July · 1894 ·

SKETCHES IN BROADWAY

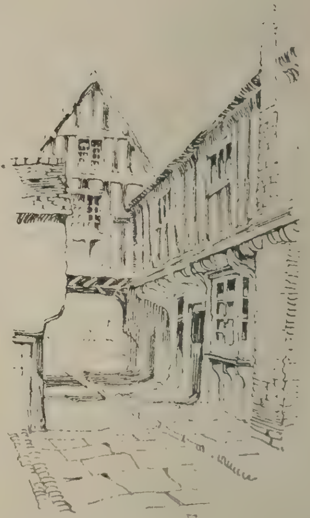
AND NEIGHBOURHOOD
BY
ERNEST C BEWLAY



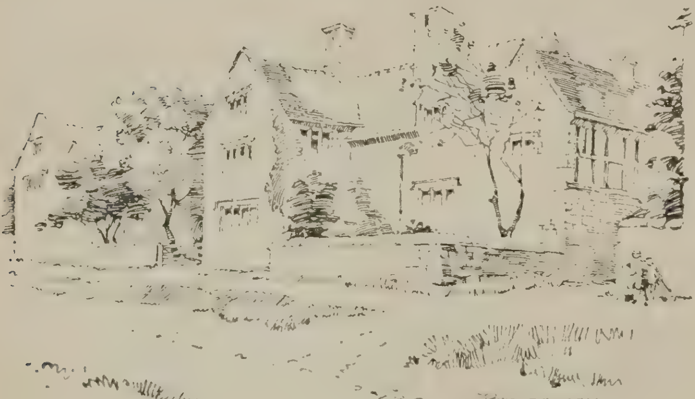
CHIPPING CAMPDEN



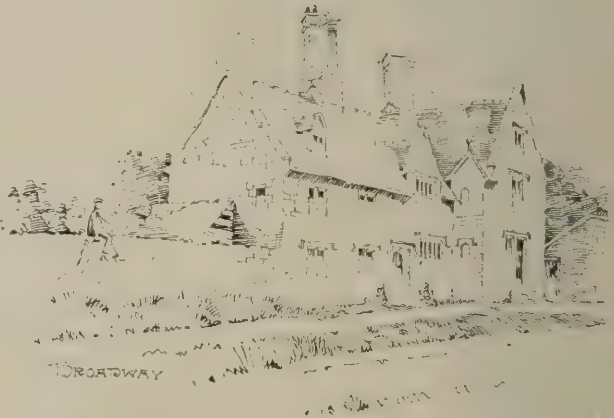
STANWAY



· EVESHAM ·



BROADWAY



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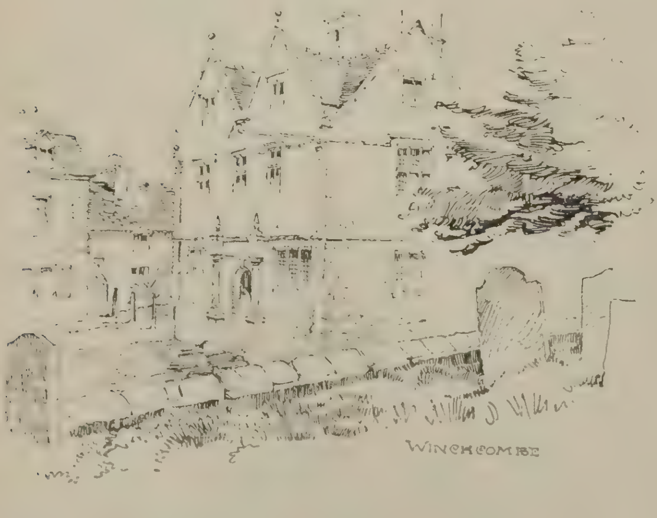
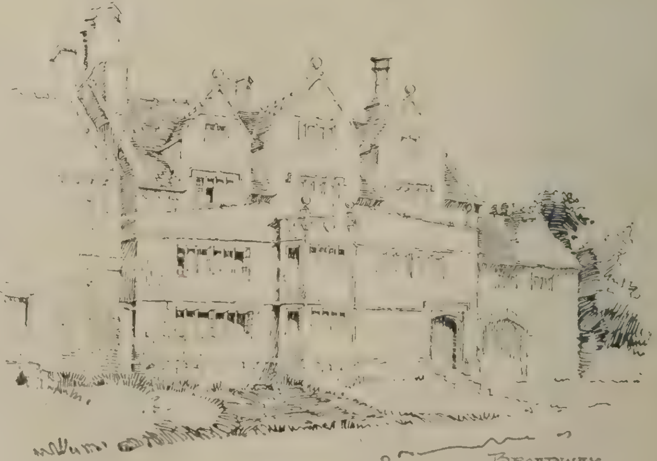
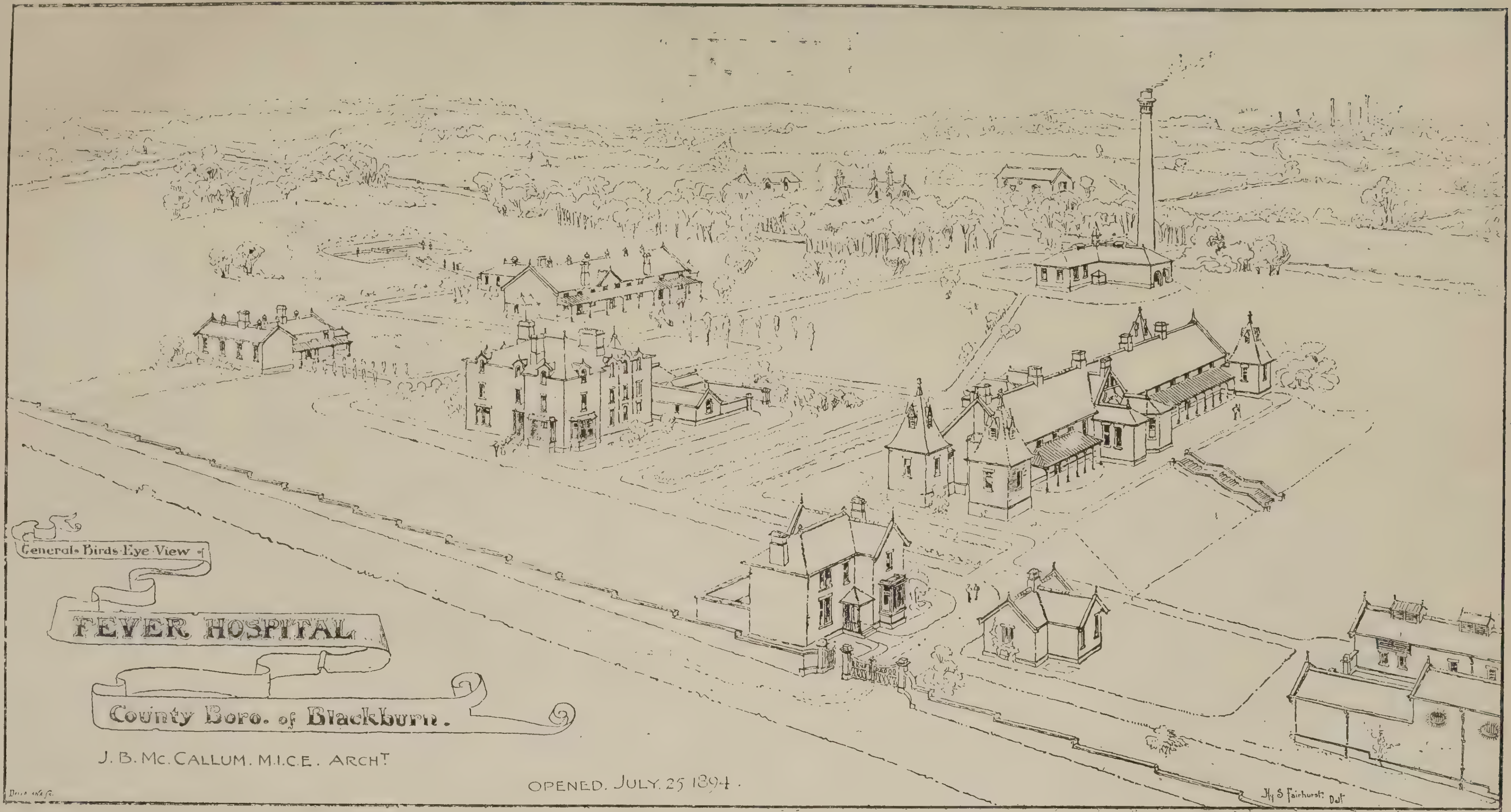


WINCHCOMBE



BROADWAY



General. Birds. Eye. View of

FEVER HOSPITAL

County Boro. of Blackburn.

J. B. Mc CALLUM. M.I.C.E. ARCHT.

OPENED. JULY. 25 1894.

Hy S Fairhurst Delt

WAYSIDE NOTES.

I THOUGHT so! The meeting of the Commissioners of the Exhibiton of 1851 was held last Friday at Marlborough House. The Prince of Wales presided, and there were twenty commissioners present, including Prince Christian, the Duke of Cambridge, and the Duke of Fife. It is nearly two years since the last meeting was held, and the report read, which chiefly related to financial questions connected with the Gore House estate, was a long one. Among the matters discussed was the position of Alexandra House for the reception of female students attending science classes in South Kensington, and it was resolved to form an association of trustees to be intrusted with its administration. It was further decided to contribute £200 a year for five years in aid of the maintenance of the department for investigating and testing the natural products of the colonies and India at the Imperial Institute, in addition to the payment of £300 for the same purpose. That means another £1,300, from funds which are really national, towards the abortive Institute which does little but dine and wine its members and tea the loungers at sixpence a head!

I do hope Clerks of Vestries and District Boards will respond to the letter addressed to them by the Vestry Clerk of Hammersmith with the view of supporting the intended application of the London County Council to the Board of Trade to hold an inquiry into the management and working of the gas companies supplying the metropolis, with a view to ascertaining whether there is any reason why the gas supplied to consumers on the north side of the Thames should be charged at a higher rate than that supplied to consumers on the south side, and whether measures can be taken for securing a uniform rate of charge by all companies supplying gas to consumers residing in the county of London; such inquiry to include the question of the advantage or otherwise of enriching the standard of gas and the use of portable apparatus for testing same. It is really time this rank robbery on the part of certain gas companies should end. If private consumers choose to be fleeced in this fashion, there is certainly no reason why the public authorities should submit to it, and it behoves every local authority to back up the action of the London County Council enthusiastically.

I was finishing my tomato soup at the Temperance Hotel, Doncaster, the other day, and had just ordered chicken and bacon and bread-sauce to follow, when I turned to the outside front cover of the *menu*, and there I read at the top:—

Herbert Athron,
Architect and Surveyor, Auctioneer and Valuer,
House and Estate Agent.
Property bought and sold on commission. Houses let for
race week. Valuations for mortgages or probate.
Dolphin Chambers, Market Place.

I am glad to give this additional advertisement to this enterprising Doncaster "architect and surveyor." It is not so attractive, of course, as it appears on the *menu*, where it is suggestively flanked by a group of appetising fishes on one side, and a noble sirloin on the other, comestibles which I trust duly reward the business-like enterprise of the advertiser. There is no time like after dinner to approach a possible client—possibly one who has made a good thing in "race week" into the bargain, and as to its being "unprofessional"—who cares nowadays?

Bumbledom, it seems, is compelled to allow Kensington Gardens to be smoke-dried. At the south-western corner of the gardens there has been erected a huge building, which, after lying vacant for some years, has recently been opened as an hotel. From its main chimney there now issues at all times of the day a volume of dense smoke, which exceeds in density and energy the performance of the most refractory of black-country chimneys. The wind usually setting towards the gardens, this smoke fills and vitiates the air even to the further side of the round pond, and covers the whole of the area most usually resorted to by children as a playground. Its noxious effects are thus widespread in the summer; they will be still more so when the foggy days hold them earthwards. The reason the nuisance is allowed to continue—so Mr. Marcus B. Huish says, in a letter to the *Times*—is, that the hotel is not in the parish of Kensington, but in that of St. Margaret's, Westminster, whose municipal offices and officers are some miles away, and, presumably, careless about the contamination of Kensington Gardens. Such is vestrydom!

The paper read by Mr. Thomas J. Bailey, F.R.I.B.A., the architect to the London School Board, on the "Architecture and Hygiene of Schools," a report of which is given in the present issue, is of special interest, it sketches the development of the board school as we now see it. Mr. Bailey takes the Hugh Myddelton School as a modern type, and I refer my readers to the plans published in this journal, as upon this type all the most approved schools are now built. Mr. Bailey thinks if any further evolution takes place, it is likely to be in the alteration of the 60 unit for classrooms. In the interests of hygiene I should like to see a little more space in the classroom. It is often very crowded. Referring to sanitary appliances, I was glad to find that the automatic flushing tank and stoneware glazed trough are now used in place of the old arrangements.

The City Church Preservation Society seems to have made some difference in the price fetched at the sale of the site of All Hallows Church, Thames-street, on Tuesday. At any rate, the sum realised, £13,100, was regarded as considerably below the value. A circular was placed in the hands of all who entered the sale-room, purporting to contain "counsel's opinion" that the site could not be legally built on, and that the first attempt to build would be met by legal proceedings. The auctioneer endeavoured to remove the apprehensions of any intending purchasers as to their risk of incurring legal proceedings by pointing out that if opposition should be raised and sustained to the use of the site for building purposes, they would not be compelled to complete the purchase; and he also said that the Ecclesiastical Commissioners had taken an eminent counsel's opinion, and were assured that their action was absolutely legal. It remains to be seen whether the threat of the City church preservers can be made good. I hope it may. Very little, after all, goes to the masses in the suburbs from the sale of these City churches, and they might so easily be profitably utilised, instead of being demolished to make room for Grains and the money-changers.

CHIPS.

Professor Banister Fletcher, F.R.I.B.A., was nominated on Tuesday to represent the City Commission of Sewers at the International Congress of Hygiene and Demography at Buda-Pesth next month.

Lady Galsworthy laid on Tuesday the foundation stone of Brook Hospital, at Shooter's Hill. The new hospital, which is to occupy 32 acres, will accommodate 500 patients and a staff of about 270. The cases treated will be scarlet fever, enteric fever, and diphtheria. The hospital is estimated to cost £200,000, or £400 per bed. Mr. T. W. Aldwinckle, F.R.I.B.A., is the architect.

At Tuesday's meeting of the London County Council the consideration of the proposed improvements at the junction of Wellington-street and the Strand was postponed until after the vacation. A committee recommended that the artisans' dwellings to be provided on the Goldsmiths-row site to accommodate 144 persons, at a cost of £5,953, should be erected without the intervention of a contractor, and that the plans, estimates, and specifications should be referred to the Works Committee for that purpose. They also submitted a similar recommendation with respect to the Cable-street scheme, by which 520 persons will be accommodated at a cost of £19,880, including £500 for a caretaker's lodge. The recommendations were adopted.

A new church is about to be built at Llwydcoed, near Aberdare, from plans by Mr. C. E. Halliday, of High-street, Cardiff.

At a meeting of the Middlesbrough Lunatic Asylum Committee, on Monday, it was resolved to accept tenders amounting to £68,000 for the building of the new asylum.

The parish church of Weobley, one of the finest for size, dignity, and grandeur in the diocese of Hereford, is about to be restored at an estimated cost of £1,500, from plans by Messrs. Bodley and Garner, of London.

New station buildings are being erected for the Lancashire and Yorkshire Railway Company at Broadley, near Whitworth, Lancs. The contractor is Mr. Walker, of Bradford.

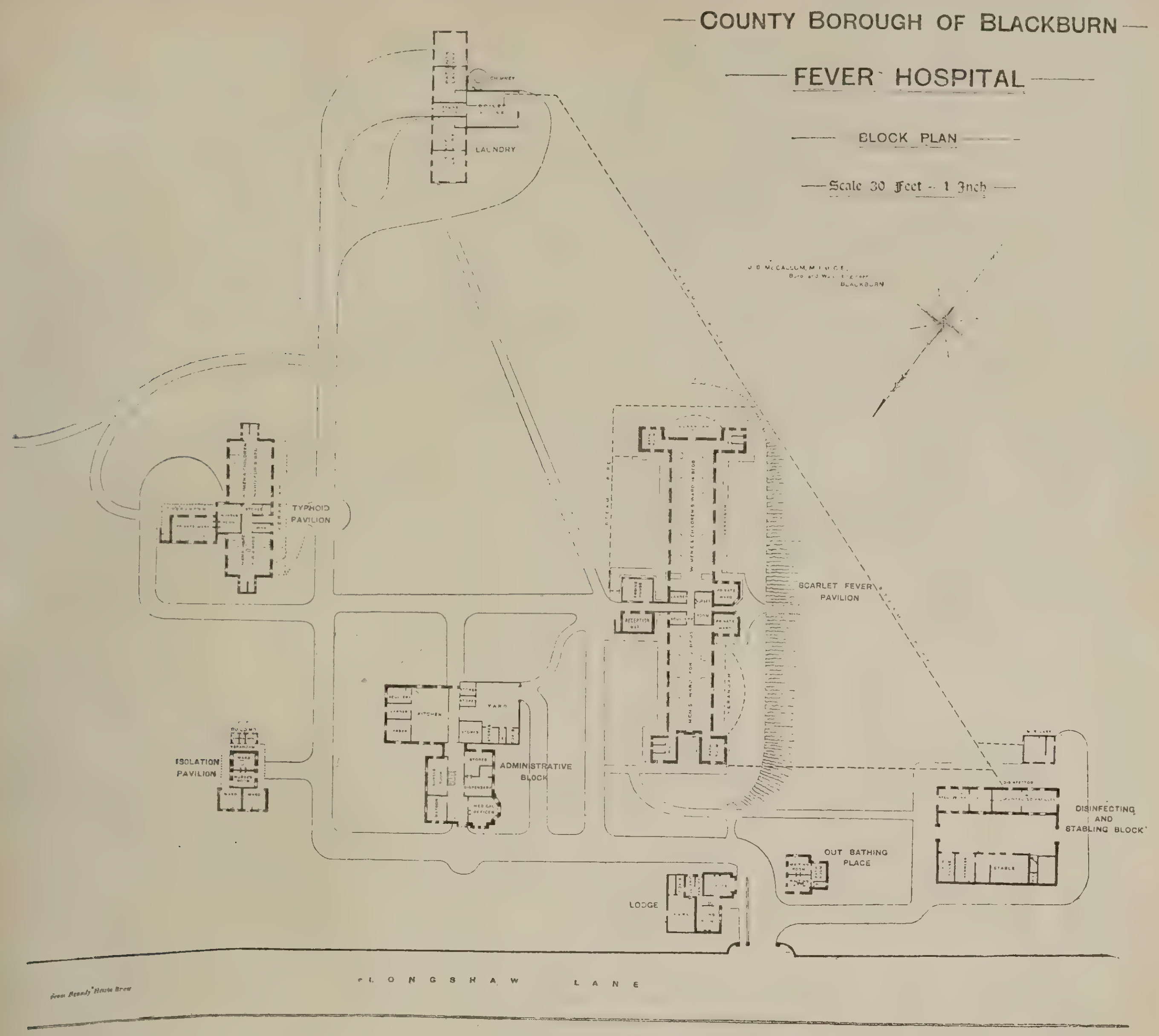
ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Glasgow Architectural Association.—The members of this association will visit on Tuesday next Belmont Established Church at Hillhead, of which Mr. James Miller is the architect, and will make an excusion to Edinburgh on Saturday, the 25th inst., to see the University buildings. The programme for the ensuing session is as follows:—Sept. 4, Opening address by the president, Mr. Alex. N. Paterson, M.A.; Sept. 29, Visit to Linlithgow; Oct. 2, "Planning of Country Houses," by Mr. William Fraser; Oct. 6, Visit to Paisley; Oct. 16, "The Abbeys and Cathedrals of Scotland," by Mr. P. M'Gregor Chalmers; Nov. 6, "On Tramp," by Mr. J. Kennedy Hunter; Nov. 2, Lecture by Mr. James Chalmers; Nov. 30, Annual Conversazione and Dance; Dec. 4, "Planning of Farm Houses," by Mr. Chas. J. Davidson; Dec. 18, "The Thirteenth and Fourteenth Centuries in Italy," by Mr. T. L. Watson; Jan. 8, 1895, "Monumental Buildings," by Mr. W. J. Blaine; Jan. 22, "An Architectural Chat," by Mr. J. A. Morris; Feb. 5, "The Development of School Planning," by Mr. R. W. Horn; Feb. 19, "The Monks and their Abbeys," by Mr. Henbest Capper; March 5, "The Early Development of the Christian Church," by Mr. W. J. Anderson; April 2, "The Work and Influence of the Brothers Adam in Scotland," by Mr. John White; April 20, Visit to Stirling; May 6, "Decorated Gothic," by Mr. D. B. Dobson; May 24, Visit to Douglas; and, June 3, Annual Business Meeting.

Kent Archæological Society.—The annual meeting of this society was opened at Faversham Town Hall on Tuesday, under the presidency of Earl Stanhope. After the adoption of the report and the re-election of officers, visits were paid to the parish church and to the old grammar school, erected in the 15th century and recently converted into a Freemasons' hall. At Davington the priory and the Norman church of the nuns, erected on the site of a Saxon church, were seen, and the next visit was to Preston parish church, within the borough, at which the Rev. Canon Scott Robertson acted as guide and lecturer. In the evening the annual dinner was held in the drill-hall. At a meeting which followed papers were read by Mr. George Payn (hon. secretary), Mr. F. F. Giraud, and the Rev. C. V. Collier.

The Royal Archæological Institute.—This Institute has been holding its annual congress during the past week at Shrewsbury, under the presidency of Sir H. H. Howorth, M.P., F.R.S., whose inaugural address, dealing with anthropological topics and tracing all Teutonic art to Byzantine sources, was delivered at the Guildhall on Tuesday week. In the evening of the same day the Architectural section was opened with an address by the president of the section, Mr. C. J. Ferguson, F.S.A., and a lecture was given by Mr. W. H. St. John Hope on "Monastic Arrangements," illustrated by restored plans of all the abbeys in Salop. On Wednesday an excursion was made to Pitchford Hall and Church, Acton Burnell Church, the Castle and Parliament House, Langley Chapel and gateway of Manor House, and Condover Hall and Church, the Rev. T. Auden, F.S.A., vicar of Condover, and chairman of the Shropshire Archæological Society, acting as guide. In the evening the antiquarian section was opened with an address by Mr. Stanley Leighton, M.P., and Mr. J. T. Micklethwaite, F.S.A., gave a paper on "Monastic Life," followed by one from Mr. Mill Stephenson, F.S.A., on "The Monumental Brasses of Shropshire." On Thursday the members visited Shifnal, Tong, and Donnington churches and Lillieshall Abbey, and an address was given in the evening by Mr. W. H. St. John Hope. Other rounds of visits were made on Friday and Monday, and on Wednesday the proceedings were brought to a close by a joint-visit with the Shropshire Archæological Society to Clun Castle.

At Peasedown, Somerset, on the borders of the parishes of Camerton, Wellow, and Dunkeston, a permanent stone church has been built by Messrs. Franklin, from designs by Messrs. Bodley and Garner, of Gray's Inn, E.C. The iron church which is thus replaced has been re-erected at the Causeway, Fishponds, near Bristol. It is 92ft. by 26ft., and stands on a brick foundation, with concrete flooring. The removal and re-erection have been carried out at a cost of £600 by Mr. C. Hayes, of Thomas-street, Bristol, under the direction of Mr. R. Cridland, architect, of that city, and the reopening service took place on Saturday.



BLACKBURN FEVER HOSPITAL.

This fever hospital, opened by the mayor on July 25th, is situated at Longshaw, in the borough of Blackburn, about 250 yards west of the old Roman road leading from Edgeworth to Blackburn. The site of 10½ acres is inclosed by a boundary wall 6ft. 6in. high. A stream runs through the site, affording a good outlet for subsoil drainage. On entering the gates there is a porter's lodge on the left hand, which contains an office, kitchen, scullery, two bedrooms, bath, lavatory, and w.c. The out bathing place is opposite the lodge, and to the right of the entrance gates. There are two waiting rooms, 10ft. by 12ft, also bath, lavatory, and w.c. It is intended that it shall be used principally as the final disinfecting and discharging place for patients. A patient, before being discharged, will be admitted into one of the waiting-rooms, will bathe, and then receive his disinfected clothes in the other waiting-room (discharging-room). The discharging-room will thus be kept free from infection. Besides patients, it may often be desirable to disinfect here persons who have been in contact with infectious disease, either at the hospital or in the town. The danger from visitors whom it may be necessary to admit to the wards will in this way be much diminished.

The administrative block situated to the left of the main entrance, is three stories high, and contains accommodation for the medical officer, matron, and nurses, with 16 bedrooms, baths, lavatories, and w.c.'s. Hydrants are placed on the landings of all floors of this block, with a 3in. hose-pipe 30ft. long attached, and can be readily used in case of fire. A detached portion of the administrative block, one story high, contains kitchen, scullery, dairy, pantry, larder, &c., and is placed in such a position as to afford easy access to the various wards in which provisions, &c., are required. The pavilions, two in number, consist of long one-storied buildings, divided into two main wards by the nurses' room and scullery. The absence of crevices liable to collect dust is one of the special features of the pavilions. The angles between floors, walls, and ceilings have been carefully rounded off. All the floors are formed of oak blocks, laid on 4in. of concrete and 2in. of cement. The scarlet-fever pavilion lies to the right of the administrative block, and contains the following wards:—men's ward, 60ft. long by 24ft. wide, and affords accommodation for 10 beds. The women and children's ward is 84ft. long by 24ft. wide, and accommodates 14 beds. There is a private ward to each of these containing one bed. The two main wards are separated by the nurses' room, 18ft. long by 11ft. wide, and is situated so as to afford perfect control over the wards. Crossing the corridor, and immediately opposite the nurses' room, is the scullery and larder. There is also an isolated reception ward and small ventilating engine house at the entrance to this pavilion. Lavatories, bath-rooms, with movable baths and sprays, w.c.'s, sinks, &c., are provided in both the men's and women's wards. A verandah, to which patients can be easily wheeled, has been erected on the west side. The typhoid-fever pavilion lies to the rear of the administrative block on the left hand, and provides accommodation for four beds in the men's ward and six beds in the women's and children's ward. The two wards are separated partly by a corridor 13ft. long by 9ft. wide, and partly by the nurses' room. Full control over both wards can be obtained by means of windows placed in the nurses' room. A private ward, 24ft. long by 12ft. wide, containing two beds, lies to the rear of the nurses' room. Lavatories, baths, w.c.'s, scullery, linen and food stores have been erected in suitable positions. The wards are heated by Manchester grates, placed in the centre of the floors. A verandah runs the length of the entire building on the west side, for the convenience of convalescent patients. The isolation block is situated immediately to the left of the administrative block, and contains three single wards, 13ft. long by 11ft. wide, with nurses' room, and outbuilding containing bath, sink, and w.c. An interesting feature of the hospital is the ventilation of the scarlet-fever pavilion. It has been carried out by the Sturtevant Company, and combines heating with ventilation. Air is supplied to the building and withdrawn by means of two fans, worked by a 4H.P. engine. The air is heated before admission by means of steam pipes, around which it circulates. The air is also filtered, and can when necessary be moistened, and to a certain extent cooled. This conditioned air is admitted at a height of 10ft., and the outlets are placed close to the floors under the beds. The extracted air is conducted by earthenware pipes to the laundry chimney. The ventilating pipes are of glazed earthenware, and are so arranged that they can be cleansed. As, however, the air will be filtered before admission, it is not anticipated that there will be much deposit. The cubic space allowed per bed is 2,000ft., and it is found from tests that have been made that 10,000ft. of fresh air per bed per hour can be introduced without the fans having to work at an undue speed. The ventilation of the other parts of the hospital does not call for any special remarks. It is carried on by fireplaces, ventilating stoves, ventilating gas-lights, and Boyle's patent ventilators. The laundry lies to the extreme south of the site, and contains patients' laundry, engine house, staff laundry, boiler house, and chimney 90ft. high. The patients' laundry is entirely cut off from the staff laundry. There are in each laundry wringing and boiling machines, steeping tanks, draining troughs, rinsers, ironers, and drying machines. A shafting from the engine-house runs the entire length of both laundries, and is connected by means of driving-belts to the various machines. Steam and hot and cold water are connected to all appliances. The disinfectory, stabling, and mortuary block faces Longshaw-lane, to the west of the site. The disinfector occupies a building 24ft. long by 12ft. wide, and has two entrances. The stabling accommodation includes harness room, coach-house, and a four-stalled stable, with hay-loft, &c. Close to the disinfector is the mortuary, and post-mortem room. The disinfector was made by Messrs. Goddard, Massey, and Warner. The disinfecting agent, superheated steam, can be obtained either from the laundry boiler or from the small boiler which forms part of the apparatus. Special means are taken for preventing any undue condensation of moisture on the sides of the chamber or on the articles. Some condensation is unavoidable, and to dry the clothes hot air is admitted into the chamber from around the fire. Infected clothing is taken into the building by the east entrance, and removed from the west, so that one-half of the building is kept quite free from infection. The disinfector will serve not only for the hospital, but for the whole town. The grounds of the hospital are drained by means of surface or tile drains. These consist of round hard-burnt clay pipes, 6in. in diameter, laid 3ft. apart and 1ft. deep, with an inclination of about 1ft. in 50ft. towards the west side of the site. A 9in. drain connects these at the boundary wall, and finally discharges into the brook running through the grounds. Tile drains are laid round all buildings at a depth of 1ft., and covered with 6in. of broken stones. These are laid in addition to a damp-roof course on all foundations, to insure perfect dryness in the walls. All drains, before entering any building, are disconnected by means of Buchan's disconnecting traps, built into manholes. The soil pipes from the various closets are ventilated by means of cast-iron pipes carried up the walls to about 3ft. above the eaves of the roofs. All water closets, sinks, and hoppers are of the most modernised type, with patent flushing apparatus, and have been supplied by Messrs. Doulton and Co., of Lambeth, and Messrs. Twyford and Co., of Hanley. The present accommodation provided is: In scarlet-fever ward, 26 beds; typhoid-fever ward, 12 beds; isolation ward, 3 beds. This is allowing 2,000c.ft. of air space for each bed. The accommodation can at any time be increased to 55 or 60 beds. There are also 16 beds provided in the administrative block for the use of the staff. All outside walls are formed of bricks, with Yorkshire stone dressings. All walls, ceilings, coves, &c., have been plastered and finished with patent adamant plaster, supplied by the Patent Adamant Company Limited, of Birmingham. Electric bells have been fitted, also telephones which connect each block of buildings with the officers' quarters, and likewise with the central. The plans for the hospital were prepared and carried out by the staff of the borough engineer (Mr. J. B. McCallum, M.Inst.C.E.) with the medical assistance in the first instance of Dr. S. Barwise, formerly M.O.H. for Blackburn, now county medical officer for Derbyshire; and secondly, as regards all recent medical details, by Dr. J. Wheatley, M.O.H. of the county borough of Blackburn. The chief contractors were: for masonry and brickwork, J. Whittaker; for joinery, Kenyon and Moulding; for plumbing, E. Cunliffe; for painting, John Hargreaves; for plastering, A. Airey; for flagging and slating, R. and T. Seed; all of Blackburn. The total cost, including land and furniture, has been about £21,000.

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In answer to an appeal from Mrs. Humphry Ward, Mr. J. Passmore Edwards has intimated his willingness to provide the necessary buildings for the extension of University Hall Settlement in Somers Town, provided the site be secured. It is proposed to erect a concert room holding 600 persons, library, reading-room, gymnasium, and classrooms.

COMPETITIONS.

Coventry.—The scheme for the erection of more adequate municipal buildings for this rapidly growing city made some further progress on Tuesday, when the city council decided to institute a competition for the buildings, and to appoint Mr. Charles Barry, F.S.A., of Westminster, as assessor, at a fee of 110 guineas. Competitive designs will be invited from architects practising in Coventry, and from a limited number of others to be selected by the committee. A premium of £150 is to be offered for the best design, and £50 each for the designs placed second and third in order of merit by the assessor. The plans and design placed first in order of merit, and in respect of which the premium of £150 is paid, will remain the property of the corporation, all others being returned to their respective authors. An ominous paragraph in the committee's report, which was adopted, recommended: "That competitors be informed that, as the council is uncertain when, if ever, complete municipal buildings will be erected, they are unable to agree at present to employ the author of the design placed first to carry it out; but that they do propose, if no insuperable objection exists, to employ him to carry out such portion of it as can at once, or from time to time, be undertaken, on the usual professional terms, such portions to be so arranged as to be part of the entire design, and consistent with its future complete realisation. That they also agree to pay the author of such design (or his representatives) 1¼ per cent. on the estimated cost of the unexecuted portion of his design, if within seven years from the choice of the same no instructions are given for the completion of the buildings, having due regard to any portions which may then have been executed by the architect."

Darlington.—A special meeting of the Darlington School Board was held at the School Board offices on Tuesday afternoon, to receive and consider the report of Mr. E. R. Robson, architect, London, on the competitive plans for the new schools in Corporation-road, who places the designs in the following order: 1st, "Q. E. D.," by Messrs. Clark and Moscrop, Darlington. 2nd, "1894," by Messrs. Clark and Moscrop, Darlington. 3rd, "Up to Date," by Mr. G. G. Hoskins, Darlington. 4th, "Progress," by Mr. Frank Martin, Darlington. 5th, "Lux," by Messrs. J. P. and H. D. Pritchett. Mr. J. Hall occupied the chair. The chairman said Mr. Robson had gone very carefully into the designs. They proposed, therefore, to employ the author of "Q. E. D." as the architect for the new schools. The motion was then put to the meeting, and carried unanimously.

Monument to Thomas-a-Kempis.—A committee has been formed, having for its object the collection of subscriptions, for the erection of a monument in Holland in honour of the venerable Thomas-à-Kempis, Prebendary of the Order of St. Augustine, and the well-known writer of the "Imitation of Christ." In order to be able to erect the monument, this committee wishes to start a competition. Artists in Holland and abroad are invited to compete. The monument must be erected in the style of the 15th century, and must be of solid stone. It will be placed in the Catholic Church of St. Michael, Zwolle (Holland). The cost must not be more than 10,000fls. (£840). All competitors are required to send in structural drawings, and carefully prepared sketches. The first prize will be 1,000fls. (£84), and the second prize 500fls. (£42). All designs must be received on or before the 15th January, 1895. The committee is composed of eight clergymen, presided over by the Reverend Canon L. B. Mulder, of Wolvega, Holland. The jury consists of two architects, three clergymen, one sculptor, and an art-expert and antiquarian. All wishing to take part in the above competition, can get all directions and requirements by directly applying to Mr. H. B. G. Molkenboer, Vossiusstraat 50, Amsterdam.

Rochdale.—The town council have decided to institute a limited competition, restricted to eight architects, for the Technical Institute and Free Library to be built on the Green, and to give each competitor a sum of 75 guineas for his design, the author of the selected design to be employed to carry out the work on the usual terms. The total cost of the building is limited to £40,000, and Mr. MacVicar Anderson has been appointed the assessor.

Salford.—The Salford School Board, having recently invited competitive designs from five firms of architects practising in Manchester and Salford for the erection of new schools, Marlborough-road, Hightown, have chosen for execution the scheme submitted by Messrs. Woodhouse and Willoughby, FF.R.I.B.A., of 109, King-street, Manchester. Provision is made for 870 scholars, 450 infants on the ground floor, and 420 girls on the first floor. A gymnasium and cookery classroom are also provided. The school is on the central hall principle. The front elevation is intended to be faced with Ruabon stocks and terracotta. The estimated cost is about £9,000.

Sheffield.—At the last meeting of the Sheffield School Board a committee reported that fourteen sets of designs had been sent in by architects practising in the city for a proposed school at Tinsley Park-road. Those by Messrs. Holmes and Watson, of St. James's-row, Sheffield, were selected for execution, and they were appointed architects. A premium of £15 was awarded to Mr. C. J. Innocent, and £10 to Mr. W. J. Hale for the second and third best plans.

Yorks, North Riding, C.C. Offices.—The five architects invited to compete for above—viz., Messrs. Brierley and Demaine, York; Messrs. Clark and Moscrop, Darlington; Messrs. Broderick and Smith, Hull; Mr. C. H. Fowler, F.S.A., Durham; and Mr. C. J. Ferguson, F.S.A., London, have sent in their designs for above. At a committee meeting of the council it was decided to ask Mr. Alfred Waterhouse, R.A., to assist in the selection. Each of the invited architects receives a premium of £25.

CHIPS.

Adjudications in bankruptcy have been made in the cases of John Pearce Flew (trading as Flew and Co.), of Glasbury-road, late Bank-buildings, West Kensington, W., builder and contractor; and George Pluckrose (trading as William Oldrey and Co.), Carlton-bridge, Westbourne-park, W., builder.

A new Congregational church is to be built at Grange-over-Sands, to accommodate about 340. The tender of Mr. Jas. Garden, of Dalton-in-Furness, for the whole work having just been accepted. The total cost will be about £2,250. Mr. E. Howard Dawson, A.R.I.B.A., of Lancaster, is the architect, and has also in course of preparation plans for new churches for the same body at Dalton and at Carnforth.

The local board of health of Merthyr Tydfil have adopted plans by Mr. E. A. Johnson, M.S.A., Abergavenny, for new public offices and a county court.

The new coast electric tramway between Douglas and Laxey was formally opened to the public on Saturday. An inaugural party, among whom were Dr. Hopkinson, of the firm of Mather and Platt, Manchester, consulting electrician to the company, and Mr. F. Saunderson, C.E., the company's engineer, travelled from Douglas to Laxey by special car, the distance of eight miles along the cliffs being covered in a little over half an hour.

The memorial-stone of the Verdin Technical Schools, at Winsford, will be laid to-morrow (Saturday) afternoon. The building is in course of erection from plans by Messrs. Woodhouse and Willoughby, of Manchester.

The foundation-stone of the Memorial Cottage Hospital at Crewe was laid on Saturday. It is being built at a cost of £2,800 on a site near the entrance of the Queen's Park. Mr. C. R. Woodbridge, of Edleston-road, Crewe, is the builder.

The chancel and transepts just added to Plaxtol parish church, Kent, were consecrated by the Archbishop of Canterbury on Wednesday.

The first section of the Mary Cross Deaf and Dumb school for North and North-East Lancashire was opened at Preston by Earl Derby on Saturday. The building at present provides accommodation for 50 children, and has cost £5,200. Messrs James and Green, of Blackburn, are the architects.

New schools added to St. Peter's Church, Stockport, were opened last week by the Bishop of Chester. The cost has been nearly £4,000. The building is of brick with Ruabon terracotta dressings. Messrs. Woodhouse and Willoughby, of Manchester, were the architects, and Messrs. T. and W. Meadows the contractors.

The annual report of Mr. Hainsworth, inspector of buildings under the Leeds Corporation, shows that the 2,017 new buildings approved during the year include 9 villas, 30 semi-detached villas, 586 through houses, and 1,392 back-to-back houses. Among 45 miscellaneous plans were two churches, four chapels, one addition to church, two additions to chapels, five mission-rooms, a synagogue, four schools (two with swimming-baths attached), and seventeen additions to schools.

Building Intelligence.

Caerphilly.—The memorial-stone of a Congregational chapel, replacing on a fresh site one used for many years past, was laid on Wednesday week. The style of the new building is a free treatment of Gothic, and the church is built of local and Pontypridd stone, with dressings of Bath stone. It will accommodate about 520 worshippers, and has a gallery over the entrance and at the two sides. At the rear is a schoolroom to accommodate about 200, and a vestry and classroom are also provided. Behind the pulpit is a large organ-chamber, with provision at the front for the choir. This is reached by a separate stair from the schoolroom entrance. The chapel measures internally 51ft. 6in. in length by 36ft. in breadth, and the schoolroom 20ft. by 36ft. respectively. The architect of the building is Mr. John H. Phillips, St. John's-chambers, Cardiff, and Caerphilly; and the builder is Mr. Thomas Rossiter, of Caerphilly, the amount of contract being £1,500.

Handsworth.—The foundation stone of the enlargement of St. James's Church, Handsworth, was laid last week by the Earl of Dartmouth. A few years ago the recess at the east end was replaced by a chancel. The work of renovating the nave was intrusted to Mr. J. A. Chatwin, of Birmingham, who has prepared designs in the Geometrical style, which will be carried out by Messrs. Barnsley and Sons. It is proposed to remove the galleries and the south aisle, building in place of the latter a large nave, the present chancel and remaining portion of the church constituting a north aisle. A new chancel and south aisle, with chancel arch, over which will be placed an organ-chamber, will also be constructed. At the west end is to be erected a lofty baptistery. The new portion will be externally faced with brick with Hollington stone dressings, the interior having Bath stone dressings and spaces between stuccoed. The roof will have massive timbers, and be boarded. There will also be choir and clergy vestries. In dimensions the new nave will be 38ft. by 22ft., the chancel aisle 20ft. by 15ft., and the south aisle 86ft. by 15ft. The cost is estimated at £8,000.

Newcastle-on-Tyne.—The corner stone of the Masonic Hall for Northumberland was laid in Pilgrim-street, Newcastle, with Masonic pomp last week. The style is Classic. The grand entrance leads direct by "seven" steps to the central lobby, and to a spacious corridor leading to the retiring rooms for both ladies and gentlemen, the whole of the ground floor being devoted to public reception and ball-rooms. The large ball-room is 72ft. long, 36ft. wide, and 25ft. high, and it is arranged, not only for use as a dancing-room, but for large meetings, concerts and lectures, and for Masonic banquets. It will accommodate between 500 and 600 persons for meetings, 150 to 200 couples for dancing, and for 250 diners at banquets. The cost of the hall, exclusive of site, will be from £14,000 to £15,000. The architect is Brother J. Johnson, Queen Victoria-street, E.C., whose designs were selected in competition by the arbitrator, Brother Chas. Barry, P.G.S. of Works, England, and the builders are Messrs. J. and W. Lowrey.

Shedfield, Hants.—The modern parish church of St. John the Baptist, Shedfield, is being completed by the erection of a north aisle and porch. The building is Decorated in style, and has been erected from designs by Mr. John Colston, F.R.I.B.A., of Winchester. The first portion of the parish church, which replaced an ugly brick edifice reared at the beginning of the century, was built in 1875-80, by Messrs. Knight and Son, contractors, of Wickham, at a cost of £5,763. That contract included nave, chancel, south aisle, and transept, and base of south-west tower. In the year 1887 the tower was completed, and now contains a peal of six bells. The north aisle and porch are fast approaching completion; the contract for the work, under the direction of Messrs. Colson and Son, the architects, having been taken by Messrs. Rapley and Son, builders, of Gosport. The carved capitals and sculpture on the first portion of the church was the handiwork at the time of Mr. Harry Hems, of Exeter. Messrs. Harry Hems and Sons have just done the carved work in the new north aisle. The total cost of the church has been close on £2,000.

Staines.—The new church of St. Peter, Staines, built at the cost of Sir E. Clarke, M.P., was consecrated by the Bishop of Marlborough on Saturday last. The architect is Mr. George H. Fellowes Prynne, F.R.I.B.A., of 6, Queen Anne's Gate, Westminster. The tender of Messrs. Goddard and Sons, of Farnham, for £6,000 was accepted, this sum being exclusive of the tower and spire, which have since been given by Sir E. Clarke at an additional cost of about £1,400. The screen has also since been given at a cost of nearly £300. The style chosen in design is a free treatment of Perpendicular in red brick and stone. The nave is of four bays 26ft. by 80ft., having a height of 40ft. to the apex of the waggon roof. The chancel is of the same width and height as the nave. Aisles are thrown out on the north and south sides of the nave. There is a narthex at the west end, with western entrance. The tower, which is placed at the south-west end of the south aisle, is in three stages, and capped with a copper-covered spire. In the lower stage, on the nave-floor level, a baptistery is formed. The upper stages are ornamented externally with panelled work in brick and stone. A southern transept, with separate entrance, forms the nave of a small chapel on the south side of the chancel. On the north side of chancel are clergy and choir vestries, with the organ-chamber. The altar is elevated by nine steps from the nave-floor level. A unique feature of the church is the constructional rood-screen, which is carried right up into the chancel arch, the upper portion of which is enriched with tracery. The central figure and rood are designed to be cut out of the solid stonework of the tracery, and the side-figures placed on corbels formed in the panels of the tracery. All the sculptured work has been done by Mr. J. Taylerson, of Lavender-hill; Mr. W. H. Augur, of Staines, has acted as clerk of works; the stalls and altar (which is decorated in gold and colour) have been carried out from the architect's designs by Messrs. Lonnie and Co., of Camberwell; the iron screen work, chancel gates, and door furniture have been made by Messrs. Singer and Sons, of Frome. The dossal is a very handsome piece of work, made of white and gold tapestry of Tudor pomegranate design, with three orphries of crimson silk plush trimmed with rich crimson and gold silk lace. This, together with the side hangings, forms a most effective decoration of the east wall. They have been supplied by Mr. Alfred Stalman, of 67, Frith-street, Soho, London.

CHIPS.

The inauguration of a new organ took place on Friday at Ayton Parish Church, N.B. The organ has been erected at a cost of about £1,000, and is fitted up with hydraulic engines and patent starters by Messrs. Melvin and Sons, Glasgow.

The ratepayers of St. Pancras have again voted against the proposal to adopt the provision of the Free Libraries Acts in that parish.

An organ, built by Mr. Howles, of Bristol, was opened last (Thursday) night at the Hill-road Congregational Church, Clevedon, Somerset.

Christ Church, Rotherhithe, is to be restored and reseated under the superintendence of Messrs. Newman and Newman, of Tooley-street, London Bridge, S.E.

Under the will of Sir Austen Henry Layard, after the death of Lady Layard, the portrait of his uncle, Benjamin Austen, by Sir Martin Archer Shee, P.R.A., is to be presented to the Incorporated Law Society. All his other pictures (excepting portraits) are then to be offered to the trustees of the National Gallery. The portraits are left to his nephew, Captain Arthur M'Gregor Layard.

The members of the Hampshire Field Club visited the Isle of Wight on Thursday in last week, when they inspected St. Thomas's Church, Newport, rebuilt in 1854, on the site of the one erected in 1180, and afterwards roamed over Merston Manor House, a Jacobean mansion, and the church and castle at Carisbrooke.

A Select Committee of the House of Lords have decided to allow the London, Walthamstow, and Epping Forest Railway Bill to proceed. By this Bill, which has already passed the House of Commons, a new company is incorporated with powers to construct a railway commencing at South-place, Finsbury, passing northward through St. Luke's, Hoxton, Shoreditch, Kingsland, Hackney, and Upper Clapton, and southward through Walthamstow and Leyton to Chapel-end and Chingford, whence it will skirt Epping Forest and terminate at High Beech. Between Upper Clapton and High Beech the railway will form junctions with the Midland and Great Eastern Railway systems.

Correspondence.

ASSISTANT SURVEYORS, WAR OFFICE.

To the Editor of the Building News.

Sir,—After reading the words "so well ventilated" in the opening paragraph of the letter written by "One Who Is In It," in your issue of July 27, my eyes fell on the heading "Sewer Ventilation" in the next column, and I could not help thinking that the theory advanced by Mr. Hurst as to the dangers of indiscriminate stirring up of dirty puddles is very applicable to this discussion concerning the R.E. Department.

Such unpleasant verbal microbes as "dirty work," "wishing to pose," "act for their individual gain," "disagreeable military duties," &c.—granting for the moment that they are all true, and well deserved—would be much better sealed up; or, if they must find vent, filtered through metaphorical cotton wool.

It is pretty certain that the last discussion did more harm than good to us, because of the numbers of these microbes which found vent then. I would venture to suggest that more moderate language should be employed if this correspondence is to continue. Those of us who are most dissatisfied, who see no good at all in the existing arrangements, must allow that they cannot hope, by a few letters in this or any other paper, to upset the whole department—even if that were desirable. Pulling down the Temple of Dagon required the muscles of a Samson, and was his last resort when nothing was left to be hoped for but revenge—a pass to which I should be sorry to think we have come.

I think the calculations as to promotion are erroneously pessimistic. I admit that if every one of the present staff survives in health and strength and remains in the department until he is 65, the figures are right. I have in my possession a diagram, corrected to date, which shows all the life-history of each man, and it is not a pleasant object of study for the assistant who happens to have his name in the second column of the Army List. But I find that of 62 names in the list for 1879, only 14 will be left at the end of this year, and 20 names will have been struck out of the list printed privately in 1889. This seems fairly strong evidence that retirements will average between three or four per annum. I give this suggestion for what it is worth. Some of the retirements and deaths will, of course, be among the assistants themselves.

I wish, however, principally to notice the argument stated in these words: "They hide the workers and blind the eyes of the public."

First, then, I have heard the same language used in private offices. All civilian architects and engineers are not superior in every way to their head draughtsman, and Tom Pinch is not unknown in Great George-street or Bloomsbury. The leader in last week's Building News affords some interesting reading in this connection.

Second, and now I feel I am going to wave the red rag in earnest. *An ornamental head to the department is a necessity.* Is there any one in the R.E.C.S. so extremely—what shall I say?—trustful (?) as to think that when the Temple of Dagon has collapsed with a mighty crash, and the dust has cleared away, we shall be discovered unhurt, sitting on the top of the ruins, the chief surveyor rechristened "Chief, Army Works Department," at the present I.G.F.'s salary, and all the rest of us smilingly perusing our appointments to lucrative posts under him? No, the present staff of Tom Pinches would remain (*perhaps*) in the same position, the only change would be that a new set of superiors would be put over them, civilians this time. "Iniquitous!" you say. Well, perhaps I agree with you; but are we singular in this respect? I fancy I have heard Radical politicians attacking the existence of the Queen and Royal family on precisely the same grounds. There we have Pecksniff, a host of Pecksniffs, *in excelsis*. Show me any public department without its ornamental head; I will go the length of saying its *useless*, ornamental head, and then we can begin to clamour for an entirely middle-class works department, in which every man shall be estimated at, and paid according to, his true worth. In the present state of society in this country, the head officials of the Army Works Department must be drawn from the same class as the heads of all other departments, and we practical men cannot evade that fact, though some of us appear to forget it occasionally. Some of us have an idea that the importation of the German system would end our woes. It is doubtful. We are not in possession of any details as to who the German civilian architects are, and how they are treated. Newspaper reports as to the behaviour of German army officers towards civilians are not encouraging.

I could write much more on this subject, but I shall probably have to supplement this later on. In case, therefore, I should be misunderstood to mean that I have no fault to find with the existing status of the R.E.C.S., I will now give a short list of my principal grievances.

1. The premium on celibacy. In the case of our married men, their wives' and families' passages should be paid, and a fair allowance of luggage made for each person, stating a maximum, if necessary.

2. The vacancies in the higher ranks should be filled up.

3. Travelling allowances are meagre, and surveyors are forced to use second-rate hotels, or supplement the rate out of their own pocket.

4. Married men to have quarters. A constant source of loss is having to leave a place with a house on one's hands.

The above are financial. The following may be termed administrative :—

5. The placing of the staff to be more in the hands of the chief surveyor than it now is apparently. All assistants to have at least six months with others senior to them, before being stationed alone.

6. District surveyor to have a better-defined position—i.e., as regards the public. His name to appear, as a matter of course, in all directories, lists of staff, &c., in a way to show that he is an important wheel in the machinery. We should not then have regimental officers asking, "Who, or what, is the surveyor?"

7. Abolish the term assistant surveyor, and alter the R.E. regulations defining his duties.

8. I think we could all do without the M.F.W. A chapter might be written on him; but I refrain.

I must stop—not that I have exhausted the subject, or even the list of grievances; but this letter is, I am afraid, too long. The social question I should like to take up at another time, if opportunity offers.

This I must say, however: that if anyone is deterred from entering the department by the letters which have been written, *will it not be the best men—the men we want?* Have your correspondents considered this?—I am, &c.,

Balbus.

Sir,—Will you allow me the use of your columns to endorse all that has been written by "One Who Was In It" in his letter of warning to intending candidates for appointment as above. Intending candidates should not lose sight of the following facts :—

That as surveyors of the civil staff, Royal Engineers, they are "bossed" by military officers who have no professional knowledge or experience.

They can never, as the conditions of the Service now are, become the head of their department, but are subject at any age, and after any length of service, to be put under the direction of an officer, greatly their junior in age and service, who, the authorities say, must always rank senior to civilians on account of his military commission, even though that officer be a newly-joined subaltern or recently promoted non-commissioned officer.

The prospect of earning £500 per annum is so very remote that it should be left out of consideration altogether. Candidates now joining must expect to be about 25 years as assistant surveyors—that is to say, that for 15 years or so they must remain at the maximum of £280 per annum.

That the life of a surveyor R.E. is one of utter isolation and social ostracism, due to the fact that the officers with whom they serve either thoughtlessly or wilfully ignore them, outside their official duties, and by their behaviour create the impression in minds of others that they are simply civil subordinates of the Department, and the regulations as to status, &c., are so very vaguely defined as to support them in this view. The relative rank which is assigned to surveyors is lower than that of any other Army Department, and as the status of officers of the Army is judged by the rank individuals can rise to, they suffer accordingly.

All work turned out by the surveyor is appropriated by the Engineer officer as his own—the surveyor gets no credit for the work he performs, nor is he officially recognised in connection therewith.

In proof of this, take the type plans and specifications issued from the War Office, which have the signatures of engineer officers prominently on them; the signatures of the civil surveyors and draughtsmen who prepared them never appear. In the advertisements for War Department contracts in the columns of professional and other papers, the Colonel R.E. is conspicuously to the fore, but no mention is made of the R.E. surveyor, who supplies the plans and affords the necessary information to the contractor.

In conclusion, let me advise intending candidates only to seek appointments in the R.E. department as a last resource; the Office of Works, the Admiralty, the London County Council, and other public bodies offer appointments which, although they may not appear so lucrative at first, are far worthier the consideration of really good professional men than the R.E.D. Until there has been a Royal Commission of inquiry and the conditions of service entirely altered, the War Department should be left severely alone; the pay is not what it is represented, as substantial deductions must be made for moves, and the service is irritating, destructive of all zeal and energy, and the social ostracism complete. —I am, &c.,

Truth Will Out.

WINWICK ASYLUM.

Sir,—We note that you have made a reference in your paper to our having been appointed architects for the new Lancashire County Asylum at Winwick. Mr. W. S. Skinner, of this city, is joint architect with us in this matter, and his name should have been coupled with ours.—We are, &c.,

Henry Crisp and Oatley.

Scottish Provident Chambers,
27, Clare-street, Bristol, July 31.

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Intercommunication.

REPLIES.

[11183.]—**Levelling with Theodolite.**—In reply to "Theo," a level is better for levelling than a theodolite, other things being equal, on account, for one reason, of its being lighter. Weight is not an unimportant matter. The level has to be carried by the surveyor from position to position all day long, and one's shoulder is apt to become sore with the impact of the level being placed thereon when moving and carrying to the next position, so that the lighter the instrument is, consistent with stability and efficiency, the better. Another consideration in favour of the level is that, weight and size for weight and size, the telescope is longer and larger than in the theodolite. Its greater length permits of the true level being more accurately and more quickly obtained, and its being larger in diameter admits of more light—an important advantage in the dusk or in cloudy weather. Further, in the level the adjustment screws will usually be found with heads of larger diameter than those of a theodolite, and these are more readily acted upon and turned. In severe weather the fingers become somewhat benumbed with the cold, and it is troublesome to work with small screws. These are the chief advantages which the level possesses for levelling over the theodolite. The latter instrument, however, can be used for such work as levelling, and theoretically is as perfect; but as a matter of practice, it is open to the objections above indicated.—Charles F. Crapp, Birmingham.

[11184.]—**Heraldic Supporters.**—I have been in communication with Sir Albert W. Wood, College of Arms, and would gladly send "L." and "Y." his reply if they think fit to communicate with me.—Edward Griffith, 30, Grosvenor-street, Chester.

[11186.]—**Sewage Filtration.**—In answer to "M.," particulars of the system of filtration of sewage through polarite, and its treatment with ferozone can be obtained from the International Water and Sewage Purification Company, Limited, 7, Victoria-street, London, S.W., and in Mr. W. Santo Crimp's "Sewage Disposal Works" (Charles Griffin and Co., London).—J. T. Rea.

[11186.]—**Sewage Filtration.**—Full particulars of the Ferozone and Polarite system of treating sewage can be obtained of the International Water and Sewage Purification Company, Limited, 7, Victoria-street, Westminster.—Secretary.

[11187.]—**Bridge.**—It seems to me that the question of your correspondent was very well and fully answered in the last number of the Building News, in No. V. of your valuable and ably-written series of articles now in progress, under the title of "Steel Bridges."—Girder.

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The parish church in Gunton Park, near Cromer, was reopened on Wednesday by the Bishop of Norwich after extensive restoration.

The Lords of the Admiralty have appointed a small committee to inquire into the proposed erection of extensive naval barracks at Chatham. The scheme includes the conversion of the old convict prison into barrack buildings. The project is estimated to cost over £300,000.

Legal.

RATABLE OCCUPATION.

WHETHER or not the occupiers of certain premises are directly ratable to the poor, is often a matter of much importance in deciding questions affecting their value or suitability for various purposes. The broad principle is of course that the firm having the beneficial occupation of the premises affected is the party to be rated, and not their owner or other person receiving the rent. There are, however, various cases in which occupiers, who would otherwise be ratable, escape that direct liability because of the fact that their occupation is at all times subject to the control of the owner. This is why lodgers, for instance, are not ratable or responsible directly for the rates, although they have, of course, a beneficial occupation. But if, instead of being a lodger, a man becomes a sub-tenant of a part of a house over which the owner or landlord has no control, then his liability to be rated in respect of the premises he occupies at once returns. In a recent case affecting part of the Liverpool Docks, the question was whether the Rochdale Canal Company could be directly rated to the relief of the poor (*Times*, 17 July) on the ground that they had the beneficial occupation of a certain dock as tenants of the Mersey Docks and Harbour Board.

It appeared that under their agreement of tenancy the Canal Company held a certain berth with quay space, cranes, &c., of the board at an agreed rental, and were under various covenants as to repair, while the landlord had the usual powers of re-entry. It was, in short, a regular letting of so much land with water and appliances for use, and as such the premises were clearly ratable to the poor. But the agreement contained a clause under which the Mersey Board had free access to, and complete control over, the portion so sub-let to the Canal Company, and on this ground it was argued that the occupiers of these premises were not directly ratable. The rate had, as a matter of fact, been made and enforced; but the question of law was raised by special case, and it had been decided in favour of the Rochdale Canal Company by a Divisional Court; a judgment now affirmed by the Court of Appeal. The Lords Justices explained that the premises were, of course, ratable to the poor, and they were not discussing the question of any liability for the payment of the rates as between the Canal Company and the Mersey Board. They simply decided that the Canal Company, under the agreement mentioned, were not such occupiers of the premises as made them liable to be rated directly, because they had no such exclusive occupation as would render them thus responsible; being in fact more like lodgers than tenants, so the appeal was dismissed with costs, and the rates must be collected through the Mersey Board, as the occupiers for this purpose.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Architect.—Alterations.—Plans.—Payment.—You are entitled to 3 per cent. on estimate for work abandoned, and to the cost of quantities. The subsequent design, &c., is a separate matter, for which about five guineas seems fair. Probably £21 would be a reasonable settlement for the whole bill.

R. W.—Road.—Building Line.—If these houses are built under a lease or agreement, there should have been a clause as to the building line, for breach of which an injunction could be obtained. If not, the adjoining owners could object; but action by the local board would probably be more effectual, and they should be called upon to take steps to prevent this encroachment.

C. P.—Ancient Light.—New Windows.—Either B. or C. can put up a hoarding to block the new lights which A. has opened, and so prevent their becoming ancient lights, unless A. will enter into an agreement and pay a nominal rent. There is no right of action against A. for opening these lights, although they overlook B.'s ground.

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Mr. F. J. Williamson, of Esher, has been commissioned to execute a colossal statue of the Queen, to be erected at Rangoon, Burma.

The Works Committee of the London School Board show in their annual report that during the past year 14 new schools were built, to hold 13,669 children, and that the cost of them amounted to £377,278. A number of existing schools were enlarged.

LEGAL INTELLIGENCE.

The Acquisition of Tramways by Local Authorities.—Judgment was given in the House of Lords, on Monday, by the Lord Chanceller and Lords Watson, Shand, and Ashbourne in the appeals raising the question of the liability of county councils when they acquire tramways under their power of purchase at the end of a period of 21 years after construction to pay for goodwill. There were two cases down for decision in which this point was involved—that of the "Edinburgh Street Tramways Company v. the Town Council of Edinburgh" and that of the "London Street Tramways Company v. the London County Council." In each case the referee appointed to determine the price that ought to be paid for the tramway undertaking which was about to be bought up did so by considering what sum it would cost to establish such a system of tramways if it did not already exist, and then deducting from that a certain amount in respect of depreciation. The companies, however, contended that the proper price ought to be arrived at by capitalising the rental value of their undertakings. The first division of the Scottish Court of Session dismissed this contention, and their judgment was now affirmed by a majority. The Queen's Bench Division, on the other hand, allowed the contention; but the order made for the award of the referee to be reconsidered was discharged some months ago by the Court of Appeal, whose decision was declared by a majority, as in the other case, to be in accordance with the statute, Lord Ashbourne alone dissenting.

In re James Smith.—An adjourned meeting for the examination of the debtor was held before Mr. Registrar Linklater on Wednesday. The debtor had traded as a potter in Lime-street, City, and at the Canal Potteries, Old Kent-road, under the style of "Thomas Smith and Co." The accounts filed showed gross liabilities £92,499, of which £52,310 were expected to rank, with assets estimated to produce £28,858. Debtor ascribed his insolvency to want of capital from the beginning of his trading, necessitating borrowing money at interest; but the Official Receiver, in his observations, said that it appeared to be mainly due to losses and liabilities on accommodation bills, loss on trading, and to the drawings for household and personal expenditure. At a former sitting, the debtor admitted that his accommodation-bill transactions during the twenty-five months preceding the date of the receiving order had amounted to no less a sum than £369,042. These transactions were carried on in connection with about twenty persons, who were mostly his customers, and, for the purpose of facilitating the discount of the bills, he opened five or six different banking accounts.—The examination was concluded.

CHIPS.

Sir Frederic Leighton was present at the reopening of the South London Fine Art Gallery on Wednesday evening, when the large cartoon, by F. Madox Brown, of the body of Harold brought to William the Conqueror, was on view for the first time since it was exhibited in Westminster Hall 50 years ago. The gallery will be open daily, 3 to 5 and 7 to 9.30 p.m.

The first walk of the archæological section of the Cardiff Naturalists' Society was held on Friday last, when the members visited the farmhouse at Llancaiach Vawr, the rectangular Roman camp at Gelligaer, and the parish church, which still contains the parish stocks in the tower chamber. The members returned to Cardiff by train from Hengoed.

The foundation-stone of the Central Board School at Millbrook, near Southampton, was laid last week. The building will be erected from designs by Mr. A. F. Gutteridge, of Portland-place, Southampton; the contract has been taken at £10,250 by Mr. H. Cawte, of Shirley. The school will accommodate 1,000 children in three departments.

A new organ, erected at a cost of £200, has been placed in the Congregational Chapel, Melksham. The inauguration took place on Wednesday week. The instrument has been built by Messrs. Samuel and Twyford, Dalston.

Fire broke out at Schofield's Timber Works, Oldham, on Sunday. The flames were subdued; but at night a fresh outbreak occurred, which was, however, extinguished. The damage amounts to several thousand pounds.

The Bishop of Winchester opened and dedicated on Friday a new chapel, which has been erected at Godalming at the expense of the Countess of Meath, for the use of the inmates of the Meath Home of Comfort for Epileptics—a home opened in 1892.

The city council of Birmingham decided, on Tuesday, after a discussion, to grant to Mr. J. W. Gray, the engineer of the water department, a retiring allowance of £600 a year.

Our Office Table.

An important and regrettable modification of Part V. of the London Streets and Buildings Bill was made by the House of Commons Select Committee, and has just been confirmed by the Select Committee of the House of Lords, now engaged in the consideration of the Bill. The original draft of section 55 in this Part V. of the Bill, had provided that in all future dwelling-houses an open space shall be left in the rear of each house defined by an angle of 45°, drawn from the ceiling of the ground floor. Under pressure from property owners, the House of Commons altered this clause so as to require an angle equal to 63·20° only, instead of 45°. Even this notable minimum of the clear space to be provided behind houses—one that will doubtless be treated as a maximum by grasping owners desirous of creating ground-rents, and their tools, the speculative builders—was opposed by the Associated Owners of Property; but after hearing evidence, the committee decided in favour of the principle of limiting open spaces by an angle of 63·20° "where practicable."

The preparations for the reception of the British Association at Oxford on Wednesday next, the 8th inst., are now fully advanced, and it is expected that there will be some 1,800 visitors in the University city during the coming week. The inaugural meeting will take place in the Sheldonian Theatre on Wednesday evening, when the Marquis of Salisbury will deliver his opening address. The second lecture, on Friday, will be delivered by Dr. J. W. Gregory, of the British Museum of Natural History, his topic being "Experiences and Prospects of African Exploration." The third evening lecture will be given on Monday week, the 13th inst., by Professor Shields Nicholson, of the University of Edinburgh, on "Historical Progress and Ideal Socialism." On the morning of Thursday next, the 9th inst., the presidents of the various sections will give their opening addresses. There are nine sections: (*a*) Mathematical and Physical Science, presided over by Professor A. W. Rücker; (*b*) Chemistry and Mineralogy, presided over by Professor H. B. Dixon; (*c*) Geology, presided over by Dr. Fletcher, F.R.S.; (*d*) Biology, presided over by Professor J. Bayley Balfour, of the Edinburgh University; (*e*) Geography, presided over by Captain W. J. L. Wharton; (*f*) Economic Science and Statistics, presided over by Professor C. F. Bastable; (*g*) Mechanical Science, presided over by A. B. W. Kennedy; (*h*) Anthropology, presided over by Sir W. H. Flower; and (*i*) Physiology, presided over by Professor E. A. Schafer.

Mr. A. Fowell Buxton has presented to the National Gallery a "Portrait of a Lady," by Jan A. Van Ravesteijn, a Dutch artist (born in 1572 and died in 1657) previously unrepresented in the collection. The picture, which has been numbered 1423, and hung on the second screen in Room XII., that containing the Peel collection, measures 19in. wide by 26in. high. The portrait is a three-quarter length of an elderly woman, with dark blue eyes; she looks to the left, and she wears a close-fitting black bonnet and dress, silver and pearl earrings, and a deep white cape.

The ultimate extension of the British Musenm by the gradual absorption, as the leases now held from the Duke of Bedford fall in, of the 69 houses and their gardens now abutting on the rear and sides of that institution in Montague-street, Charlotte-street, and Montague-place, may now be looked upon as assured, as the Bill for the acquisition of the land has successfully passed through the House of Commons, and was read a second time without opposition in the House of Lords on Tuesday night. The Museum will eventually cover the entire parallelogram inclosed by Great Russell-street and the three thoroughfares already named. About five acres will be added to the immense area covered by the Museum, and the sum to be paid by the Government for the reversion is £200,000.

To the north of Jerusalem, not far from the Church of St. Stephens, the owner of some ground has, in digging the foundations of a house, discovered a very beautiful mosaic pavement. Mr. Bliss, who has recently commenced explorations for the Palestine Fund, describes it as "a splendid piece of work, measuring about 21ft. by 13ft. . . . Within a beautiful border. . . . is a vine with branches on which hang clusters of grapes, and among the branches are numerous birds—peacocks, ducks, storks, an eagle, a partridge, a parrot in a cage, &c. It is almost perfectly preserved, and near the eastern end is an Armenian inscription to the effect that the place was in memory of all those Armenians whose names the Lord knows." Underneath is a cavern in which were found bones, lamps, and glass vases.

In the early morning of Sunday last the fine old church tower of St. Mary, Norton-sub-Hamdon, was struck by lightning. The whole of the inside, consisting of a peal of five bells, the clock, the chimes, with all the wood and lead work, were in a short time destroyed by fire. This church and tower are well known to those who have taken much interest in Somerset churches. It is almost unique as a village church in being of one style from tower to chancel, with the exception of the porch, which is about a hundred years earlier in date. The tower is nearly 100ft. high, and is a conspicuous object in the landscape, while the melody of the bells was familiar for some miles around. As a matter of course the walls of the building are of stone from the neighbouring quarries on the hill. These are all well built, and for all practical purposes are as sound as when the old builders laid down their tools. The inhabitants of the parish, as the custodians of the building, are most anxious that it shall be handed down to succeeding ages in as good a state as possible. The parishioners appeal earnestly, not only to their neighbours, but to all who love the old Somerset churches, for generous assistance, that they may be able to make good the fearful damage that has been done as far as possible, and so hand down the beautiful building a prized and valued possession to future generations. The Rev. A. G. Edwards is rector. Messrs. C. Trask and F. N. Quantock Shuldham are the churchwardens of the parish.

The annual report of the Department of Science and Art just issued shows a great advance in the number of schools and pupils under scientific instruction during the past year. The pupils in the science schools are not far short of 200,000, compared with less than half that number seven years ago. More than 110,000 of these students were examined in the year, and of these above half were successful in passing in one or more subjects. In the Art Division it is stated that more than two million scholars, in nearly 20,000 elementary schools, are now taught drawing, and are being examined, under the regulations of the department. Throughout the reports generally there are indications that the students in too many cases neglect to follow the rules and conditions under which they are required to work.

The general committee of the Cardiff Fine Art, Industrial, and Maritime Exhibition adopted, at a meeting on Monday, plans and suggestions for the construction of the proposed exhibition buildings, prepared by their architect, Mr. Edwin Seward, R.C.A., of Cardiff. There will be four chief ranges of buildings, forming courts (north and south, east and west), inclosing a central open court of 184ft. by 162ft. Around this there will be a promenade and covered-way gallery, space being thus afforded by which from 3,000 to 4,000 persons could witness the spectacles in the open court. In each case the buildings are set out to contain a central nave of 50ft. span, with side aisles of 15ft. width. The central portion of each court will also be provided with a gallery on the first floor. In the case of the fine art-department, which will form the central entrance front, brick will be employed; but the remainder of the buildings will be in corrugated iron. Italian, Dutch, and English gardens will be laid out on the south side, upon which opens the building devoted to the horticultural department. Here will also be displayed façades representing some of the features of Old Cardiff. These may be combined with a representation of the water-gate which stood near the rear of the Cardiff Town Hall, affording means of access to the Feeder, which will be utilised for water pageants. There will be an electric railway on the western side 2,500ft. long, and within this a switchback of 1,200ft. In the concert hall, space will be provided for audiences of about 2,000, and 200 in the orchestra; but the space can be extended to provide for 4,500 or 5,000 people. It was reported that the guarantee fund had reached £7,482. Mr. E. Seward was formally appointed as architect for the exhibition; his plans and estimate were accepted *nem. dis.*, and it was agreed that the works shall be carried out by contract.

The Court of the Carpenters' Company, in their report to the Livery, state that they have accomplished during the year what places them in the front rank of the City Guilds, especially in the promotion of technical education. The premises acquired by the Company in Great Tichfield-street, formerly the West London School of Art, are now called the Carpenters' Company Trades Training School, and the companies who have classes there for the teaching of their different trades are the Tylers and Bricklayers, Wheelwrights, Painter Stainers, Plasterers, and Masons. The Institute of British Wood Carvers occupy one end of the building. The number of students in all the classes since the commencement has been 140. The Company's educational work at Stratford offers every encouragement for increased effort, the various exhibitions having been of a very satisfactory character.

◆

The West Ham Board of Guardians have adopted plans prepared by their architect, Mr. Sturdy, for a proposed workhouse infirmary at Forest House. The estimated cost is £105,182.

On Tuesday week the Bishop of St. David performed the ceremony of reopening Penrice Church, which for the last twelve months has been undergoing restoration, at the cost of £1,000. The work has been carried out by Messrs. Beynon and Gibbs, of Gower, from the designs of Messrs. Waller and Son, of Gloucester.

Several additions have been made quite lately to the chapel of Stonyhurst College, notably a panelled and carved oak dado, 10ft. high, made by Messrs. Robson and Sons, of Newcastle, and an alabaster altar by Messrs. Boulton and Sons, of Cheltenham. Mr. Hedley, of Newcastle, fixed, in time for the centenary, a carved oak reredos; the panels are filled by paintings by Messrs. Bacon Bros., of London. Messrs. Dunn and Hansom, of Newcastle, have been architects for all the work, and everything has been carried out from their designs and under their superintendence.

Trade News.

WAGES MOVEMENTS.

South Shields.—The Master Builders' Association of South Shields has conceded an advance of ½d. per hour for joiners and machinists, and this new rule came into operation on Wednesday. The North Shields builders have accepted a like advance, and the threatened dispute has thus been averted.

CHIPS.

A new church is about to be built for the parish of St. Lawrance, Barton, adjoining the present church, which will, on the completion of the new edifice, be pulled down. The monuments will be transferred to the new building, the stone from the old church will be utilised for boundary walls to the churchyard, and the woodwork for panelling in the new church.

The little parish church of St. Peter's at Hever, Kent, has recently undergone a thorough and much-needed restoration. The work has been carried out by Mr. W. H. Bourne, of Woodchurch, Kent, under the superintendence of Mr. R. Philip Day, the diocesan architect. The cost has been between £1,300 and £1,400.

The dedication of the twelve clerestory windows of the parish church at Kidderminster, which have been filled with stained glass as a memorial of the late Bishop Claughton, took place on Friday. The windows are illustrative of the Benedicite, and and they have been designed and executed by Messrs. Hardman, Powell, and Co., Birmingham.

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120, BUNHILL ROW, LONDON, E.C.
The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Ashbourne, Derbyshire.—For the erection of new chapel. &c., in Station-street. Mr. Hy. Harper, Market-place, Nottingham, architect. Quantities by the architect:—

Vickers, H., Nottingham £1,465 0 0
[The lowest of eight tenders.]

14 GOLD MEDALS. HIGHEST AWARD, CHICAGO, 1893. 14 GOLD MEDALS.
Ebner's Patent Hydrofuge Wood Block Floors.
Telegraphic Address: EBNERS, LONDON.
Code: UNICODE.
INSPECTION OF SHOW ROOMS INVITED.

ANY WOOD OR DESIGN USED.
JOS. F. EBNER'S PARQUET FLOORS, ANY THICKNESS OR DESIGN.
JOS. F. EBNER'S ROMAN AND VENETIAN MARBLE AND GLASS MOSAIC PAVING.
JOS. F. EBNER'S IMPROVED MARBLE TERRAZZO PAVING. ARTISTIC, CHEAP, AND DURABLE.
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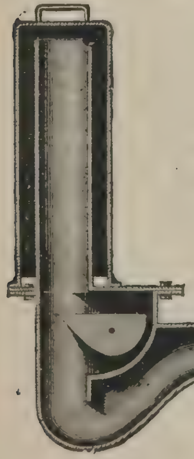

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FOR FLUSHING SEWERS AND DRAINS.
Beyond all comparison the Most Perfect Syphon made, and the only one which will ALWAYS FLUSH when tank or chamber is full. On an entirely new principle. Neither small pipes nor air-holes in syphon dome.
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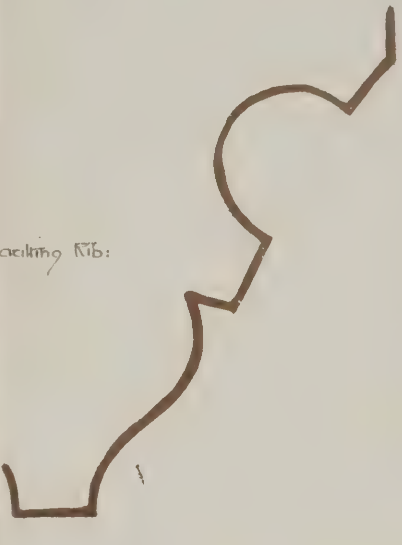
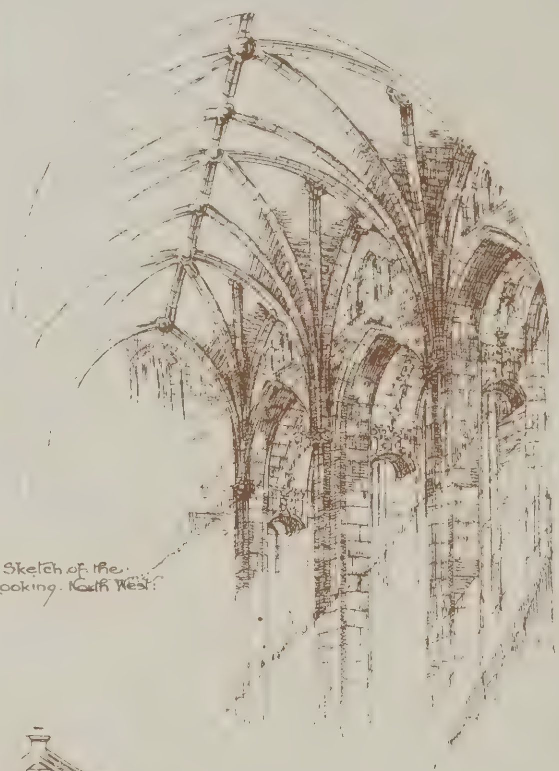
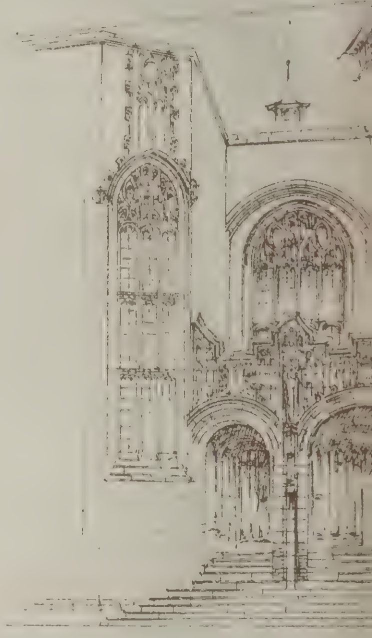
Vaulting Rib:



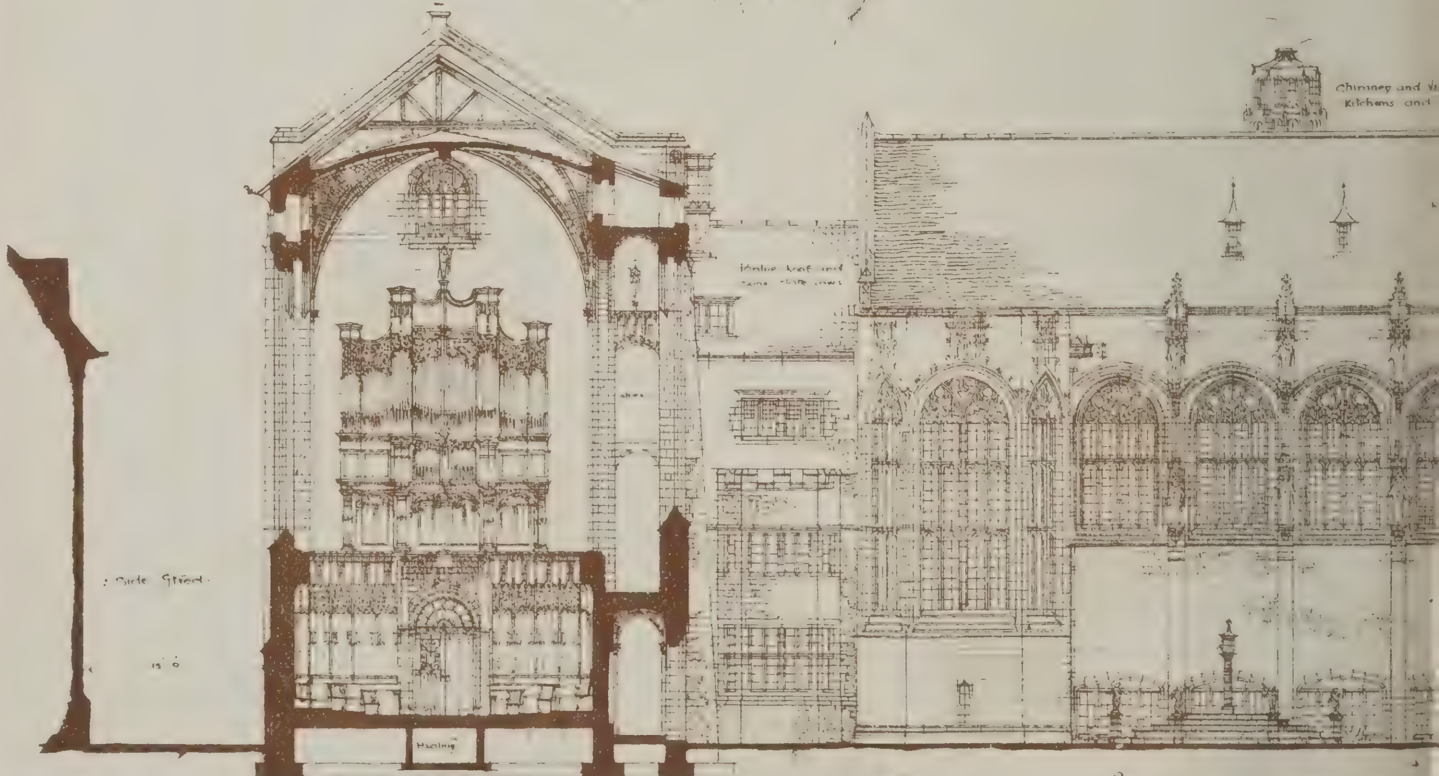
detail of Vaulting Ribs in Chapel:



Interior Sketch of the Chapel Looking North West:



Sketch Showing Entrance



Masters House (Study Window)

Section thro' the Chapel looking West:

† Elevation of Dining Hal

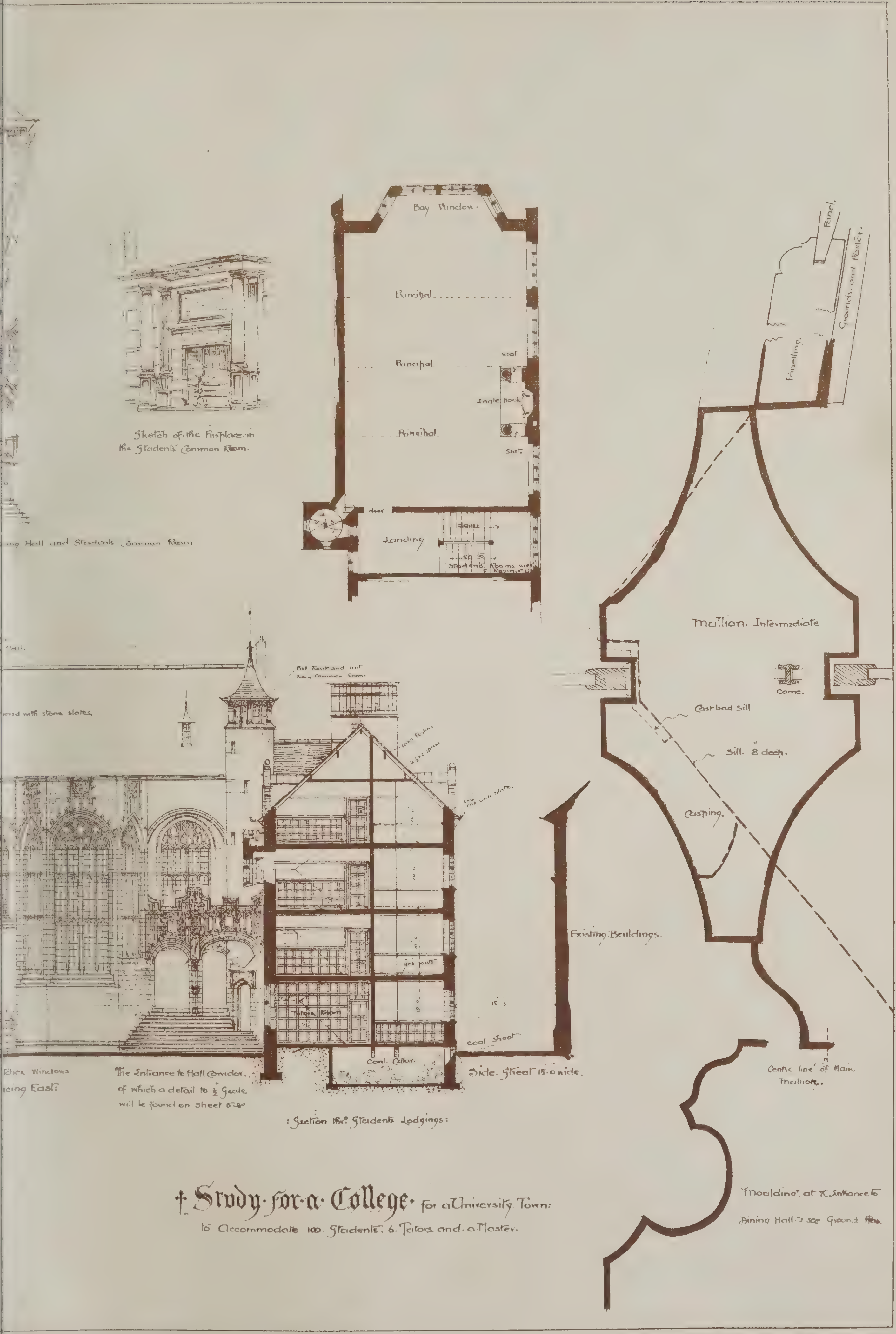
Notes. The Chapel stalls to be of Dantzic Oak throughout fumigated and dull polished. The floors of stalls of oak blocks.

Sketch of Gas Bracket to Student and Tutors Rooms. (in Bronze.)

: Sketch of Sundial and Ste
Centre of Great Quadrangle
(Lead Figures on Pedestals).

RIBA SOANE MEDALLION AND A

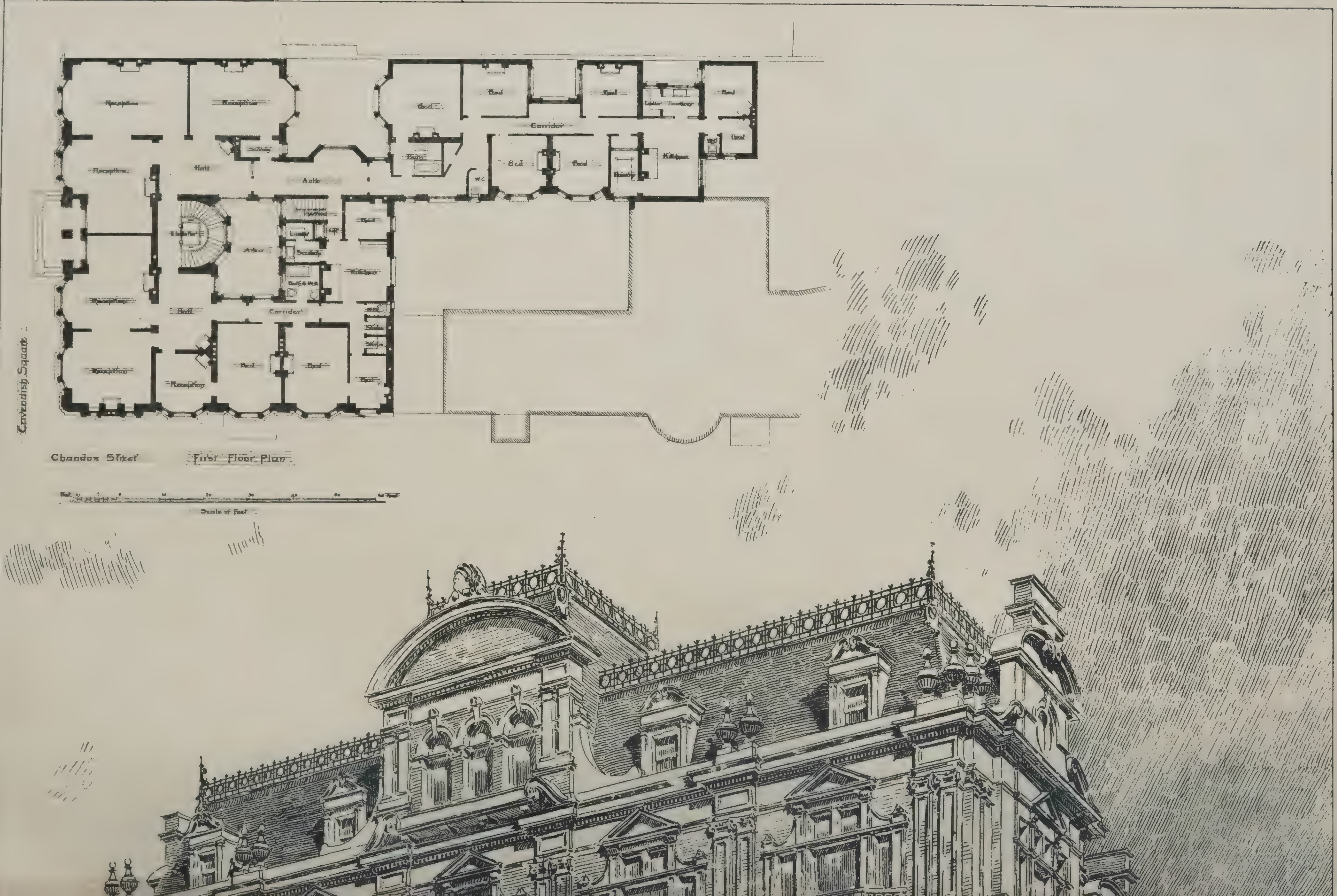
UG 3..1894

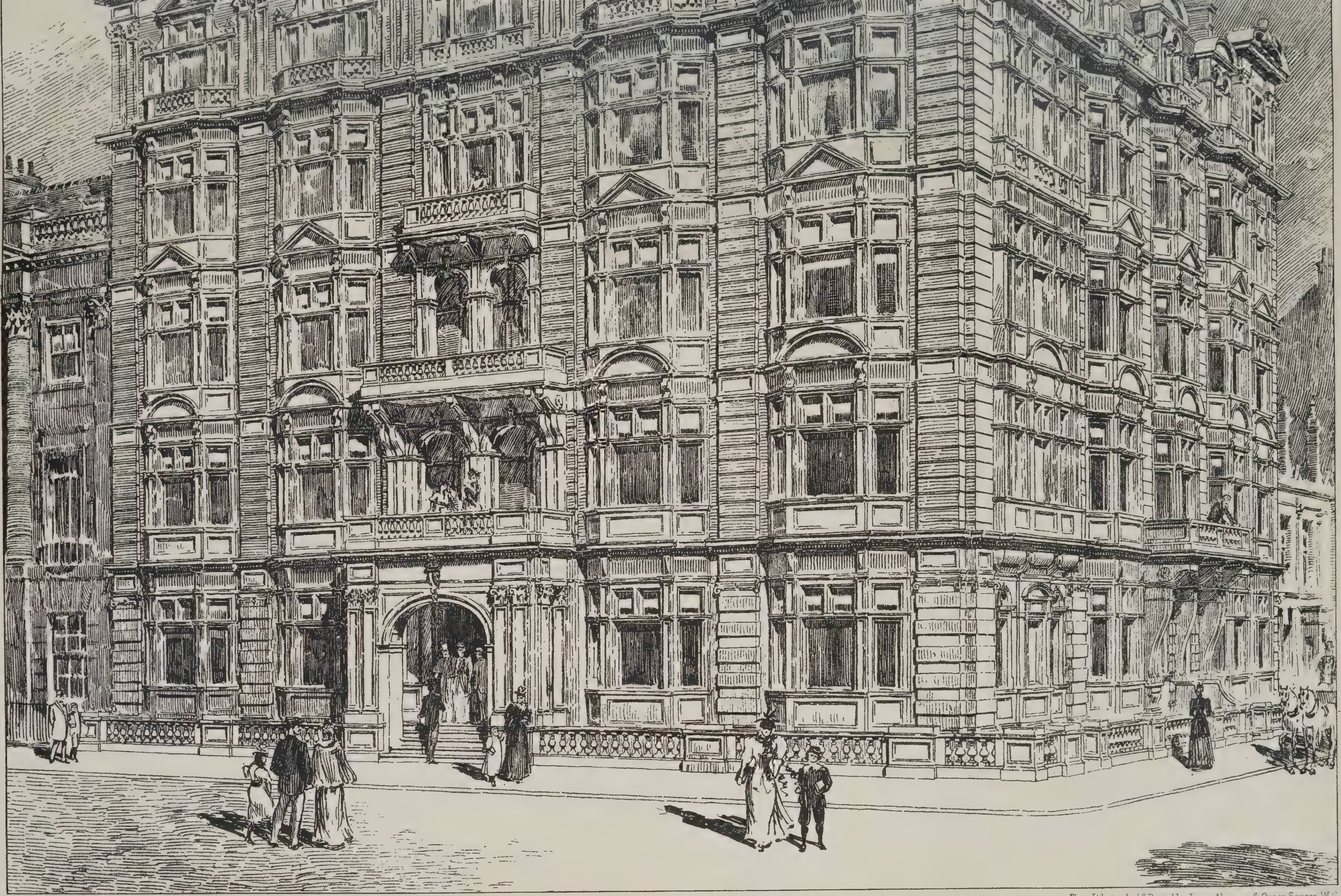

Sketch of the Fireplace in the Students' Common Room.
ing Hall and Students' Common Room
Bay Window.
Principal
Principal
Principal
Seat
Ingle Nook
Seat
door
Landing
down
up to Students' Rooms over
Hall.
ered with stone slates.
Bell Turret and vent from Common Room
10×4 Purlins
4"×2" Spars
wall plate.
Tutor's Room
9×2 joists
15' 3"
coal shoot
Coal Cellar.
Existing Buildings.
tchen Windows
acing East.
The Entrance to Hall Corridor, of which a detail to ½" Scale will be found on Sheet 5 &c.
Side Street 15'0" wide.
Section thro' Students' Lodgings:
Panel.
Grounds and Plaster.
Panelling.
Mullion. Intermediate
Came.
Cast lead Sill
Sill. 8" deep.
Cusping.
Centre line of Main Mullion.
Moulding at Entrance to Dining Hall: see Ground Plan

† Study for a College for a University Town:

to Accommodate 100. Students. 6. Tutors and a Master.

PRIZE DESIGN BY JAS HUMPHREYS TONGE.


Reception
Reception
Reception
Reception
Reception
Reception
Hall
Ante
Hall
Ante
Corridor
Bed
Bed
Bed
Bed
Bed
Bed
Bed
Bed
Bed
Bed
Bath
WC
Corridor
Larder
Scullery
Kitchen
Pantry
W.C.
Lift
Scullery
Bath & W.C.
Kitchen
Stores
Stores
Cavendish Square
Chandos Street
First Floor Plan
Scale of Feet



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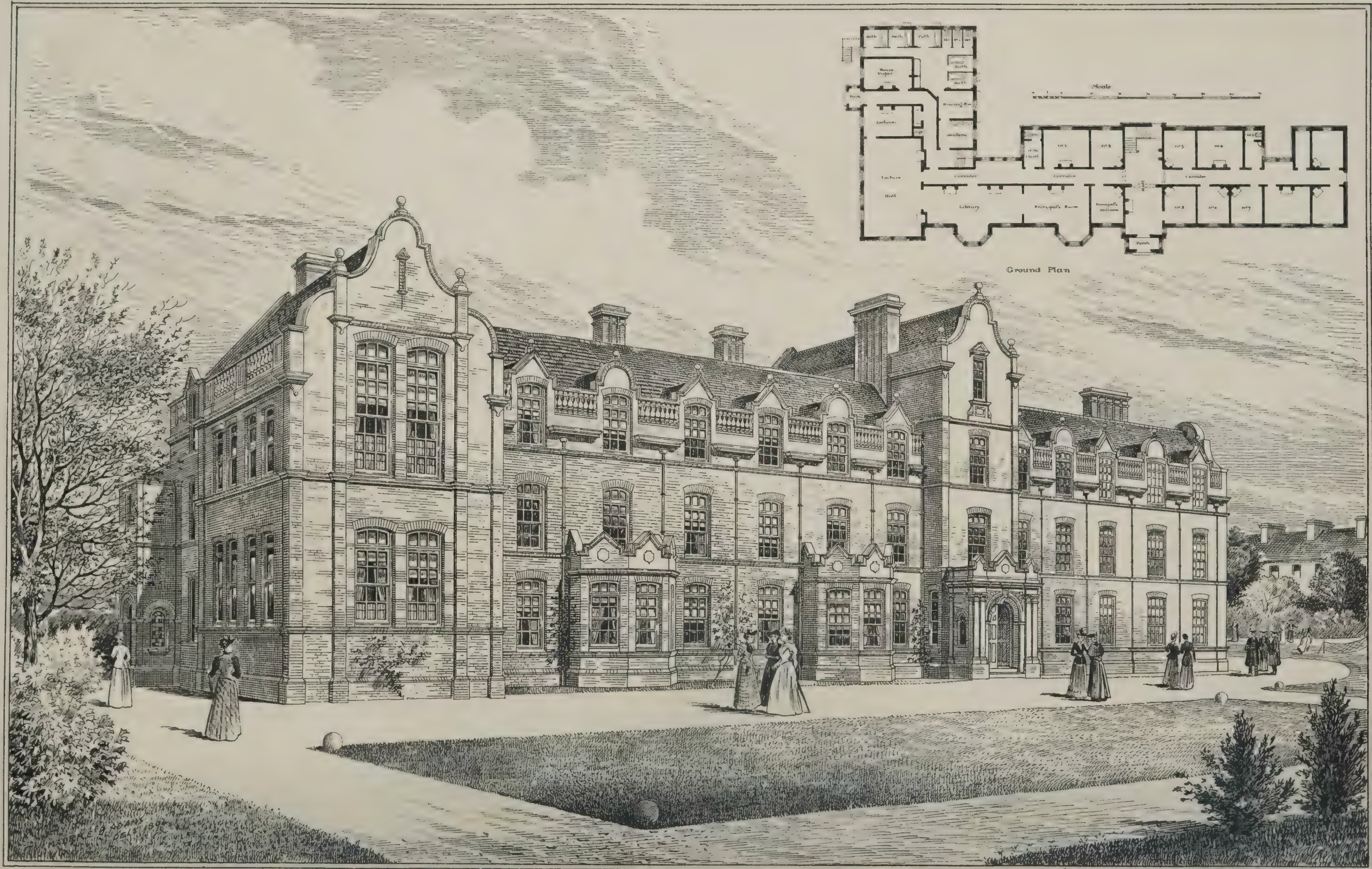
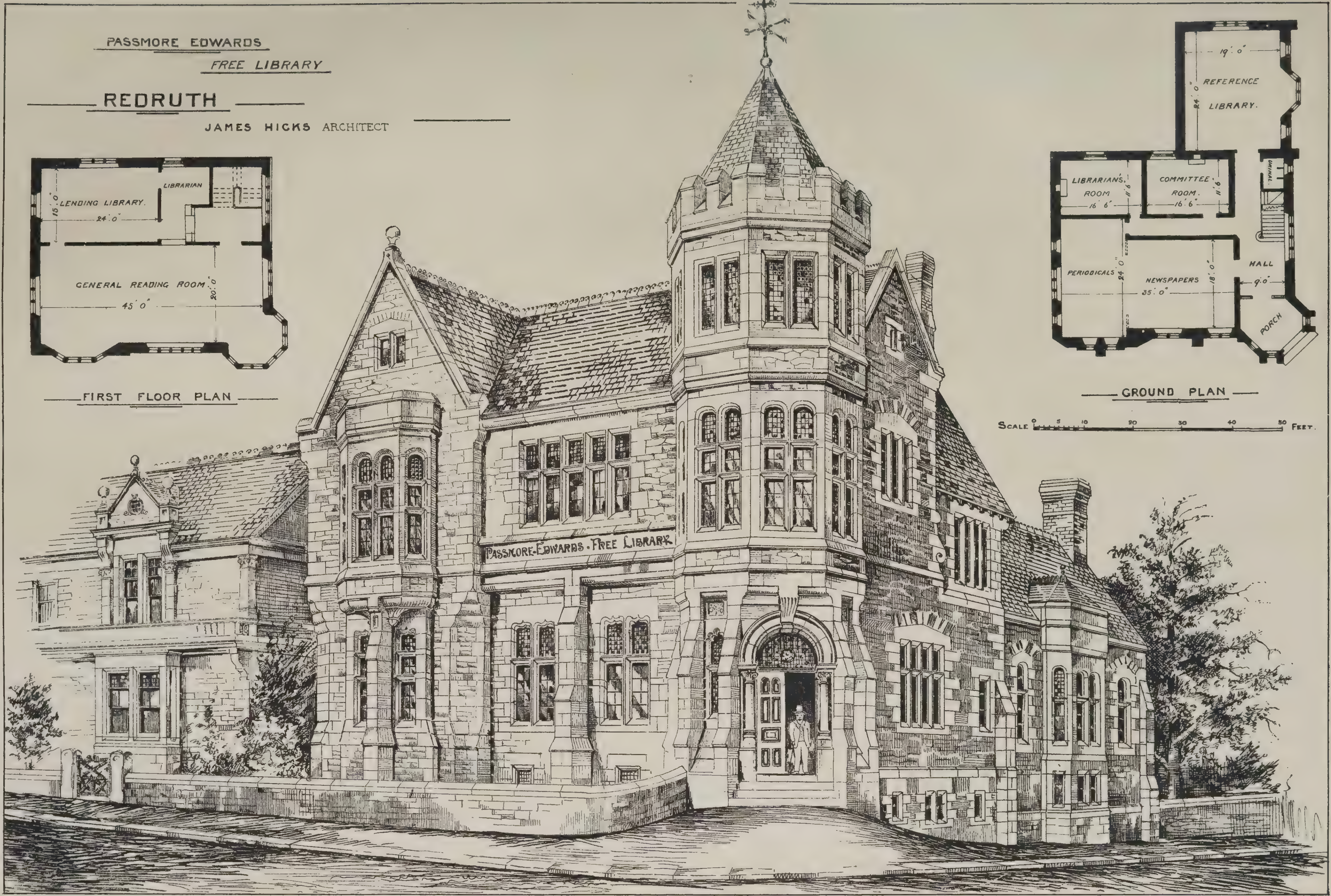
Nº 9· CAVENDISH· SQUARE· W· LEWIS· SOLOMON· F·R·I·B·A· & E·C·ARNOLD· JOINT ARCHITECTS·



TEACHERS' · TRAINING · COLLEGE · CAMBRIDGE

W^m M. Fawcett, M·A·Architect



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FIRST FLOOR PLAN

GROUND PLAN

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2066.

FRIDAY, AUGUST 10, 1894.

COMMERCIAL DESIGN.

THOSE who can see a little further than most people cannot fail to discover a good deal of what may be called artistic slavery in the design of our buildings, our manufactures, and art goods. In every case there is something to be made by somebody. In the building of a house the ground landlord or leaseholder, or the speculative builder, makes a profit; the contractor for a public building has to recoup himself; the producer of manufactured articles looks for a remuneration on his capital, and the draughtsman has to be paid for his labour. When the owner gets his building, or the customer his article, a series of profits have been made; the building or article is primarily made to sell. The workman or tradesman obtains his profit, but only like a machine, not an intelligent being. Such a state of things is so general that when we see a building, a piece of furniture, or a wallpaper or carpet, we hardly can say who is responsible for the design, or how many profits have been made on it. It is no longer the product of the designer and workman with one object in view coming direct to the owner or customer. Many persons have had a hand in the production, one making a profit out of the manufacture, another something out of the sale.

Take the ordinary building—from first to last, somebody is trying to make something out of it. The contractor is endeavouring to cut down the brickwork or stonework here or the details there; the manufacturer or merchant seeks a profit by endeavouring to persuade the architect to use a material that is a little easier manufactured; the engineer or specialist to do only as much as he is obliged to do, to make the heating system or ventilation workable, and even the designer and draughtsman are more intent on exhibiting their artistic talents on paper than in the building. If we seek to explain the reason of all this, we must come to the only conclusion—the great hiatus between capital and labour, or between the designer and the workman. The social and industrial condition of the producer lies at the bottom. The workman is cut off from the employer, the producer from the consumer; each seeks to make his own individual profit at the cost of the other. Thus, in the design of carpets and wall-papers and metal goods, the public or individual customer has really to deal with the manufacturer second or third hand, whose taste is stamped on the articles produced and sent into the market, and the dealer or salesman has also a voice in deciding which is to be sold.

A good deal of artistic slavery is engendered by the method of working now in use. Do we not see it amongst our artisans and artists in the production of furniture, joinery for buildings, metalwork decoration, and textiles? Subdivision of labour reduces the workman to a unit, disconnected from his trade as a whole, and all other trades. The professional designer now takes the place of the various crafts; he designs for them. One writer, speaking on the bearing of subdivision of labour on the teaching of design, says truly: "How are we to teach design, technique, and style, in its direct application to material when the pupil has no chance of coming into contact with the whole of his material; when one portion of it is made in Birmingham, another in London, another in New York?" One consequence of this breaking up of the work into fragments is that the designer becomes a mere professional hack; if he draws a piece of furniture or metalwork, he puts a quantity of unnecessary labour into it; his design is a model of finished execution; the drawing is shaded by lines which take him a longer time to perform than the original thought bestowed upon the design—labour thrown away, but which ought to have been expended in the workshop. The consequence to the workman is that he ceases to take any personal interest in a work, and endeavours to frustrate the intentions of the designer. We refer more especially now to the ill consequence, on the designer, which the system in vogue at South Kensington has encouraged in its application of art to industry. By placing design in the hands of a class, instead of encouraging each craftsman to become an artist in the material in which he works, a kind of fictitious draughtsmanship is promoted which goes under the name of design. The very repetition of drawing designs on paper without knowing or touching the material creates a conventional system of designing. The artist gets into a groove of his own. His designs for tiles, pottery, mosaic floors, wall hangings, ironwork betray a certain "set" of thought or mannerism, which gets more and more hard and stereotyped the longer he designs. The artistic specialist cannot see new problems, for he is never brought into contact with the actual manipulation or processes of the potter, the mosaic-worker, the forge, or workshop. Many of the designs which this year are exhibited at South Kensington Museum in the various classes of the department show unerringly this tendency. The art school teaching simply inculcates general principles and rules, and places examples before the student. These are no doubt good and excellent, but they do not enable the pupil to think out the conditions and problems for himself as they arise. A want of knowledge of the real conditions of the material or structure is betrayed by the authors for designs for tiles and pottery, wall-papers and textiles. Thus, for example, we notice in some designs a want of insight into the requirements of the process of tile-making. The pencil or brush appears to be out of sympathy with the material and its mode of working; the very lines and choice of patterns and shading betray the ignorance of the student with clay-working and burning. In the designs for pottery the examiners make a remark which applies generally to other classes as well. They say the students in many cases "appear to be misled by pleasant effects of ordinary water-colour, which could not be rendered in pottery." This is true both in tiles and plaques. A particular effect of colour and shading is sought which cannot be produced. In the textile designs we discover a similar want of sympathy with the structure or fabric. The printed hangings and other designs are either too elaborate or unsuited for printing; carpet designs exhibit often a want of knowledge of the manufacture, or, at least, of the proper treatment of forms, or the patterns are those which have been used before. The drawing in every case is excellent, and a degree of perfection in getting up these designs on paper is attained which does not accord with the practical knowledge of the designer. In fact, in carpet design, as in every other artistic manufacture, the manufacturer has to cater for a much lower public taste than even he desires. The manufacturer often has to keep his personal taste to himself, and to produce patterns and colours which violate every canon of good taste, and the designer must equally meet the want. So long as we have this condition of things to study it is impossible to expect a higher standard of design. Again, to produce at moderate price, mechanical repetition is a necessity; large quantities of each design have to be made. The present mode of introducing these designs to the public tells also against the system in vogue. The manufacturer often forces his own taste on the market, and the public can only buy what the dealer or salesman likes to bring forward. With regard to the pattern-book mode of introduction, those capable of judging know very well that the best goods and designs are shown to a great disadvantage, the result being that the vulgarest designs are bought. As to carpets, the Persian or Eastern examples afford the best schooling probably for the designer. Whatever value there is in geometrical distribution of a pattern, it does not follow that it should be obtrusive. Certainly there should be some indication of design, or it becomes a bewildering jumble to the eye.

But these indications of mannerism, fostered by the system of copyism or design which is promoted in our art schools, do not apply to one branch only, but to all. In the architectural drawings and designs, the examiners have called attention to particular points "to the absurd waste of time and pains in mere mechanical processes and idle repetition." We find this a common failing of much of the modern design. All the reproductive processes which are favoured by our industrial system encourage mechanical repetition. The draughtsman likes repetition, because he obtains effect with a small expenditure of mental effort; the contractor likes it, because it saves labour, and machinery can accomplish the work quicker; the bricklayer, mason, carpenter, plasterer, and decorator all like it, because they can repeat one detail a hundred times over. The architectural draughtsman, or the designer of furniture, metal-work, and pottery in a particular sense exemplifies the working of the modern commercial system. His method is to make pleasing designs on paper; but as these have to satisfy chiefly the employer or manufacturer who requires a large percentage of profit, repetition and mechanical labour are required. He spends his time in repeating details, by shading his drawing by "hatching," or ruled lines, and produces rather a taking picture than a well thought-out design. What a waste of time is seen in elevations or sections shaded by lines, which time might have been saved by a wash of sepia or India ink. In another place we find a school of art students, pretending to show the joints of masonry in a measured drawing, but which lines are merely put in to produce an effect of neatness without any regard to accuracy. Far better, as the examiners say, not to show the jointing. Another hint is given as to the value of explanatory sketches in drawings. Our old masters and our greatest designers have left us instances of their original designs in which these rough explanatory sketches are shown in the margin; and of drawings roughly shaded in pencil, crayon, or brown wash. They made no attempts to produce neat or pretty drawings. No; these old workers were too busy or too nearly in contact with the real materials or buildings to waste their time in repetition of a detail or the mechanical shading of a cornice.

In every field of artistic design there is someone to make a profit. Sometimes the business and commission-taking architect does it at the cost of his clever draughtsman who wins him his competition; sometimes the manufacturer or producer makes it out of the designer or artist of the establishment, who is paid a pitiable salary; sometimes it is the enterprising contractor who places himself between the employer and actual worker. Whichever it is, his training and education is to make attractive drawings on paper apart from, and independent of, all consideration as to material or structure. We have both the "individualist" and "collectivist" systems of industry, the modern "commercial," and the old guild or workshop system, set before us by example and precept; we know what each has done and can do, and it remains with us to adopt that which will give the highest results.

HYGIENIC DEVELOPMENTS IN BUILDING.

TWO or three valuable papers which we reported last week read at the Public Health Congress deal with matters of sufficient importance to call for remark. Cardinal Vaughan, in referring to the housing of the working classes, pointed to the advantage of the cottage system as against that of the "block" system of building, as being more favourable to the home influence and the bringing up of children. On this ground he thought the "outward extension" into the country of cottages was to be preferred to crowding together masses of people under one roof in a busy centre—a plan with which everyone will agree who has considered the problems. No doubt the railway companies along their lines might utilise their land to build and manage cottage towns and provide cheap fares, for many tracts of ground lying waste and profitless at the side of railway junctions could be rendered profitable in this way.

The subject of Architecture and Hygiene of Schools was ably dealt with by Mr. Thomas J. Bailey, F.R.I.B.A. The author's practical knowledge with the requirements of Board schools in London will be read with interest. School Board architecture is one of the modern developments of our day. Its germ is to be traced back to the old elementary school, and to the old Code. Undoubtedly a great change has been made; various modifications have taken place in the plan of schools since the first Board school was built 21 years ago. The first schools built generally had, as Mr. Bailey showed, a long central room with one or two classrooms at each end, the central room forming a passage-room to the classrooms, with desks along the back wall, in which the windows were placed. This central passage-room sort of arrangement had many defects. The room was filled half with desks, and the light was in the teachers' eyes, while the free or passage side of the room was crowded with teachers' desks and apparatus. The want of access to the classrooms, and the division of the main room for classes, were the chief defects in this plan; and to avoid the inconvenience of having to traverse the central room, a corridor or corridors were introduced along the side to give access to the classrooms. This passage was made wider and wider, until the "hall" was evolved with its independent classrooms side-lighted opening into the hall or corridor on one or both sides. It is interesting to notice the several changes as they are described by Mr. Bailey—stages really in the evolution of the modern typical Board school. They are a series of modifications suggested by actual experience in planning which have entirely altered the original type of building. The central hall, with its groups of separate classrooms, is the main difference, the cloak-rooms and entrances have also been gradually provided for, and have grown, so to speak, out of the widening of the corridor. The "model" plan illustrated in the old Code has so completely given way to the new type that the Department would condemn any plan founded on the old arrangement. The sanitary requirements have also undergone a complete change. Playground area has been increased to a minimum of 30sq.ft. for each child. The old latrine provision of closets outside the school, with sometimes covered passageways to the school, has been improved, and automatic flushing-tanks and stoneware troughs substituted for the defective iron troughs. The Hugh Myddelton School, Clerkenwell, is an example of the modern type of school and sanitary arrangements. Here we find all the points to which reference has been made—a main school of three stories, infants on the ground-floor, allowing 8ft. superficial to each child, 10 classrooms for 75 to 80, and a central hall, 80ft. by 40ft. The upper-floor classrooms are for 60, and there are four staircases, the boys being at the top. Warming is provided for by low-pressure steam, with ventilating radiators. Inlets for fresh air and extractors from the ceiling level insure a renewal of the air and prevent stagnation. Cloak-rooms are warmed by steam-pipes, and well ventilated—a very desirable thing when damp garments are hung up. Drawing classes are now a necessary adjunct, and these are provided for on the top floor over the classrooms at one end, and a manual training workshop at the other, though the latter may be better placed in the playground for boys. If there is a chemical laboratory, a position on the upper floor is a good one. No doubt other changes will be adopted to meet the requirements of education as time goes on, but we may take this school as embodying the main points of the improved Code.

The paper on Fever Hospitals, by Mr. Campbell Douglas, F.R.I.B.A., did not throw much fresh light on the question of planning. Two points broached by the author are worth remembering; one is that the most costly hospital was not necessarily the most efficient, and the other that the most effective and modern plan does not always show the best results. The comparison of two hospitals, the Belvedere Hospital, Glasgow, with the City Fever Hospital, Edinburgh, the former with double pavilion one-story wards, and the latter with three stories, was instanced, where the lowest death-rate occurred in the latter, old-fashioned, antiquated city hospital. An allowance per bed of 2,000c.ft. is recommended, a capacity which is perhaps not often found. Among other things the author recommended double-hung windows, an open air under-story below the ward blocks, both of which are now accepted necessaries to insure comfort and health.

On the question of local sanitary authorities, Mr. Lewis Solomon's paper dwelt on many of the difficulties and troubles experienced by the architect in carrying out sanitary work in London. We have repeatedly drawn attention to the irregular practices of sanitary authorities, and their want of a uniform code of rules. For plans of drainage, one authority requires one scale, another a different one; one parish requires the position of closets on each floor to be shown, another does not. By one authority a 9in. drain-pipe is necessary, others are satisfied with 6in. pipes; the rule about laying pipes in concrete under the house is not universally enforced as it ought to be. Some parishes require the pipe to be laid on or half buried in concrete; other parishes require them to be entirely bedded in that material, a diversity that may be observed in many recently built estates. The necessity of having an inspection chamber is equally uncertain in its enforcement. One parish requires it in front; others both behind and in front of the house. Some approve of air inlets to the drains; others do not, and there seems to be a great difference of opinion as to where the outlet ventilator is to be, and of what diameter it should be. In some parishes special types of closet apparatus are required. Testing drains is another matter about which the parish surveyors and inspectors have their own whims. All these things, as well as sanitary certificates being granted before the tenant goes into a house, should be regulated on some uniform basis. At the present time each parish has its own likings; the authorities and their surveyors exercise their powers sometimes indifferently, at other times absolutely, and the architect is either bound to submit or his client be fined.

OF CHURCH EMBROIDERY.—XII.

By May Morris.

DESIGN.

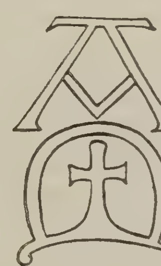
[WITH LITHOGRAPHIC ILLUSTRATIONS.]

I AM lingering a little over Mediæval art, and the illustration that accompanies these notes is again an example of woven stuff, a scrap of fine Italian work with birds and dogs, both very life-like. I hope you will be as pleased with this beautifully harmonious treatment of living everyday nature as I am; but I am sorry that the scrap of stuff is not large enough to give all the repeat of the pattern. Of course I have not said my say about animals and symbolism, but I do not fancy you would care to have me wander very far off the beaten track of embroidery into the realms of archaic worship, and all the strange beliefs enveloping the mysteries of the world's origin, that gave birth to so much of what is familiar to us in decorative art.

The fact is, I do not sympathise with those early Christian writers who, recognising the analogy between their own and pre-Christian religions, feel bound to make explanations, often far-fetched and mystic, for that analogy, and sometimes in the process weaken the vividness and reality of the ancient belief. It is no use trying to give some deep esoteric meaning to all animal symbolism that has come into the Christian religion when its own meaning is perfectly clear and indisputable as to origin. It is the old, old illogical method of explaining an ancient custom by tacking a more modern and often mythical story on to it. What harm if the Byzantine peacock, the sacrificial lamb, the dove of the Trinity, all find their prototyes in early religions? The often-quoted analogy between Orpheus making music to all created animals, and Christ as the Good Shepherd, does not come amiss to my mind, for in both we have represented the same idea of universality, of communion with, and protection of, all living things. The Roman Catholic symbolists, in writing on colour, and on the sacred numbers, become extremely fantastic and interesting also; and here I will say that modern symbolism, already traditional, shows a tendency to become more and more arbitrarily mystical, and should be treated by designers for ecclesiastical decoration with caution and judgment. It would be as well to use only the more familir emblems and symbols, and to allow oneself the same latitude in interpretation that the old artists were allowed. There is often a baldness and poverty about symbolism introduced into modern design, which I account for by the propensity, a mistaken one, I think, to treat such forms too simply, and without sufficient regard to decorative effect. A quatrefoil placed in the centre of an altar-cloth, and unsupported by any floriation or minor work, is dull enough, ornamentally speaking; but interlaced with other forms, or relieved by less-pronounced constructive lines, it becomes pleasing and interesting, and thus treated is one of the most familiar forms in design of the best periods. Banish rustic crosses, lumpy crowns, realistic nails in the passion emblems, and that ugly thing, the Passion-flower, that has not even the merit of antiquity, and reminds the profane mind of nothing more exalted than a neat suburban garden with its crude brick wall.

I know that very little latitude is permissible in the modern church with regard to colour, the symbolism being rigorously adhered to, sometimes at the expense of decorative effect. Easter vestments must, I believe, be entirely white and gold; blue is, as a canonical colour, rarely admissible, in England, at least, and so forth. Early vestments had more variety in their colouring; to go no further than an old church inventory, we find among the possessions of the cathedral of Lincoln, "Item, 13 copes of the same suit (*i.e.*, white damask), with orphreys of blue velvet, figured with flowers of gold." Again, "Item, a cope of white damask broidered with flowers of gold with a red orphrey, having in the Morse this scripture, 'Memoriale Domini Willielmi Fendike quondam Vice-cancellarii hujus Ecclesiæ,' in the hood a bird of gold called a Fanshe." I wish I could believe in the existence in the Zoological Gardens of the bird called a Faushe, or Fanshe; but I fear it is unfindable, and the nearest I can get to the name is that of the respectable and historic phœnix. But, again, it may be a finch (*fauchet*). However, I will spare you a parenthetical dissertation on etymology, a subject of which I am entirely ignorant, and therefore cheerfully ready to write upon. Plenty of blue vestments and church hangings are to be met with in the same rich inventories of Lincoln:—"Item, another cope of blew baudkyn, having a branch of white roses, running in red velvet in the midst of the orphrey, and a spleyed eagle in the hood." "Item, a canapye of blue cloth of Baudekyn with buds of flours in gold." "Item, a canapye of red silke, with green braunchys and white flours poudyrd with swannys of golde between the branchys." Note what a fine eye for colour and composition the writer of this inventory has, and how skilfully he places before us in a few words the hanging, with its golden swans between the blossoming trees.

If one goes in for symbolism of colour to a great extent in ecclesiastical or secular decorative art, one comes upon unexpected embarrassments owing to the ambiguity of the symbolism itself. It has often come into my day's work to arrange and design covers for this and that book, with the behest laid upon me to get as much of the solid contents of the work into my few poor little inches of plane surface as ingenuity or conscience will permit. Sometimes I do it; sometimes I strike; sometimes, when I have a little time to spare and a particularly charming and reasonable woman to deal with, I explain, with all the clumsiness of the inarticulate artist, why and when rigid symbolism is not possible or desirable. If you put the copy of "Tristan and Isolde" that you followed the opera with at Bayreuth into a green cover to recall Isolde's Irish birthplace, you find yourself wishing you had made it red, to express the passion of the story. Green, too, I find, on consulting an authority, denotes "youth, mirth, and gladness, and is emblematic of felicity and prosperity," which is rather a large order, and not descriptive of the fate of these lovers. Now, let me go further, and bring you to the reduction to absurdity of modern symbolism. A leaflet before me, headed "Picture-Poems in Porcelain," explains that a certain firm are desirous of giving to the eager world both pictures and poetry in bedroom furniture (to lighten the heavy sameness of our morning and evening toilette), and you are invited to go and view the results of their public-spirited efforts in a room decorated by an "elegant scheme of plush and silk drapery . . . . the ceiling being hidden by an arrangement of light blue silk, so disposed as to create a sky-like effect." Now this is very promising, and you read on, hoping for more. Then you find that one suit of bedroom furniture (consisting of "washstand and dressing-table, with adjuncts") is made to illustrate the story of Lancelot and Elaine; another Faust, a third Marmion, a fourth the Marriage of the Roses. I must quote, for it is too good to be lost. We have, first, Elaine watching Lancelot and Lavaine; next the hermit's cave at Camelot, with Lancelot lying on a couch and Elaine bringing him the diamond prize; next King Arthur, surrounded by the Knights of the Round Table; next, Elaine confessing her love to Lancelot; next, Elaine witnessing the departure of Lancelot; and elsewhere Elaine sitting alone in her tower, Elaine on her death-bed (with her family and friends around her), Elaine laid out in state on her barge, and, lastly, King Arthur reading Elaine's last will and testament." Please remark what follows: "It will be noted that in every instance flowers take the place of figures, Elaine being represented by a moss rose on a golden stem, Lancelot by a yellow Marshal O'Neil rose on a golden stem, Lavaine by a red English rose, King Arthur by an English rose on a golden stem, with purple and ermine leaves, and so forth." In Faust, we are told, Margaret is a daisy, Faust a pink poppy, Mephisto a red orchid, and Martha a jonquil. "The incidents are well-chosen and picturesquely treated. The ewers and basins are decorated with passages from the score of Gounod's opera, in which the clefs are formed variously of a spider's web, the scabious flower, the orange-blossom flower, and the lilium auratum; and the notes by flies, seeds, orange-blossom buds, and lilium auratum buds." We find that all the exhibits are "delicately imaginative in artistic treatment," "unique," be it observed, "and not destined for exact reproduction." Now I leave Mr. X. (for this is not an advertisement) and his sky-blue silk ceiling, his toilette-table and adjuncts, his symbolism gone mad, and set up my wail of wonderment that a moderately-sane world will encourage such tomfoolery by paying for it in hard cash. Endless is the information to be got out of the writers on symbolism with regard to the sacred properties of numbers. I spare you the quotations I should like to make; but treatises on this subject are excellent reading. On the sacred names, too, there is ample room for mystic symbolism. In the name of the Virgin Mary, some old writers take each letter for an initial: one finds five precious stones in it—M margarita, A adamas, R rubinus, I jaspus, A amethistus; and another finds the qualifying titles of the Virgin—Mediatrix, Auxiliatrix, Reparatrix, Illuminatrix, Advocata. The monogram, giving the first and the last letters of Maria, is sometimes very prettily worked out (as in the accompanying sketch, 13th century). The insertion of these monograms, or the names or initials of the personages represented, give a distinctive character and special interest to figure design, and any motto or legend, clearly and sharply drawn and worked, strikes an important note in the scheme of such design. I need not say that modern eyes will scarcely trouble to decipher them, but that must not deter the designer from using all the decorative resources of his invention; for, unfortunately, artists are bound to work for themselves rather than for their audience to-day, which is just exactly what makes the difference between old and new work. Some years ago I exhibited a pair of embroidered curtains, which were crowned by a couple of verses; very clear Italian lettering, worked in black on a white ground. I shall never forget those verses. I spent the greater part of two days in repeating them to the ladies who came to see the work, and who went away vaguely charmed, asking me out of politeness what the words were, and listening out of sheer good nature and politeness while I recited those weary lines. Nevertheless, I shall continue to put legends and scriptures in my designs when it seems good to me, and pigeons, and cocks and hens, and puppies, and "faushes," and little black pigs, too, if I like. The brutality of the artist who does not care for his public (and only for his critic as far as he prepares the market for him) is the outcome, on the one side, of that irritating divorce of art from common life which, on the other, creates the very indifference of the untrained eye and mind which artists complain of. What a circle of cause and effect! And poor Art, to be so tossed!



Does it ever strike you, by the bye, how ludicrous that word "art" would sound on the lips of a mediæval workman, who was steeped in art to the marrow of his bones? To distinguish between objects of everyday life and objects for use on state occasions would not come amiss to him—the one simple and homely in material and work, the other wrought with becoming magnificence, but both sightly. But the "art-object" to-day knows its place, and stays there. The rickety little table from an artistic shop may be as cheap and nasty as your kitchen table; but your kitchen table would not venture into the drawing-room, and your black-and-gold gimcrack on its three uncertain legs bristles with gentility, and is innocent of "utility-value."

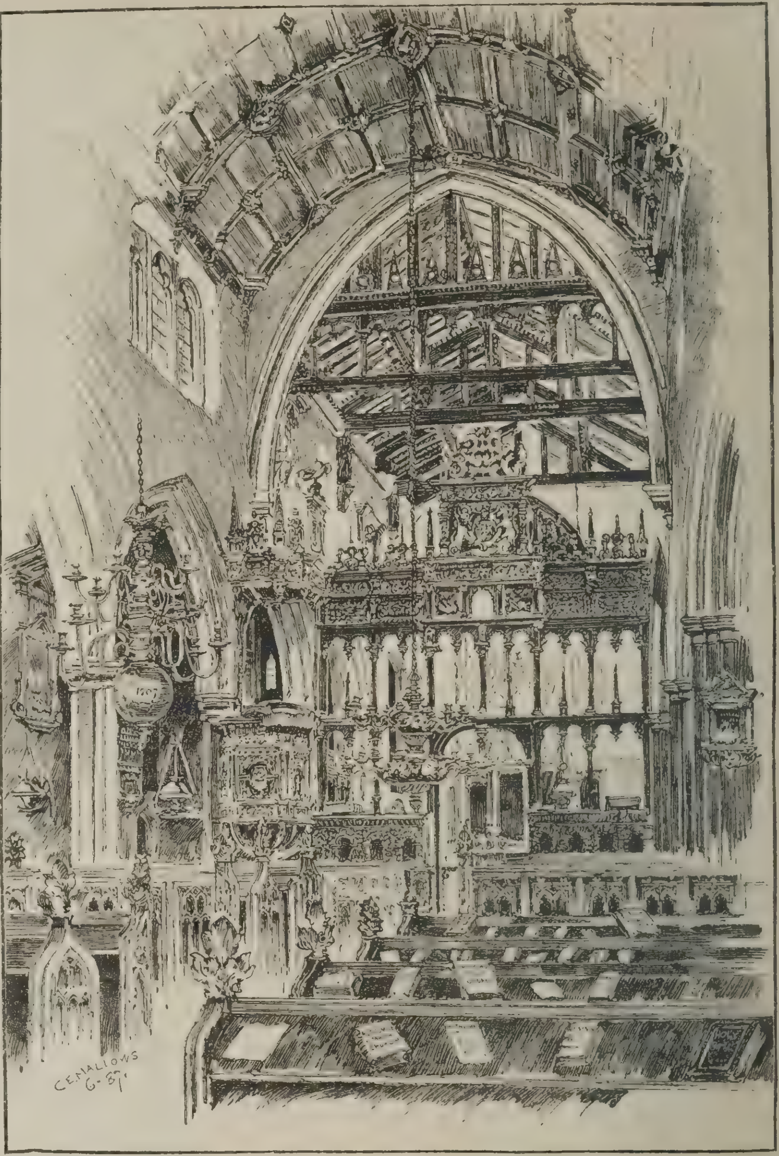
THE ARCHITECTURAL ASSOCIATION EXCURSION, 1894.—I.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

THE twenty-fifth annual excursion of the Architectural Association will commence proceedings on Monday next, the 13th inst., at Wells, under the personal direction of the President, Mr. E. W. Mountford, F.R.I.B.A., and the following abstract is the text of the official programme:—On Monday, Crosscombe Church will consume three hours, and Chewton Mendip Church has two and a half hours devoted to it. Tuesday will be entirely occupied in visiting and sketching in the Cathedral, the Bishop's Palace, the Deanery, Vicar's Close, St. Cuthbert's Church, and the Bubwith Alms-houses at Wells. On Wednesday four and a half hours will be spent at Mells, at the Church and Manor-house, with one hour on the return journey at Shepton Mallet. Thursday, a trip into Wiltshire by train will be made to see Longleat and Stourhead, three hours being devoted to the Marquis of Bath's Mansion, and half that time will be spent at the other house. The journey this day rather looks as if it would be a tiring one. Friday will be divided between Pilton, Evercreech, and Bruton; and Saturday morning will be spent at Glastonbury. From this list it will be noted that only ten places besides the cathedral city are to be visited, at once affording a striking contrast to the programme of the first Somersetshire excursion held by the Association in 1879, when no less than twenty places were seen, exclusive of Wells itself, which then, as now, furnished the headquarters of the party. These places were Crosscombe, Shepton Mallet, Doulting, West Cranmore, Nunney Castle, and Mells, Priddy, Cheddar, Axbridge, Rodney Stoke, Westbury, and Wookey. Pilton, Pylle, Ditcheat, Wyke-Champflower, Bruton, and Evercreech, ending with Glastonbury and Meare. The buildings commanding attention in Wells itself occupied Monday as well as the morning of Saturday on that occasion, which has by common consent been generally accounted the most enjoyable excursion of the entire series. The late Mr. J. D. Sedding, it may be mentioned, first took part in these outings that year. Two other excursions, besides the Wells outing, have since been held in the same county—viz., that at Yeovil in 1883, when Mr. Cole A. Adams was President, and that at Taunton in 1892, the year of Mr. H. O. Cresswell's presidency. Mr. S. Flint Clarkson held office when the party first visited Somersetshire, the architecture of which county is fairly well familiar now to those who joined all three of these trips, to say nothing of the Bath Excursion, when the northern borders of the county were to some extent encroached upon. The inevitable difficulty, which by the very nature of things has proved almost insurmountable, of selecting fresh districts sufficiently limited in area, and at the same time well furnished enough with typical and interesting examples of architectural merit to be worthy of so continuous an examination as these excursions necessitate, rendered it desirable to go over again some of the earlier ground already covered by a few of the earlier excursions, and thus it has come about that Wells has for the second time been chosen. Last year the Norfolk and Suffolk programme was, to some extent, spoiled by the further difficulty of securing suitable hotel accommodation for so numerous a party. This year the original hospitable headquarters of the Swan, facing the grand west front of the noble cathedral at Wells, will, if we may judge by previous experience in the same hostelry, leave very little to be desired. The tendency of overcrowding the programme with minor specimens of work previously complained of on some of these trips has been rigidly avoided—at any rate, this year. Indeed, we should not be surprised to learn that an approach to the opposite extreme has been brought within a measurable distance, with provisions such as the three hours' stay at Crosscombe, where the tower and spire and the very rich Jacobean screen and pulpit are the chief attractions. The four-and-a-half hours' stay at Mells, the seat of the Horners, near Frome, is a liberal allowance, although the place is a most delightful spot unquestionably, with a highly-interesting church, distinguished by a handsomely-proportioned and typically-characteristic western tower, which, like the interior of the building, has been well, if not too thoroughly, restored, as some may think, the Renaissance pewing*, which once so greatly enhanced the interior, having for one thing been cut up and reused as a dado. Mells Manor House, a sketch of which figures among our lithographic plates to-day, adjoins the church, with which it groups uncommonly well; but interesting as its history is in association with the well-known tale about the veritable "Jack Horner who sat in the corner," the building is, after all, soon seen and easily remembered, with its simple detail both inside as well as out. In 1879, only forty-five minutes were allowed, which was, of course, far too short a stay, even if the time arranged for is none too long on the present occasion. Although Glastonbury is included, Adam de Sodney's 14th-century house at Meare, and the "Fish House" hard by, are omitted. To visit Glastonbury and not see these buildings seems strange indeed. Longleat, it is true, has not before been visited on either of the A.A. excursions, and no doubt for its "pure" Elizabethan detail and dignified semi-Italian design it certainly justifies a digressive ramble by a body of architects, for

With every luxury complete,
All charms the senses at Longleat.
Nothing is wanting, all complete;
Perfection's Empire is Longleat.

Traditionally, John of Padua's name has been associated with the house, and we know from the existing documents that Robert Smythson (the "surveyor" of Wollaton) was some while head mason here; also that Sir Christopher Wren erected a staircase and porch, which Jeffrey Wyatt pulled down when he built the north front, and did his best to spoil the inside of the mansion. Mr. J. D. Crace has decorated the place during the last 20 years, and unquestionably the building is of the first consequence, to say nothing of the art treasures housed within its walls, which date from 1566.† We are not so sure about the Classic mansion known as Stourhead, the seat of the Hoare family. The central portion of this mansion was built in 1720 from the plans of Colin Campbell, the Scotchman who designed Houghton Hall, in Norfolk (seen on the King's Lynn excursion), and built the front of old Burlington House, Goodwood House, near Chichester, and other similar mansions in Kent and elsewhere. There are probably still some fine pictures and other art treasures in this house, collected by the late Sir R. Colt Hoare about 100 years ago; but the "Gothic men" of the party, if any such worthies still exist, will be little likely to become enthusiastic over its architecture. The accompanying illustration gives the principal front view of the building, the wings of which were added in 1800. Its "pleasure gardens" and charming grounds,



CROSSCOMBE CHURCH, SOMERSET.

with the extensive lake of 30 acres, "embosomed in wooded hills, which open as if to show the distant vistas ascending through the park," furnish a picture of unquestionable merit and exquisite beauty. These two houses furnish the only variations in the way of additions to the programme of 1879, excepting Chewton Mendip church; but among the omissions which can but cause regret is the grand ride to Cheddar over the Mendip Hills, though we are bound to admit that the buildings to be seen along the route are not of leading importance architecturally speaking.

So much for the general outline of the forthcoming proceedings, and, without any aim at even an epitome of the history of the architectural beauties of Wells, which is beyond question one of the most interesting cities in Europe, we may briefly direct attention, by a few descriptive and illustrated notes, to some of the buildings which the excursionists will see on this occasion. Among our accompanying sketches to-day is a charmingly-drawn pencil view of the Common Hall, or Library, as it is now sometimes called, of the Vicar's Close, contributed by Mr. C. E. Mallows, who, we are glad to be enabled to say, is recovering from his late serious illness. The view represents the fireplace and recessed windows on either side of it, with the reader's pulpit within the thickness of the wall over against the chimneypiece. Mr. Thomas MacLaren has lent us his capital sketch showing the chain gate and Vicar's Close entrance archway, over which this common hall is located, and the chimney with the main windows, as well as the little ones at the rear of the pulpit, represented in the picture. From the Cathedral we have Mr. Mallows' study of St. Toothache's pillar, seen in his sketch in the south transept, looking into the nave. The authority for the legend is that the faithful, resorting to this spot when suffering from the agonies of this painful disorder, were relieved after patient reflection and undoubting prayer, standing in front of the column on the tomb slab in the floor and there meditating upon the sculptured representation, seen incorporated in the pier's capital, of a man's head depicted in the throes of a toothache. Hence the local term of "the Toothache Column," and we gather that Canon Church is quoted as the authority for the picturesque legend. The plan of the cathedral, printed among our block illustrations herewith, will enable the reader to see the exact position of this column. Evercreech Tower, sketched by Mr. MacLaren, completes the plate. The interior of Crosscombe Church, drawn by Mr. Mallows, is taken, by the permission of Messrs. Cassell and Co., from the *Magazine of Art*, showing the celebrated pulpit and screen, of which we published fully-drawn-out details by Mr. Arthur Ed. Bartlett on July 26 and on Sept. 27, 1889. Our last sheet to-day includes two sketches from Glastonbury of "the Tribunal" in the High-street, and the celebrated Abbot's Kitchen, with a plan showing the four fireplaces, one in each angle, and flues running straight up; but the chimney tops which rose above the corners were demolished a long while since. The sectional diagram embodied in the text further elucidates the sketch of this curious structure.

In reviewing all these estimable examples of a bygone age, the two distinct studies, which on the one hand include the practical architect's estimate of them as specimens of design and construction, and on the other embrace historical and archæological considerations, present the same

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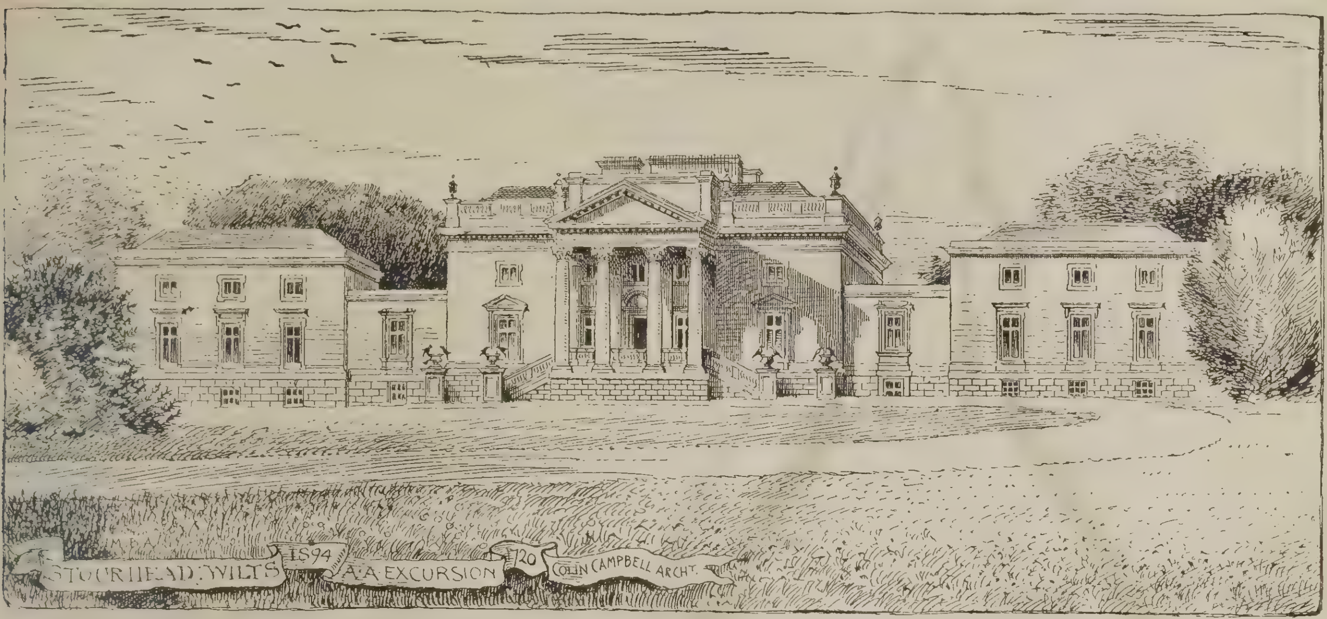
* See BUILDING NEWS, July 20, 1883, for detail of these seats.

† For views of Longleat see BUILDING NEWS for July 21, 1882.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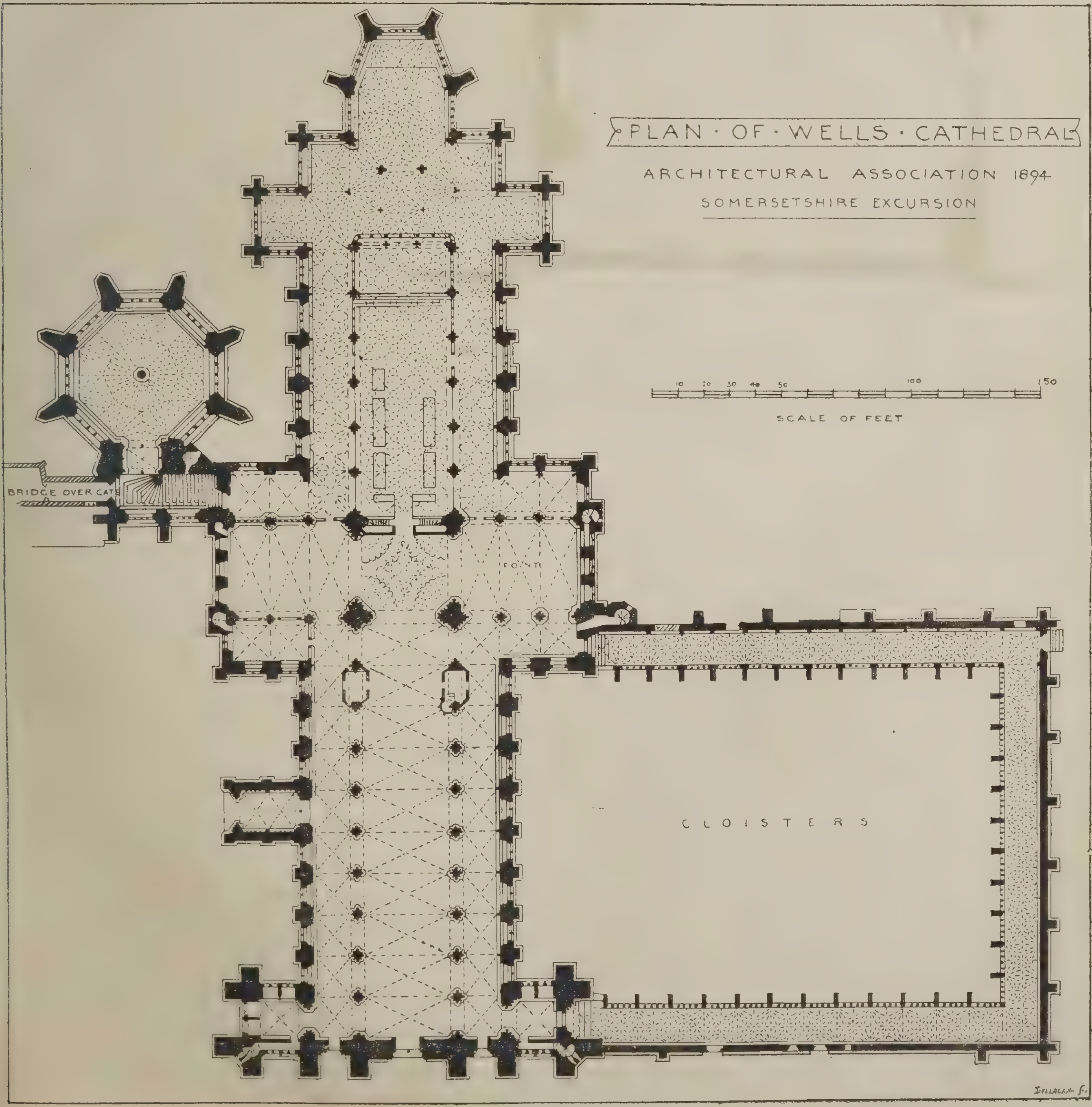
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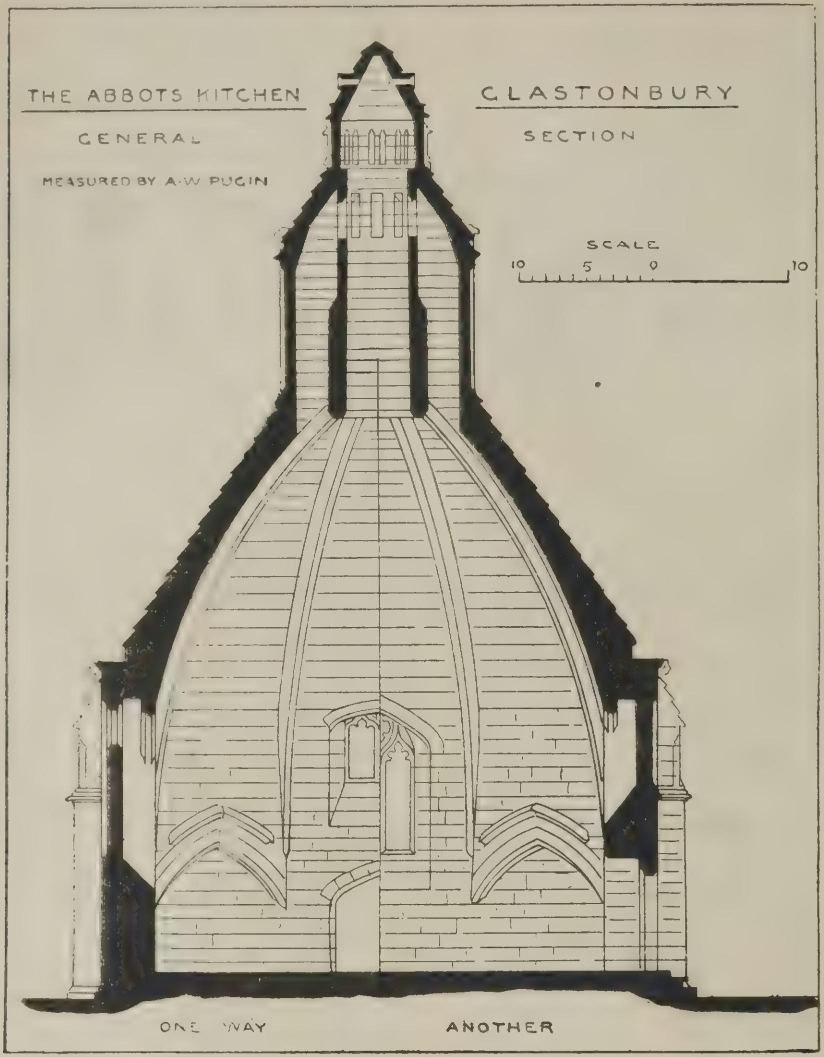
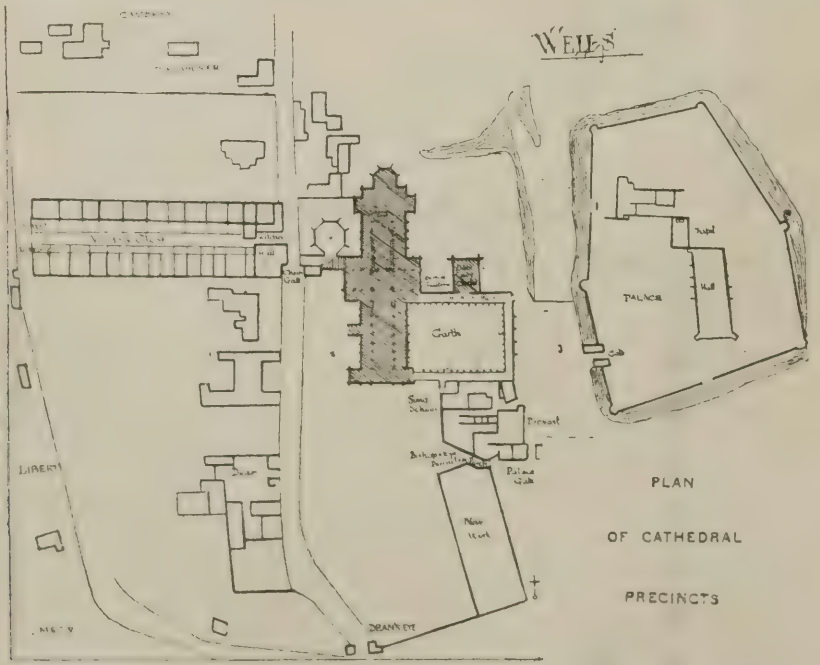


subjects from different standpoints, and yet leave neither complete without the other, for, in fact, they cannot actually be separated. The city of Wells, with its unique group of ecclesiastical and secular buildings, particularly demonstrates the inseparable character of both studies in which architecture and history join hands. The buildings of Wells were not monastic at all, and therefore all the essential features of a conventual character, such as a refectory and common rooms with dormitory cells, are absent. The clergy were parochial, and these seculars, being parish priests, were governed by the bishop, and they occupied separate houses, with different individual duties. The Chapter of Canons administered the Diocesan property in conjunction with the bishop, and had no ordinary obligations of a monkish rule to obey. Naturally there were here, as elsewhere, serious engagements between the Cathedral clergy and the Abbots of Glastonbury; but these struggles were practically at an end ere the present buildings were begun, and the monastic houses once existing in Wells were before then destroyed. A very comprehensive plan of this cathedral, with its precincts complete, will be found among our block illustrations to-day, showing the Bishop's Palace, the Vicar's Close, &c. The monks of Glastonbury had to give up to the Cathedral Chapter several manors, which were ceded to Bishop Joceline and his successors for ever, and in addition they supplied him with money to start new buildings of which the cathedral is only a portion of his design. This included the elder Lady chapel, the Chapter-house, the Deanery, the Archdeaconry, the houses of the Vicar's Close with their chapel and library, the gatehouses of the Precincts, the Bishop's Palace, and the prebendal houses in the Liberty. The palace is still among the earliest and finest houses in England, and so well was its fabric maintained by Lord Arthur Hervey, the late bishop, that on his successor (who has just been appointed) coming into office, scarcely one farthing on dilapidations will have to be expended, the diocesan surveyor having reported upon the premises to this effect. The palace was originally built between 1205-1244. The great hall and the chapel, built by Bishop Burnell in the time of Edward I., between 1274-1292, formed main parts of the building, of course; but the hall exists now only in ruins. The gatehouses of the Close were the work of Bishop Beckington during the Wars of the Roses, though they were evidently made more for show, really, than defence. The Bishop's Barn and the Wellhouse in the Bishop's Garden (1490) are both interesting. The Deanery was rebuilt by Dean Gunthorpe (1472-1498), and, in spite of alterations and modern sash-windows, remains a capital specimen of a 15th-century gentleman's house, with a wall inclosure and gatehouse of its own complete. The house of the choirmaster (1480) and the earlier organist's house (1390) are also well worth seeing. The Canons' houses in the Vicar's Close* and the chapel at the northern end of the Close, as well as the common hall at the other extremity, where the vicars dined together, are exceptionally quaint and remarkable. The late Mr. J. D. Sedding, when he was cathedral architect after the death of Benj. Ferrey, restored the chapel in the Close, and Mr. Heywood Sumner decorated it under his direction. The iconography of the west front of the cathedral is unequalled, presenting a magnificent façade of figures with portraits of triumphant monarchs, saints, apostles, and prelates in one great assembly, undeniably beautiful, though in parts the design, if untrammelled by rigid canons of composition, defies in some particulars the limitations of rule. The dignity of expression and posture of many of the statues can hardly be surpassed, and the groups representing the Resurrection, over the west triplet window, are wonderfully fine. Wells Cathedral was finished in 1242, two years after the death of Cimabue. Its building was in progress when Nicolo Pisano, the Italian restorer of sculpture, flourished; it was finished 46 years before the Cathedral of Amiens, and 36 years before Orvieto Cathedral was begun, and it seems to be the first specimen of such magnificent and varied sculpture united in a series of sacred history to be found in Western Europe. Exeter, Salisbury, Lichfield, Crowland Abbey, and Howden Church in Yorkshire, were adorned with sculpture, but on comparison it will be found that the west front of Wells, in this respect, excels them all as the most elaborately ornamented example in England.



THE SCIENCE AND ART DEPARTMENT.

The annual report of the Department of Science and Art is of interest in its proposals for a more organised system of secondary education. The opinion is expressed that grave defects in that system exist throughout the country. The report speaks of the value of the interchange of ideas afforded by the central Education Departments, the Charity Commissioners, and the Education and Science and Art Departments, these being represented in a committee. Evidence was taken, and a memorandum

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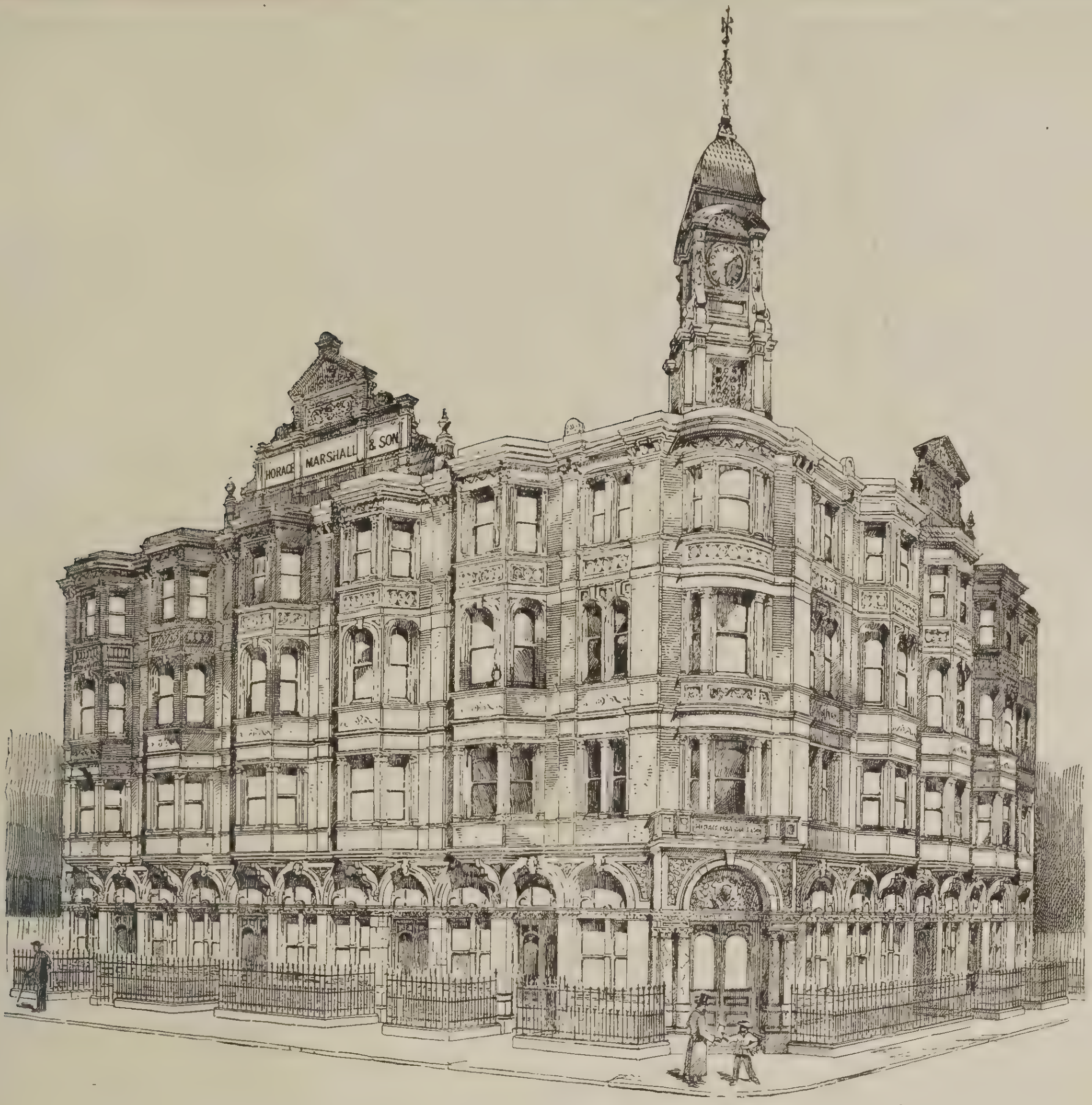
* A bird's-eye view of the Vicar's Close, Wells, from the Cathedral roof, appeared in the Building News for July 19, 1889, and a plan, with details and views, July 20, 1883. The Deanery bay windows figured in our issue for January 30, 1891. The Chapter House entrance was illustrated by us, April 10, 1891, and the west front, giving the N.W. tower, appeared in the Building News for June 12, 1891. Two interior views of the Cathedral, from the pencil drawings of Mr. Mallows, will be given next week.



NEW PREMISES FOR MESSRS. HORACE MARSHALL AND SON.

drawn up, which was transmitted to the Royal Commission on Secondary Education. The only State-aided schools, apart from the University Colleges, in which secondary education is given are the organised science schools aided by the Departments. These schools have been of great service, and have increased in the provinces. Ten years ago there was only one such school, six years later there were 40, and during the last four years their number has increased to 93. The report says: "If the energies of this class of school can be directed not merely to grant-earning on science instruction, but to really effective educational methods, they may in some measure fill that gap in the education system of England which exists, and to which we have already referred. So long as the present system of payments on results is adhered to in its entirety, there is a danger of the neglect of those subjects which are not included in the Department's directory, and of their being subordinate to instead of co-ordinate with them." The attempt is being made to bring about this co-ordination of subjects. Science has been pursued in the schools in a somewhat fragmentary and unsatisfactory way, without a study of other subjects necessary to a proper education. Thirteen new inspectors have been appointed for the purpose of improving the supervision of science instruction given under the Department. This addition to the staff has enabled it to divide Great Britain and Ireland into districts, in each of which an inspector is located. These inspectors are responsible for the inspection of the schools, and also for the supervision of the temporary local art inspectors who are employed in the examination of art and manual instruction in the elementary schools in their districts. They will also aid the local authorities who administer the funds or grants for technical education. The report observes truly that in some subjects of science the instruction is not sufficiently practical, and it believes that the addition to the staff will make it practicable to supervise and inspect the practical work which is given in the schools. Laboratory work in physical and biological science is specially referred to, and the report hopes to arrive at some plan to promote this part of instruction. Other heads of the report refer to instruction in Science and Art, the Museum, with the branch at Bethnal Green, other Museums in connection with the Department, the Geological Survey of the United Kingdom, the Committee on Solar Physics, Technical Education, &c. The extracts from the reports by examiners are of interest, especially those relating to elementary design by Mr. Lewis F. Day. Mr. Day complains of the inattention of candidates to instructions, and want of obedience to conditions. The remarks also made by Mr. Walter Crane in the advanced stage of design, and by Prof. Roger Smith, the examiner in Architecture, are worth attention by students.

NEW PREMISES FOR MESSRS. HORACE MARSHALL AND SON.

TEMPLE HOUSE, in Temple-avenue, Victoria Embankment, is the name of the new building just completed by Messrs. Horace Marshall and Son, of Fleet-street, in order to meet the expansion of their business as wholesale newspaper agents and publishers. This building is designed in the Italian style, and is constructed of red brick and Portland stone. It occupies a corner site with 100ft. frontage to Temple-avenue and 80ft. to Tallis-street. Both frontages are set back about 5ft. so as to form an area from which a lofty basement is well lighted and ventilated. The basement and ground floor, containing an area of nearly 16,000ft., with hydraulic lift and every convenience, will be devoted to the general requirements of the business, the clerks' offices and stock rooms being on the upper floors. On each of these floors, and fronting Temple-avenue, are suites of offices for the use of editors connected with the various publications issued by the firm, and also offices for the use of the principals. These rooms are approached from the principal entrance by a broad stone staircase, with granite columns and oriel windows. The principal entrance is at the junction of the two streets. Business considerations naturally predominate in the arrangement of the structure; but wherever artistic features have been consistent with convenience and comfort they have been liberally introduced. The architect is Mr. Frederick Boreham, Finsbury Pavement. The builders are Messrs. Patman and Fotheringham, Park-street, Islington.

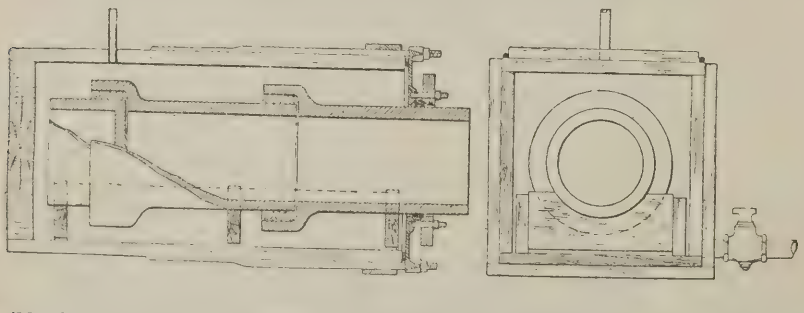
TESTS OF CEMENT SEWER JOINTS.

IN a separate system of sewerage the infiltration of ground water is a serious matter, especially when the sewage has to be purified before its discharge into a water-course. The ground water, in such cases, has to go through the same processes and the same apparatus as the domestic wastes, and consequently the first cost of the purifying works and their subsequent expenses for operation are increased. A large part of the leakage is due to the difficulty of making perfect joints in wet trenches, a difficulty which is greatly increased by the shortness of the lengths of pipe. In spite of the importance of this matter but little definite information has been made public concerning the passage of water through joints. Mr. F. P. Stearns has estimated that the infiltration of ground water into the main sewers of Boston, Mass., equals 45 gallons per capita daily, while at one time half the contents of the sewers of East Orange is estimated to have been ground water, although this proportion is stated to have decreased of late. In view of the lack of data on the matter we give considerable space below to an abstract of an excellent paper by Freeman C. Coffin on the results of some tests of the seepage of water through well-made joints. This paper was recently presented to the Boston Society of Civil Engineers by Mr. Coffin and is a contribution of permanent value to our engineering literature.

The experiments were made in a tank, shown in the cut, in which the pipes could be placed with one open end projecting and with the joints under water pressure from the outside, as in a sewer where the ground water is higher than the pipe. The leakage was carefully collected from the projecting open end of the pipe. All the tests were made under a uniform head of 5ft. above the centre of the pipe, this head being assumed as possibly about the average of that of ground water on sewers. It was obtained by a half-inch pipe screwed to the top of the tank, with a pail at the upper end into which the supply was conducted by a hose.

The pipes used were all 6in. in internal diameter and in lengths of 1ft., made so for convenience in handling. The plug was simply a closed end of pipe of the same diameter and 6in. long, which was placed in the tank as shown in Fig. 1. There were three kinds of joints used. One had a socket of the usual form, leaving room for a ring of cement between spigot and bell about a $\frac{1}{4}$in. thick and $1\frac{1}{2}$in. long. A second joint was made with a socket $2\frac{5}{8}$in. deep with $\frac{5}{8}$in. joint room, and the third kind of joint was made with sockets like the second, on the inside of which a number of roundabout grooves had been made.

The experiments were made in a light, cool basement, with a temperature of about 50° Fahr. The pipes were placed on end with the sockets up and the plug placed in the upper one of the two used in each experiment. The cement was carefully packed into the joints and rammed with a wooden rammer to compact the mortar as much as possible in the joint. The outside of the cement was carefully smoothed with a flat steel blade. When the joints were completed the pipes were covered completely with a damp cloth and allowed to stand undisturbed in that position until the end of the time of setting, when they were placed on a wooden cradle and put into the tank. The end of the tank and the stuffing-box was then placed in position and the water let on. The leakage was not collected for measurement until both joints seemed to be running at their full or normal rate, when the time was noted and the collection commenced. Sixty-three experiments were made in all, and the leading features of the results have been summed up by Mr. Coffin practically as follows :—



In the usual form of pipe socket, with well-made joints of either neat Portland cement, or 1 to 1 mortars of either Portland or Rosendale cements, with overfilled joints, the leakage would probably not exceed 1,000 gallons a mile daily, with the level of the ground water from 2ft. to 8ft. over the pipe. But the small space for cement in this joint makes it difficult to make a full joint in the trench, and although the tests show fairly good results, the difficulties in the way of doing good work in a wet trench lead to the conclusion that a larger and deeper socket is advisable where tight work is desired.

In pipe with deep sockets the tests indicate that if the joints are well made the leakage would be about as follows: With neat Rosendale cement it might be over 100,000 gallons a mile daily, while with 1 to 1 Rosendale mortar it would probably not exceed 700 to 800 gallons. With 1 to 2 Rosendale mortar it would approximate 1,000 or 1,200 gallons a day. With neat Portland cement about 150 gallons might be expected, and with 1 to 1 Portland mortar from 500 to 600 gallons. Mr. Coffin finds that the advantages of the wider and deeper sockets lie in the greater ease with which the mortar can be put into the joint, in the facility with which a wooden rammer of sufficient size may be used, in the greater depth of the joint along the pipe, which apparently reduces the seepage and increases the liability of imperfectly filled portions of the joints being covered by better compacted portions, in giving a greater body of cement to resist the action of the water reaching it before it is set, and in allowing the mortar to be placed within the joint instead of outside of it, which latter is of doubtful value in a trench where water is liable to reach it before it is set. The increased length of the joint aids very materially in preventing the pipe from moving in the joint and thereby making a direct passage for the water into it.

A gasket apparently increases the leakage by reducing the length of the joint and thus the resistance to the passage of water, but in a very bad trench where the water is likely to blow or wash the cement from the joint it would prevent the sand from entering the pipe, and if thoroughly saturated in a grout of neat cement might prevent the passage of water somewhat. If the water, or the pressure of water, could be kept from the pipe for 12 hours it would materially reduce the seepage, especially in the Rosendale cement.

The great trouble seems to be to make good joints, largely on account of the shortness of the pipe. If 3ft. lengths were adopted in the place of 2ft. lengths the number of joints would be reduced one-third. Mr. Coffin further suggests the experiment of making half the joints on the bank when the trench is wet, in a sort of cradle which will insure good alignment; this would leave but half the joints to be made in the wet trench. If neat Portland cement were used the pairs of pipes could be removed from the cradle after $1\frac{1}{2}$ hour, and if Rosendale cement were used they could be removed in four or five hours, although a longer time would be desirable. Mr. Coffin believes that nearly perfect joints could be made in this way in from one-sixth to one-third the time required in the trench, with less waste of cement. Then there would be 6ft. lengths to lay, which could be readily done in a good manner by damming the section of the trench and pumping it dry.

In making the experiments no attempt was made to test different brands of cement. That used seemed to be of good quality, but was not examined except by a sieve having 6,400 meshes to the inch, which retained 14 per cent. of the Portland and 28 per cent. of the Rosendale cements.

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL.—VI.

HAVING ascertained in our last articles the maximum stress upon the centre of either of the flanges of our plate girder, we may now proceed to provide the necessary sectional area, and arrange the riveting for the whole of the built-up section. Omitting decimals, we require 29sq.in. for the net sectional area of the upper flange, and 25sq.in. for that of the lower. We shall deduct the rivet-holes in both flanges, and disregard the much-mooted question whether the holes weaken steelwork in compression to the full amount of the area of metal punched or drilled out. That they do not has been well established; but as the percentage of loss is very small, the result will be a small corresponding gain to the strength of the upper flange of both main and cross girders, and in fact to all of the members subjected to a compressive stress. The value of the reduction, which was represented in our articles on "Riveted Joints" published in the early part of the present year, is given by the general equation—

$$N = (G - x),$$

which, as will be seen, assigns but a small amount to x. In Fig. 7 a plan of the interior of part of one of the flanges, and in Fig. 8 a plan of part of the exterior, is shown. The width of the flange is 18in., so, deducting the diameter of two rivets, we have the value of each flange plate $\frac{1}{2}$in. in thickness equal to—

$$\left(\frac{18 - \frac{3}{2}}{2}\right) \times \tfrac{1}{2} = 8{\cdot}25\text{sq.in.}$$

of net sectional area. Making the angle-irons of the flanges equal each to 4in. × $3\frac{1}{2}$in. × $\frac{1}{2}$in., we have the value of one equal to—

$$(4 + 3 - \tfrac{3}{2})\,\tfrac{1}{2} = 2{\cdot}75\text{sq.in.}$$

The requisite sectional area for the upper flange can be obtained in the following manner—

Three plates 18in. × $\frac{1}{2}$in. .... =	24·75sq.in.
Two angle-irons 4in × $3\frac{1}{2}$in. × $\frac{1}{2}$in.. =	5·50sq.in.
Net sectional area of upper flanges.. =	30·25sq.in.

For the lower flange under a tensile stress, owing to the higher unit stress adopted, only 25sq.in. are required, which is easily insured by diminishing the thickness of two of the flange-plates to $\frac{3}{8}$in. and the calculation will stand thus—

One plate 18in. × $\frac{1}{2}$in.	8·25sq.in.
Two plates 18in. × $\frac{3}{8}$in.	12·49sq.in
Two angle-irons 4in. × $3\frac{1}{2}$in. × $\frac{1}{2}$in. ..	5·50sq.in.
Net sectional area of lower flange	26·24sq.in.

It will be seen that both these areas are a trifle in excess of what theory actually demands. Instead of employing two plates, each $\frac{3}{8}$in. thick, the same object could be gained by using only one $\frac{3}{4}$in. thinkness; but for girders of comparatively small span this dimension would be rather heavy, and in practice it is advisable not to make too great a "jump" in the thickness of the different plates or bars. In designing the flanges of girders, the width should be kept constant, and the size of the angle-irons, and the difference of the area required near the ends effected by dimishing the thickness, or "dropping" one or more of the flange-plates, as will be presently pointed out. The horizontal section in Fig. 7, and the outside plan in Fig. 8 will answer for both the upper and lower flanges of our main girders, the difference being apparent in the cross section of the whole girder in Fig. 9.

Although theoretical rules are given in plenty for the pitch of the rivets in girder work, that dimension is usually determined by precedent and experience. While on the one hand there is no necessity for centring the rivets so closely as they are placed in boilers, tanks, and other examples of construction which are to be water-tight, steam-tight, or air-tight; on the other hand, if they are given too great a pitch, the plates, especially if thin, are liable to "spring," and dirt and moisture find their way in between them, speedily setting up corrosive and destructive action. A thorough examination of bridgework which has been some time in use will well reward the young engineer or architect for his trouble, and will reveal to him some practical information relating also to the scraping and repainting of iron and steel which generally is only possessed by those practically engaged in those operations. It must be borne in mind the plates are pressed together more closely and uniformly by steam or hydraulic riveting—which are almost universally employed now—than is possible with the old hand method, which can, nevertheless, do excellent work under efficient guidance and supervision. The pitch of the rivets in our example in Figs. 7, 8, and 9 is 6in. from centre to centre in every position; they are so spaced on the one half of the flange as to break joint with those corresponding to them on the other; but the difference between the line of fracture taken straight or square across the angle-iron of the flanges, and in the slightly zigzag direction shown in the figs. is small, and practically the two lines are frequently regarded as one, and the rivets connecting the web and the vertical rib of the angle-irons of the flanges made to centre with those in the horizontal rib of one or other of the angle-irons. The latter arrangement also possesses the practical advantage of dispensing with an additional "templet" in making out the rivet-holes on the plate *n*, and so saves both time and labour in the shops. For plates and angle-irons of the scantlings we have selected, the diameter of all the rivets is ¾in. In order to complete the cross-section of the main girders at the centre, we have to find the thickness of the plate-web, which must, for practical reasons inseparable from the construction of the girders, be made very considerably stronger than what is required by the stresses brought upon it. It was demonstrated in Article IV. that the shearing stress at the centre of the plate-web of a girder was equal to one-eighth of the greatest rolling load that could be brought upon it. It will not be correct, in determining the stresses upon the web, to consider the line or rolling load uniformly distributed, as was done in the case of the flanges, for if that assumption were adopted, there would be theoretically no stress upon the web at the centre, instead of the amount already determined. The rolling or total line load on each main girder $= \frac{(231 - 75)}{2} = 78$ tons, and dividing this by 8 we obtain the shearing stress equal to 10 tons requiring only 2sq.in. of net sectional area. The depth of the main girders has been taken equal to 5ft. over all at the centre, which has also been adhered to in the calculations respecting the stresses; but it should be mentioned that this dimension in large girders is measured from the centre of gravity of the flanges, and is called the effective depth. It is at this point also where the connection between the flanges and web is supposed to be made, and girders have been designed with flanges built up of a section intended to especially insure this requirement. At the same time it is very doubtful whether any appreciable practical advantages accrue from paying too much attention to mere theoretical minutiæ. This is the rock upon which the simple scientific and mathematical designer, without the practical knowledge and experience of the professional man, invariably splits. He is totally ignorant of the fact that, while endeavouring to balance the direction of forces to the fraction of a line, and twisting and torturing the material into shapes and forms unknown to the metallurgist and manufacturer, he is adding most seriously to the cost of his structure, which, in these days of strenuous competition both at home and abroad, is a primary consideration for all parties concerned. The engineer and the architect, as well as the members of the other professions, may gain a useful lesson from the old Latin adage, *In medio tutissimus ibis.*

FIG. 7.

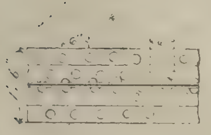


FIG. 8.

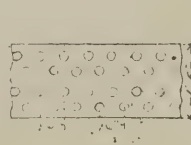
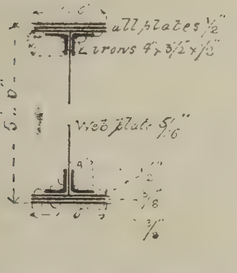


FIG. 9.



It is evident, from the small quantity of material required in the web plate at the centre of the girder, that its thickness may be reduced to the smallest amount consistent with other considerations, which fix it at five-sixteenths of an inch. There is a detail connected with the action and function of a continuous or plate web which should be brought forward, as some diversity of opinion exists on the subject, although so far as the treatment of it is concerned the consensus is nearly universal. The question may be thus put: Does the continuous web relieve the flanges of any of the longitudinal stresses developed upon them, and if so, should the net area of that small part of the plate web riveted in between the horizontal angle-irons of the flanges be included in the total net sectional area of the flanges? It has been asserted by the partisans of the solid-web type of construction that the plate web does relieve the flanges of an amount equal, as the maximum, to one-sixth of their longitudinal stresses of tension and compression respectively. This assertion is, however, doubtful, and the rule is to regard the small part of the web as distinct from the flanges in all calculations of the stresses upon either of them, although it is well known that the solid web does not act partially in the manner alleged. To the second question the answer is also in the negative—so much so, that in some instances it is stipulated in the conditions to be observed by candidates in designs for competition, that no portion of the solid plate of a continuous web shall be included in the calculations of the net sectional areas of the flanges. After deducting the number of rivet-holes made in the web for the purpose of attaching the vertical differences, as will be presently perceived, the remaining net sectional area of the web will be so largely in excess of what is necessary, that there is no need for working out the numerical result. The thickness of the web will be seen to be determined by the maximum shearing stress upon it, which occurs over the bearings at the ends of the girders. Thus the cross section of the main girders of our plate bridge at the centre, supposing there is no stiffening plate at that point, will be represented in Fig. 9, in which the web is shown broken, so as to allow of the whole cut being drawn to a larger scale without encroaching too much upon valuable space.

As the stresses upon the flanges vary, *cæteris paribus* as the product of the segments into which the total span is divided by the point where any particular stress is required, the sectional area may be decreased towards the ends, where one of the segments is equal to zero. This diminution of the area is best accomplished by discontinuing or "dropping" one or more of the horizontal flange plates, and the next feature in the design is to determine the point where one of the half-inch plates in the upper flange, for instance, may be dropped. If we put E to represent the efficiency or value of a plate in tons, *a* the net sectional area, and F the unit stress for the material, we shall have, for one ½in. plate—

$$E = a \times F = 8{\cdot}25 \times 6 = 41{\cdot}50 \text{ tons.}$$

The central stress was found to be equal to 172·5 tons, so that (172·5 − 41·5) = 131 tons, and the problem therefore resolves itself into that of finding the point in the girder where the stress is equal to that amount.

Our equation for the longitudinal stress at any point of the upper and lower flange, dividing the span into any two segments x and y, is—

$$S = \frac{W\,(x \times y)}{2 \times D \times L},$$

from which we obtain—

$$(x \times y) = \frac{2 \times D \times L \times S}{W}.$$

Make the right-hand side of the equation equal to z, and putting $y = (L - x)$, we have—

$$x^2 - x\,L = -\,z.$$

Solving the quadratic, it gives us—

$$x = \pm \sqrt{\left(\frac{L}{2}\right)^2 - z} + \frac{L}{2}.$$

Inserting for z its value $Z = \frac{2 \times D \times L \times S}{W}$ = 684, we find—

$$x = \pm \sqrt{216} + \frac{L}{2}$$

and, finally, we obtain for the length of the segment x—

$$x = \pm\,14{\cdot}42 + \frac{L}{2}$$

Since $\frac{L}{2} = 30$, subtracting gives—

$$x = 15{\cdot}58$$

and adding makes—

$$y = 44{\cdot}42$$

Consequently at 15in. from the ends of the girder over the bearings one of the flange plates may be dropped both above and below.

The point where the second plate may be dispensed with will be found by a repetition of the same calculation. Deducting another 41 tons from 131 tons we shall obtain—

$$z = 469{\cdot}8,$$

and thence—

$$x = 9{\cdot}27 \text{ and } y = 50{\cdot}73.$$

We have preferred this method of arriving at the points required, as our own notation is adhered to, and, besides, in future articles, these calculations will not be again entered into, but assumed as established, and referred to when the subject demands them. Those of our readers who prefer it, may use the following simpler formula, where the adfected quadratic is replaced by a pure quadratic. Put r equal to the distance from the centre of the girder of the point dividing the segments, then—

$$x = \left(\frac{L}{2} - r\right);\ y = \left(\frac{L}{2} + r\right)$$

from which—

$$(x \times y) = \left(\frac{L}{2} - r\right) \times \left(\frac{L}{2} + r\right) = Z$$

Multiplying the two factors, we have—

$$\left(\frac{L}{2}\right)^2 - r^2 = Z,$$

whence—

$$r = \sqrt{\left(\frac{L}{2}\right)^2 - Z}.$$

Making Z as before = 684, then r = 14·42, and x = 30 − 14·42 = 15·58, the value obtained by the previous calculation.

We have now ascertained all the data needed for designing the flanges of the main girders; but there is still another stress upon the web to be determined, which is the maximum shearing stress upon it, and occurs over the bearings, and is equal to

$$\frac{W}{2} = \frac{115}{2} = 58 \text{ tons,}$$

which will require 10sq.in. of material. Allowing for all rivet-holes, the net sectional area of the web may be put at 52in. × $\frac{5}{16}$in., which will leave a more than sufficient margin for safety. We can now plot the elevation, plan and sections of the main girders, and in so doing we shall draw attention to the practical precautions necessary to impart the proper degree of stability and rigidity to the whole structure.

THE THRUSTS ON WALLS AND ARCHES.*—VII.

By G. A. T. Middleton.

ARCHES.

THE theory underlying the correct designing of arches can be expressed in very few words—the line of resultant pressures should in all cases pass within the centre third of the arch ring. In practice, however, it is found that in ordinary cases it is sufficient if this line of resultant pressures pass within the centre *half*, instead of the centre *third*, of the ring; and, of course, in addition to this, the material of which the arch is built must be sufficiently strong to with-

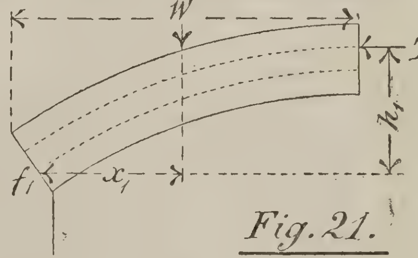


Fig. 21.

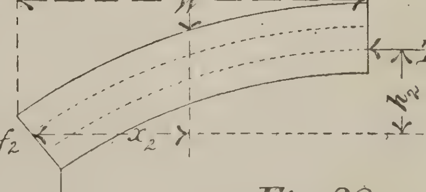


Fig. 22.

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* All rights reserved.

stand these resultant pressures safely. The problem is, therefore, to determine the value and direction of these resultant pressures.

In the case of a symmetrically loaded arch it is clear that the thrust at the crown is a horizontal thrust. Its true value, however, is difficult to determine, varying according to where within the centre third of the arch ring it acts. In Fig. 21 it is shown acting at the outer, and in Fig. 22 at the inner extremity of the ring; its true position is, in all probability, somewhere between these two extremes. Half of the arch only is shown in either diagram, for the sake of clearness, and in each the weight resting upon the half arch is concentrated at its centre of gravity, acting downwards vertically as lettered, W.

Taking the extreme case shown in Fig. 21, the value of the thrust T_1 is determined by taking moments about the point f_1 at the abutment extremity of the dotted outline of the *inner* side of the centre third of the arch ring.

Then— $T_1 \times h_1 = W \times x_1$

and therefore— $T_1 = \dfrac{W \times x_1}{h_1}$

Taking the other extreme case shown in Fig. 22, the value of the thrust T_2 is determined by taking moments about the point f_2 at the abutment extremity of the dotted outline of the *outer* side of the centre third of the arch ring.

Then— $T_2 \times h_2 = W \times x_2$

and therefore— $T_2 = \dfrac{W \times x_2}{h_2}$

Taking either of these extremes, it is treated as shown in Fig. 23. The thrust T_1 is compounded with the weight K of the voussoir nearest the centre of the arch, and all it carries, acting through their combined centre of gravity. The resultant R is found, and is produced to cut the joint between this voussoir and the next, the point where it does so being one point in the line of resultant pressures, and consequently it should lie within the centre third of the arch ring.

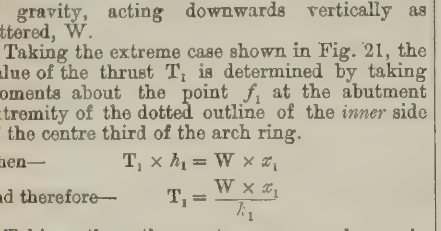

Fig. 23.

This resultant is similarly compounded with the weight of the next voussoir and what it carries, a fresh resultant being found and produced to cut the next joint, and so on. The points where these resultants cut the joints to which they relate are all points in the line of resultant pressures, and should all fall within the centre third of the arch ring. If they do so, the arch is stable under one of the extreme cases, and no further inquiry is needed; if not, the other extreme case must be tried. If this also result unsatisfactorily, it will either be evident at once that the voussoirs must be deepened, or that there is some intermediate case which will give a satisfactory result; and in either event the same process of further trial must be continued until a resultant line be found which lies wholly within the centre third of the arch ring.

It will be noticed that a vertical joint is assumed at the centre of the arch, and this is done for convenience of calculation. As a matter of fact, the voussoirs assumed for calculation need not be those used in actual practice, a brick arch of several rings of brickwork, for instance, being treated for calculation as of one ring only of the total depth, and as cut into some half a dozen or dozen voussoirs only. It is well, however, where possible, that the joints between the voussoirs should be at right angles, or nearly so, to the resultant pressure which impinges upon each.

In the case of an unsymmetrical load—by no means an uncommon thing in buildings—the horizontal thrust is found to be under the centre of gravity of the loads. It is there where the thrusts T_1 and T_2 for the two main trial cases have to be ascertained by taking moments round f_1 or f_2, as already explained. Beyond this the calculations are identical.

It is also possible to solve these problems by means of a side diagram; but to give this second method would possibly only serve to confuse students, and make them think that complicated which is in reality quite simple.

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BOOKS RECEIVED.

Brick for Street Pavements, new edition, by M. D. Burke, C.E. (Cincinnati: Robt. Clarke and Co.), is an account of tests made of bricks and paving blocks which can hardly fail to be of interest to all borough surveyors. Mr. Burke writes from experience of the use of brick pavements, and his pamphlet is founded on a report made to the village authorities of Avondale, where he is engineer. Several samples were furnished by manufacturers by request. Three cubes of each variety of brick were used, the absorption, specific gravity, crushing strength being severally tested. Mr. Burke describes the specimens submitted, how the tests were made for absorption, crushing strength, transverse strength, abrasion, and impact. The results are tabulated for every variety of clay. The author says absorption should be placed at the lowest limit, say 2 per cent. as a maximum; specific gravity, 2$\frac{1}{10}$ as a minimum; the crushing strength should not be less than 12,000lb. per square inch as an average, the limit of variation not to exceed 25 per cent. below. The construction is discussed very fully, and a paper on country roads is added. Mr. Burke's pamphlet is a comprehensive and systematic treatise on brick pavements.——*Cassier's Magazine*, July, No. 33 (New York: Cassier Magazine Co.; London: Lay and Bird, 5, Chandos-street). The present number of this beautifully-illustrated record of engineering industry, steam, and electricity, is full of instructive matter. Mr. W. G. Bonner writes a most interesting paper on "The Redwoods of California," illustrated by sixteen views of forest scenes, saw mills and machinery, which gives a graphic though faint idea of the solemn grandeur of the redwood forest, and the mysteries of its age and growth. The photo. blocks convey some idea of the giant trees of this primeval forest and the means taken in transporting the huge logs. Mr. F. G. Coggin's paper on "The Ferris and other Big Wheels," with illustration of some of the largest wheels in the world, has an interest just now especially for the engineer. Other papers are on "Mechanical Draught," by W. R. Roney; "Relations between Gas Companies and Consumers," by W. Paul Gerhard, C.E.; "The Light of the Future," by D. Macfarlane Moore, &c. These are all illustrated. The magazine is well printed, and is a cheap shillingsworth.——The quarterly issue of the *Essex Review* (Chelmsford: E. Durrant and Co.) contains an interesting article on the twin churches at Salcot Wigborough and Salcot Virley, in the district popularised by the Rev. S. Baring Gould in *Mehala*, by Mr. Fred Chancellor, J.P., F.R.I.B.A., illustrated by sketches and plans. The former church has been almost rebuilt in the past two years, and the latter, always dilapidated, was so shattered by the earthquake of 1884, that it has been suffered to remain a roofless ruin. Mr. B. R. Branfill writes a readable article on Billericay, and Mr. F. Carruthers Gould describes and illustrates his "Germ-Hunting in Mehalaland." The notes and queries are of considerable local interest.——*Journal of the Sanitary Institute* (London: Edward Stanford).—Vol. XV., Part II., for July, contains several papers by Mr. Lewis H. Isaacs, F.R.I.B.A., on the "Construction of Roads and Streets from a Sanitary Point of View"; by Mr. G. J. Symons, F.R.S., on "Meteorological Instruments and Sanitary Work"; by Mr. H. R. Mill Dow, D.Sc., F.R S.E., on the "Temperature of Soil, Water, and Air"; by Mr. R. A. Scott, F.R.S., on "Barometrical Conditions and Air Movements"; by Mr. W. Marriott, F.R.Met.Soc., on "Moisture: its Determination and Measurement"; by Mr. D. C. Theodore Williams, M.A., &c., on "Climate in Relation to Health, &c."; by Mr. F. Gaster, F.R.Met.Soc., on "Fog, Cloud, and Sunshine." Dr. Parkes, M.D., D.P.H., contributes an article on the "Possibility of the Spread of Disease through the River Waters Supplied to London." The volume contains also reviews of books; "Notes on Sanitation Abroad"; "Hydraulic Formulæ," by Mr. Henry Law, M.Inst.C.E.; law cases; programme of Liverpool Congress, &c.——*Chapters in Workshop Reconstruction and Citizenship*, by C. R. Ashbee, M.A., Architect (London: Guild and School of Handicraft, Mile-end-road).—The chapters in this volume, which is got up with some regard to artistic finish in its printing and the vignettes which adorn every chapter with delightful disregard of conventionalities, are instructive and interesting. Many gossipy dialogues may be found in the book upon art as it is, and as it might be; on the questionable wisdom of looking for the cultivation of beauty from the British middle class; on the teaching of design and its relation to workshop reconstruction; the relation of the architect towards the workshop, and the possibility of a Metropolitan school of architecture. Mr. Ashbee is a clear and pleasant writer, and, what is better, has right views of art and craftsmanship. He endeavours to show, in his own words, "not that the demand should be created and the supply increased, but that the demand is already there, only misdirected, and the supply, produced on false and artificial systems, in part, because of this misdirected demand. That, in fine, what we have to do is to guide demand by education, and to influence supply by workshop reconstruction." The author says truly, if beauty is to be made an element in our production, or in the life of our citizens, we must reconstruct the workshop—that is, our system of production in its social and industrial bearings. Citizenship must be changed before we can hope to produce better and more artistic objects than the "commercial artical" which is only made to sell. We advise all thoughtful artists and craftsmen to read "A Few Definitions towards an Ideal." The collectivist ideal is more to the purpose than the revolutionary socialism, as it is more constructive in its methods, and retains that regard for the past and for order which is necessary to progress. The fifteen chapters of this book which we have generalised are well worth reading, especially those on "Decorative Art from a Workshop Point of View," "Teacher and Humourist," "On the Teaching of Design," "The Higher Aspects of Technical Education."——*Society of Engineers: Transactions for* 1893, edited by G. A. Pryce Cuxson, the secretary (London: E. and F. N. Spon), contains the Inaugural Address of the President, "The Leicester Main Drainage," by Mr. E. G. Mawbey; "The Cleaning of Tramway and other Rails," by Mr. Henry Conradi; "Blake's Bridge, Reading," by Mr. Edmund Burrows; "Hydaulic Lifts," by Robert Carey, &c. The volume is illustrated by several plates, and there is a good index.——*The Sanitary Arrangement of Dwelling-Houses*, by A. J. Wallis-Tayler, C.E., Assoc.M.Inst.C.E. (London: Crosby Lockwood and Son), is a useful handbook for householders and owners of property. The author avoids the technical style of most treatises, and gives in a plain way the information necessary for the householder on sanitary fittings and arrangements, the proper draining of dwelling-houses and their ventilation, heating, and water supply are discussed, and the provisions of the Public Health Act, 1875, and the Public Health (London) Act, 1891, which bear on sanitary arrangement and the model by-laws, &c., are appended. The book is well illustrated, and the most recent types of sanitary fittings and appliances are selected.——*The Sanitary Engineers' Pocket Report-Book*, compiled by E. A. Sandford Fawcett, A.M.I.C.E. (London: E. and F. N. Spon), is a useful series of heads for reporting on drainage, water supply, and the sanitary condition of premises, for the use of sanitary engineers and experts in examining, testing, and reporting on these matters. These heads are given on every double-page of the book, with blanks for filling in, and relate to outfall of drainage, inspection chamber, intercepting-trap, fresh-air inlet, main drain, branch drains, soil-pipes, ventilating pipes, rain-water pipes, sinks and wastes, baths, lavatories, closets, water-supply, cisterns, result of smoke-test, ditto of water-test, remarks. A full index, with pages of sectional paper divided into tenths of an inch, for sketching plans, &c., is given. We recommend this pocketbook to all specialists and inspectors who have to make reports on the sanitary state of dwellings.

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The east window of Bothal Church has just been filled with stained glass. The subjects illustrated are "The Sermon on the Mount," and on the right and left are two figures of St. Peter and St. Paul. The window has been executed by Messrs. Atkinson Brothers, Newcastle-on-Tyne.

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CHURCH EMBROIDERY, BY MAY MORRIS: TISSUE, ITALIAN XIII. CENTURY.—ARCHITECTURAL ASSOCIATION EXCURSION SKETCHES. — ST. GEORGE'S HOME, CAPETOWN, S.A. — NEWPORT INTERMEDIATE AND TECHNICAL SCHOOLS.

Our Illustrations.

CHURCH EMBROIDERY.—NO. XII.

For description of this Italian tissue in the South Kensington Museum, see Miss May Morris's article on p. 168 *ante*.

ARCHITECTURAL ASSOCIATION EXCURSION SKETCHES.

We give, among our illustrations, five single-page sketches of some of the more interesting buildings to be visited during the forthcoming A.A. excursion to Wells and its neighbourhood. A descriptive article, with view of interior of Croscombe Church, appears on pp. 169-70, and on p. 171 are a plan of Wells Cathedral and a perspective sketch of Stourhead House.

ST. GEORGE'S HOME, CAPE TOWN, S.A.

This extensive and comprehensive series of buildings, illustrated by us to-day, represents the new Home of the Sisters of All Saints at Cape Town. The buildings include, besides the "home" proper, an orphanage (St. Michael's) for some 200 children (boys and girls), a boarding-school for young ladies (St. Cyprian's), a day-school (St. Hilda's) for girls who require a less complete education, and a chapel for the use of the several institutions. The accommodation for each department is most complete—arranged on a plan which is conventual, and brings the different institutions under one organisation with greater facility of management. The style of architecture adopted seemed the most suitable to the purpose, and the buildings, though of very simple façades, form an effective group. The site is elevated and extremely salubrious, commanding a view of Table Bay and of Cape Town. It is not, however, more than a mile from the centre of the city. The total cost of the whole scheme is estimated at £33,000 to £35,000. The portion now in course of construction and nearly completed will cost £22,000, and will comprise the "home" and orphanage, with kitchens, laundry, stables, &c. Construction has been carried out as economically as possible; the cost generally may be reckoned at 5d. per foot cube. The foundations to plinth level are of rubble stonework, and the superstructure of brickwork set in clay mortar or "daaga," as it is locally called, and plastered outside in rough-cast, relieved by quoins, bands, &c., of red pressed bricks. Inside the walls have been flush-pointed (not plastered at all) and coloured with calcareum. This is found to be quite satisfactory in appearance, and to answer admirably every way. The buildings are connected with the city water supply and drainage systems, so that their sanitary provisions are most complete. They are being executed from designs by, and under the supervision of, Mr. Sydney Stent, M.Inst.C.E., F.R.I.B.A., of Cape Town; and the contractors are Messrs. W. and G. Scott, also of that city.

NEWPORT INTERMEDIATE AND TECHNICAL SCHOOLS.

In March last eight sets of designs for the above building were sent in by local architects. The governors selected Mr. B. Lawrence's plans, which we now illustrate, and awarded him the first premium of twenty-five guineas, and the second premium of fifteen guineas was given to him, in conjunction with Mr. Charles J. Fox, for their plans, which had an almost similar arrangement, but as a mixed school. The selected plans have been somewhat modified and reduced to meet the present expenditure; but the complete scheme will be in accordance with the submitted designs, and the work will be carried out under Mr. Lawrence's superintendence.

CHIPS.

The joint committee of school boards, who have combined for the purpose of erecting a school for the deaf and blind children in North Staffordshire, have appointed Mr. Scrivener, of Hanley, as their architect.

A new organ in Kenwyn Church, near Truro, built by Messrs. Brewer and Co., of that city, at a cost of £325, was dedicated last week.

Warrants have been granted to the Edinburgh School Board, in the Dean of Guild Court of that city, to make alterations on or additions to seven of their schools. They propose to add a wing to Leith Walk School, to erect boundary walls at North Merchiston School, and to make alterations at Regent-road, New-street, and Canonmills schools. The largest alteration will be made at Abbeyhill, where a school for infants is to be erected, with a swimming-bath on the basement floor. The architect for the works is Mr. Robert Wilson, Queen-street.

The central free library at Birmingham has just been redecorated by Mr. E. H. Thompson at a cost of about £850. A new branch library in Moseley-road, in the same city, is about to be built from plans by Messrs. Jethro A. Cossins and Peacock at an estimated cost, including clock-tower and suite of public baths, of £5,500.

A scheme of sewerage and sewage disposal has been prepared for the local board of Brigg by Messrs. Pollard and Atkinson.

The foundation-stone of a new church at Kilkeel, co. Down, was laid last week by the Countess of Kilmorey. The building is Gothic in style, will seat 200 persons, and will cost £2,000. The architect is Mr. David C. Salmond, of Windsor-place, Cardiff, who is laying out Kilkeel as a seaside resort.

New works of water supply have just been completed for the borough of Newark. The reservoir, a covered one, is built on Edingley Hill, and the pumping station is at Farnsfield. Mr. Rofe, C.E., was the engineer, Mr. Rayner the assistant engineer, Mr. Davis the clerk of works, and Mr. Jenkins the contractor for the pipe-laying.

The town council of Edinburgh have under consideration a scheme prepared by Mr. T. Morham, the city architect, for a reconstruction of the City Chambers at an estimated cost of £50,000. A new council chamber, two and a half times the size of the existing one, would be the chief feature of the new building.

At Tuesday's meeting of the North Riding County Council, it was reported that five architects had sent in competitive plans for the proposed county buildings, and that Mr. Alfred Waterhouse, R.A., had been appointed assessor.

The business premises in Old Bond-street, W. which were built for and occupied by a firm of auctioneers until they removed to Willis's Rooms, have lately been altered into showrooms. The architects who carried out the original work and all alterations are Messrs. J. T. Wimperis and Arber, of 25, Sackville-street, Piccadilly, W.

The foundation-stone of a United Methodist chapel was laid in Ivor-street, Newport, Mon., on Friday. The chapel will be square on plan, but it is octagonal from 10ft. above the ground floor. Cusped and traceried hammer-beams support the roof and a central flèche. The style adopted is Early English, and the materials are red bricks for walling, and moulded bricks of the same colour for arches and dressings. Accommodation is provided for 500 persons all on the ground floor. Beneath the chapel are classrooms. The architects are Messrs. Swash and Bain, of Newport, and the contractor is Mr. John Jenkins. The cost will be £3,500.

New railway stables are being erected at Birmingham by the Midland Railway Co., and special consideration has been given to the ventilation, which will be effected on the Boyle system, the latest patented improved form of self-acting air-pump ventilators being adopted for the extraction of the vitiated air.

COMPETITIONS.

City of Londonderry.—The design selected in open competition for the Corporation public baths is by Mr. Horace T. Bonner, A.R.I.B.A., of 29 and 30, King-street, Cheapside, London, who has been instructed to proceed with the work.

Darlington School Competition.—We are informed that the account we published last week of the result of a competition for new schools is incorrect, in so far as it stated that Mr. Robson, the referee, named any order in the merit of designs beyond the first and second.

Huddersfield. — The town council have adopted the joint report of the assessors on the designs for a fever hospital to be built at Mill Hill, Huddersfield—Mr. Alexander Graham, F.R.I.B.A., Regent-street, W., and Dr. Whitelegge, medical officer of health for the West Riding—and have awarded the design marked "Aspect," by Messrs. Edward Thomas and Sons, 7, Queen Anne's-gate, S.W., the first premium of £105; "Microbe" (B), by Messrs. Groll, Minty, and Webbe, of William-street, Hampstead, N.W., the second premium of £75; and have bracketed third those under the mottoes "Efficiency and Economy," by Messrs. R. Thornton Shiells and Thomson, Edinburgh, and "Hygeia," Mr. J. W. Donald, South Shields, dividing between these competitors the third premium of £50. Fifty-six designs were sent in.

Langholm.—The Hope Trustees, having considered the report of Mr. Ewan Christian, London, the assessing architect, on the competitive plans for the Thomas Hope Hospital to be erected at Langholm, have resolved to accept the design sent in by Mr. Woodd, New Bond-street, London. They have also resolved to proceed at once with building the hospital. Mr. Hope bequeathed over £100,000 for the erection and endowment of the hospital, which is to be for the benefit of aged and infirm persons belonging to the district.

Littleborough.—Twenty-five sets of designs were submitted in competition for the new local board offices, fire-engine station, and stables to be built for the district of Littleborough at a cost of £4,000, and the board has confirmed the report of the assessors, Messrs. Woodhouse and Willoughby, of Manchester. The design submitted by Messrs. Clark and Hutchinson, of John-street, Bedford-row, W.C., marked "No. 23," was placed first, and the plans by Messrs. Duncan and Butterworth, of Rochdale, were awarded the second premium, their drawings bearing the number "14a." The referees, in their report, state that the general merit of the schemes submitted for so small an undertaking was in several cases of exceptional character. The chosen design is described as very meritorious, and admirably adapted to the several purposes of the proposed buildings, which can be built for the stipulated amount. Five of the principal offices overlook the street, and are square and well-proportioned rooms. Design marked No. 3 was placed third. The plans have been on view this week in the Hare Hill-road Offices.

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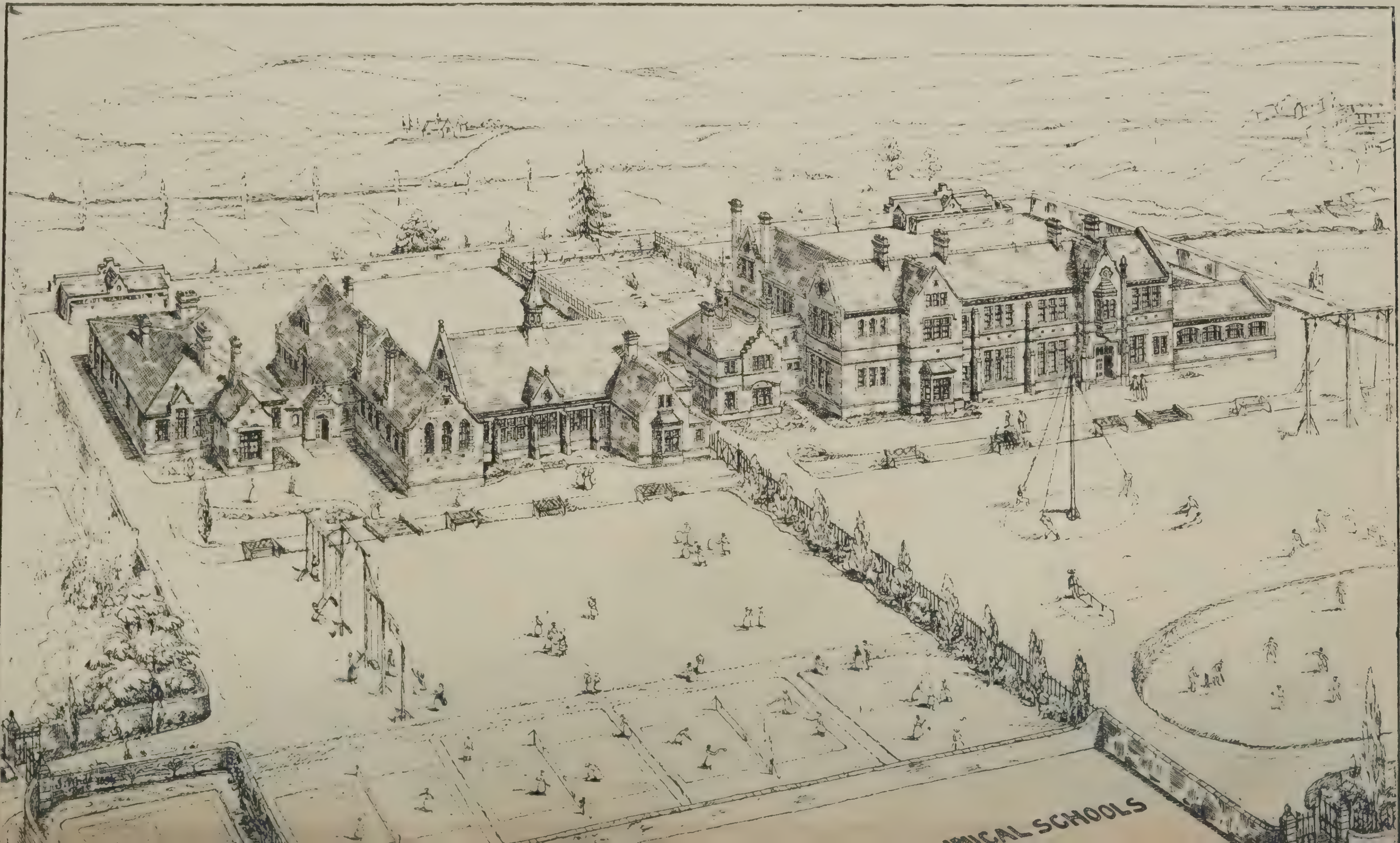
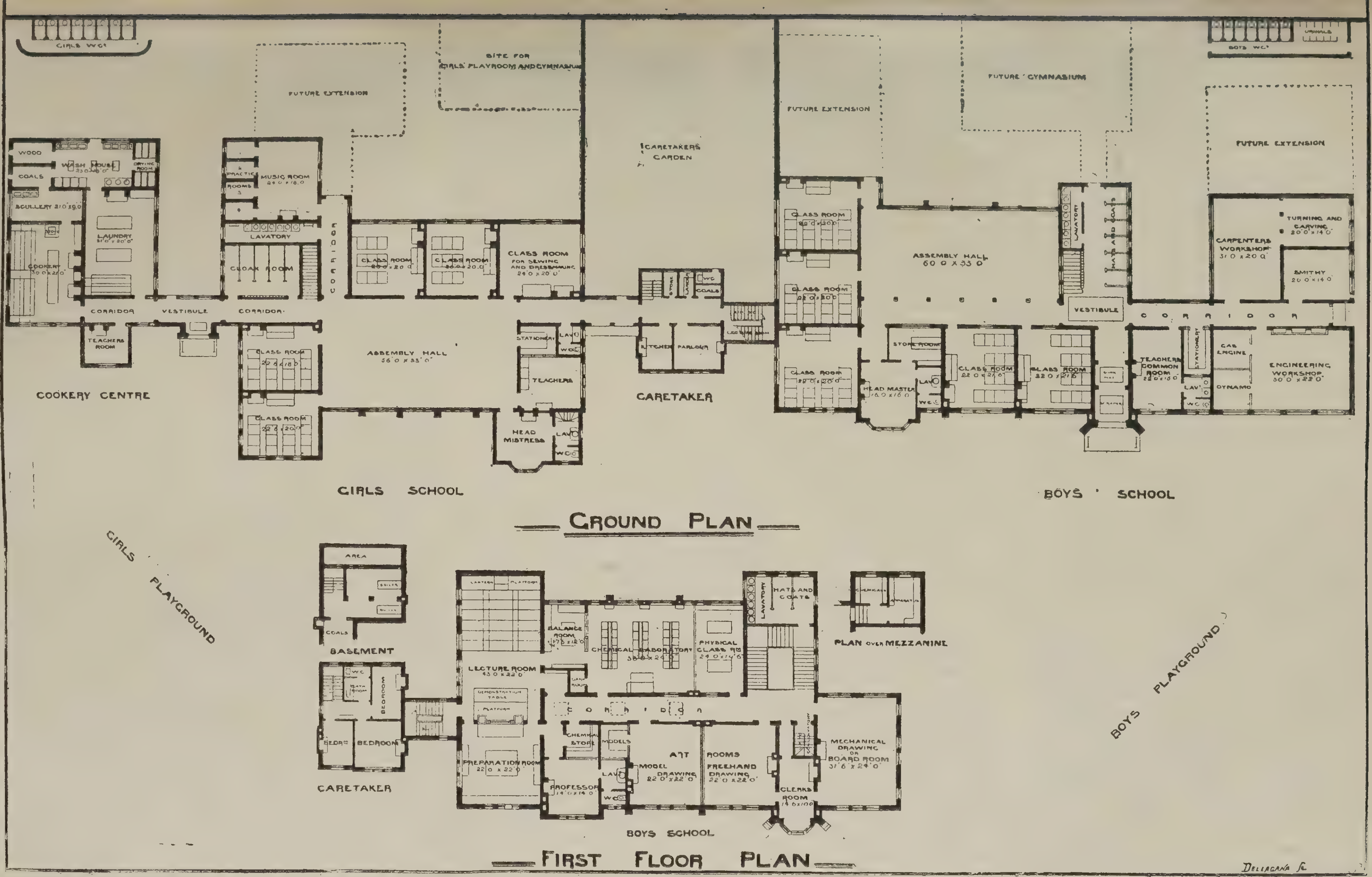
The committee of the Central London Throat and Ear Hospital, Gray's Inn-road, have adopted the plans of Mr. Ernest Turner, F.R.I.B A., for a new out-patient department, and a contract for the erection of the buildings has been entered into with Messrs. J. Simpson and Sons.

An International Health Exhibition was opened at Boulogne-sur-Mer on Monday by M. Mastier, Director of Administration at the Ministry of the Interior. The exhibition is situated on the open triangular space in front of the Casino gardens, and occupies a portion of the Chamber of Commerce buildings. There is an interesting and extensive collection of sanitary and hygienic appliances of all kinds, and the grounds of the exhibition are attractively laid out with walks and fountains.

On Friday, Major Yorke, one of the Government inspectors, inspected the extension of the North Cornwall Railway from Delabole to Port Isaac-road, which has recently been completed by Messrs. Currie and Reeve, railway contractors. The Major was accompanied by Mr. Salter, resident engineer North Cornwall Railway; also by Mr. Church, the L. and S.W.R. Company's consulting engineer, and Mr. Reeve, one of the contractors, personally represented the firm. It is expected that the new line will shortly be opened for passenger and goods traffic, thus extending the L. and S.W.R. route another 3½ miles into Cornwall. The next sections which will be from Port Isaac-road to Wadebridge, is well in hand, and it is expected it will be completed and opened for traffic early in 1895.


ICAL SCHOOLS



GROUND PLAN

FIRST FLOOR PLAN

WAYSIDE NOTES.

UNDER the auspices of the Society of Antiquaries, which is the one really working body of archæologists, it is proposed to initiate a scheme for a photographic survey of England by counties, with the view of securing permanent photographic reproductions of all objects of archæological interest. It is intended to organise a service of amateur photographers who would undertake to do the work in the area assigned to them, and to prepare three photographs of each object—one for the county society or museum, one for the Society of Antiquaries, and a third for the British Museum. A committee was appointed to consider the scheme, which, if well carried out, ought to yield splendid results,—a similar body, under Birmingham inspiration, is carrying out excellent work in Warwickshire. I do not know if it is finally decided to confine the reproduction to photography. Of many objects, good sketches or measured drawings would prove much more satisfactory records than photographs, especially those dear to the amateurs—

> Who only need the button press,
> And we do all the rest.

I suppose it was the Duke of Devonshire's speech about the retrenchment on the part of the great landowners that would be necessary in consequence of the Budget which revived the rumour that Devonshire House, in Piccadilly, had been sold to a syndicate of speculative builders. The duke has not parted with it, and it is said that he has no intention of selling it. The house is upwards of 150 years old, and did not cost more than £20,000 when it was built; and yet the speculative builders were said to have given three-quarters of a million for it. I fancy that sum would tempt even the Duke of Devonshire! The house has nothing in its architectural or external appearance to make it remarkable. The original mansion which stood on the site was taken down by the first duke, and another was built in its place. This new house was, however, destroyed by fire, and was succeeded by the one which is now the present duke's town residence.

Land seems to become worth less day by day. The season at the London Auction Mart, where large estates are generally brought to the hammer, came to an end with last week, and the prolonged period of great depression which has existed cannot be recorded as having come to a close with it. Not one of the single properties exposed on the last day of the sale changed hands. The season which has just terminated has been remarkable for the large number of great properties which were exposed to sale and for the extremely small number which were purchased. Few persons would give the reserve prices asked, the Budget to some extent being accountable for this result as well as the discouraging condition of agriculture. The properties which had to be withdrawn are now, in many instances, objects of private negotiation. The next season will not open till some time in September, and, though there will be a few casual sales or attempts at sale in the interval, no great property will be put upon the market. For September, however, a considerable number of large estates are being advertised already.

The addition to what used to be the Chapel Royal in Whitehall, for the accommodation of the United Service Institute, is now being divested of its scaffolding. It will have cost somewhere about £16,000, and, on the whole, the money's worth is there. It is not inharmonious with the famous building to which it is an appendage, though no attempt has been made at actual assimilation. It was thought better to adopt a design which did not challenge comparison with Inigo Jones's work, and though the old and the new have some features in common, they are essentially distinct. The turret surmounting the new structure as it stands has no very obvious meaning. It is said that it was intended to be the base of a flagstaff. At present, however, it seems doubtful whether it will be used for that purpose. A good deal remains to be done in the interior of the building, but it is believed it will be ready for opening in November.

The Select Committee on House of Commons Accommodation finished its labours on Tuesday. The result does not amount to much. In spite of Colonel Howard Vincent's protest against Mr. Herbert Gladstone's clause "that it is undesirable to build a new House of Commons or to enlarge the present one," the paragraph was adopted by a bare majority—possibly in view of the coming happy time when the exodus of the Irish members will leave room for the rest. The rest of the recommendations are of the usual tinkering character. Dining-room accommodation for thirty more members is to be provided by the appropriation of three of the Peers' ground-floor terrace rooms. The space available for the Press is held to be quite inadequate, and the defective ventilation resulting from the overcrowding is dwelt upon. Two entrances to the reporters' gallery, one at each end, are recommended in lieu of the present central entrance, the necessary changes entailing a considerable rearrangement of the apartments of the officials. So long, however, as Sir Reginald Palgrave remains Clerk of the House, no disturbance of existing arrangements is to be allowed; but the committee consider that on the next appointment the question of taking the residence for the use of members and the Press should receive attention.

CLAY FOR PUDDLING.

IT is a mistake to suppose that a pure and tenacious clay makes the best puddling. An authority writing in *Indian Engineering* observes: "No high degree of purity is at all essential to insure complete imperviousness, and tenacity may under certain circumstances prove a distinct drawback." As the brick manufacturer and potter add sand or powdered flint to the clay in order to prevent cracking in the kiln, so the clay for puddling should have sand, as it is liable at times to become dry from evaporation and the heat of the sun. It is all the better for not being too tenacious, as if too much so it is liable to open in large fissures. "A roll of clay;" the same writer says, "about 1ft. long by 1in. in diameter should support its own weight when held suspended." Greater tenacity than this is objectionable if the puddle is liable to be dry at times; but if the situation prevent evaporation from the clay, a high degree of tenacity can only act favourably on the construction. Attention to these conditions is necessary to prevent failure of docks, reservoirs, and tanks constructed in porous soil.

ROYAL ACADEMY ARCHITECTURAL SCHOOL.

ADMISSION OF STUDENTS—JULY, 1894.

UPPER SCHOOL.—C. R. R. Clarke, W. H. Hazell, G. J. J. Lacy, T. G. Lucas, A. W. Newman, A. A. Reeve, T. A. Sladdin, G. Weald.

LOWER SCHOOL.—H. Budden, F. Chatterton, A. George, A. Stratton, J. Watson.

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The parish church of St. Mary Magdalene, Launceston, has been reopened after restoration and reseating, carried out at a cost of about £3,000, from plans by Messrs. Sedding and Wilson. The south aisle now includes a side chapel, in which a reredos has been placed, the remainder of the south aisle and also the north aisle being seated with chairs. The centre aisles are fitted with oak benches with carved emblematical ends, whilst the choir stalls are of the same material, but carved in more elaborate style. The oak seating and carving was intrusted to the firm of Messrs. Charles Trask and Sons, Stoke-under-Ham, Ilminster; the masonry work has been carried out by Mr. William Burt, of Newport, Launceston. The building has been heated with hot-water apparatus, Mr. William Prockter, of Launceston, having executed the work. The oak pulpit of carved oak has been lowered.

The first section of the public park for Hanley was inaugurated last week. The park is situate at Shelton, and will contain eighty acres. This area is practically divided into four parts—into an upper and lower portion by the Cauldon Canal, and into eastern and western portions by Victoria-road. The laying out of the park was intrusted to Mr. T. H. Mawson, landscape gardener, Windermere. A conspicuous feature will be a lake, covering five acres, in connection with which there will be cascades and rustic bridges. At present only one section of the park has been opened to the public. On the Stoke-road side, there has been constructed a main entrance, with ornamental gates surmounted with the borough arms, and with a lodge, in the Elizabethan style, constructed of red brick, half-timbered, and ornamented with terracotta. In a circle facing the entrance a fountain, standing 18ft. high, and 22ft. across the base, is placed.

OBITUARY.

MR. HENRY PETER HORNER, architect, of Paignton, Devon, died on Thursday, the 2nd inst., at his residence, 4, Southfield, in that town, at the advanced age of 77 years.

AUGUSTE CAIN, the celebrated French sculptor of animals, died on Monday, in his seventy-third year. He was the favourite pupil of Rude, and made his *début* at the Salon in 1846. Among his great works are the equestrian statue of the Duke of Brunswick for the town of Geneva; a group representing a lion killing an ostrich, now in the Luxembourg Gardens; colossal groups of a tiger attacking a crocodile, and of a rhinoceros attacked by tigers, placed in the Tuileries Gardens; the lions of the new Hôtel de Ville at Paris; the lioness carrying away her young, and the groups of dogs executed for the Château de Chantilly and for the Gardens of the Elysée Palace.

CHIPS.

Messrs. Nicholson and Co., of Worcester, are now erecting in the large lecture theatre of the Midland Institute at Birmingham a new organ. The total cost, including oak case, designed by Messrs Martin and Chamberlain, will be £1,200. The instrument has two fronts, each filled with 16ft. open plain metal pipes. The total number of pipes at present in the organ is 1,812; the number when fully completed will be 2,160.

The Manchester School of Art has accepted from an anonymous donor the promise of a replica of the tapestry known as "The Adoration of the Kings," designed by Sir E. Burne-Jones, and to be executed by Mr. William Morris.

In Paisley Dean of Guild Court, on Friday Daniel Gold, builder, was fined in £15 penalty for failing to erect a tenement in Thread-street, in conformity with plans passed, the terms of the Police Act, and the building rules.

The following have been elected to office in the Joiners' Company for the year ensuing:—Master, Sir Albert Altman; Upper Warden, Mr. George Charles Bames, St. Alban's; Renter Warden, Mr. Thomas Murray Jones, Aldersgate-street.

A building grant for Aberystwith College was asked for by a deputation which waited on Tuesday upon Sir William Harcourt. Money is required for three objects—the completion of the college building, and the liquidation of a debt upon it and the erection of a hall of residence for women students. The Chancellor of the Exchequer promised to grant £10,000 on condition that another £5,000 should be subscribed by the inhabitants of the district within two years.

At St. Peter-in-Eastgate Church, Lincoln, a number of improvements have just been completed, including the addition of two vestries at the north-west angle of the church and a western narthex with open-timbered roof. The architect was Mr. W. Watkins, and the builders were Messrs. Pattinson and Ruskington, the outlay having been £750, in addition to a new electric organ, built by the Hope-Jones Co., Birkenhead, at a further cost of £815, in an organ chamber provided on the site of the former vestries.

A commencement is at length about to be made with the Exeter, Teign Valley and Chagford Railway scheme. The line will connect Exeter with the Teign Valley system already opened, a distance of eight miles, and will be continued to Chagford, a further ten miles. This second part of the line throughout its entire length follows the course of the river Teign. Both sections will be constructed as single lines, but on the first eight miles from Exeter to the Teign Valley Railway sufficient land will be purchased and over-bridges constructed for a double line. The contract for construction has been let to Messrs. James and John Dickson.

An inquiry was held at the Town Hall, Ipswich, last week, before Col. J. O. Hasted, R.E., Inspector, acting on behalf of the Local Government Board, into an application from the Ipswich Town Council for loans of £14,500 for works of sewerage and sewage disposal, £1,650 for street improvement, and £600 for the improvement of the Cattle Market. Evidence in support of the proposals was given by Mr. E. Buckham, who has held the office of borough surveyor for the past 23 years, by Mr. Isaac Shone, of London, and by Mr. E. R. Turner, M.Inst.C.E., chairman of the sewerage committee of the corporation.

The town council of West Hartlepool considered, on Tuesday, the recommendation of the committee that the plans by Mr. H. A. Cheers, of Twickenham, selected in the recent competition for designs for the Technical Schools, be carried out at an estimated cost of £12,000. Considerable opposition was offered to the outlay by certain ratepayers, and after a discussion a decision on the matter was adjourned for four months.

Building Intelligence.

Aston.—The memorial-stone of a new infirmary now in course of erection at the Aston Workhouse, Gravelly Hill, was laid last week. The new building, which is being erected at a cost of £10,000, will afford additional infirmary accommodation for 162 patients. The new infirmary will correspond in length to the two previous erections, being 224ft. long. It will include six large wards, each 84ft. by 24ft., with space for twenty-five beds and six small wards, each with space for two beds. A nurse's duty room, with cooking grate, food safe, and sink, is to be provided at the entrance of each ward, with inspection window overlooking the ward. A stone staircase is placed in the centre of the building, which serves both wings, and communication to the wings will be obtained by a corridor from each. On either side is cross-ventilation, so as to prevent the admixture of air in the wards. The wards will be heated by hot-water pipes, and fireplaces will also be provided. There will be 941c.ft. of air space for each inmate.

Birmingham.—The accommodation in the Birmingham and Midland Eye Hospital is being enlarged by thirty additional beds. The extension will have a frontage to Edmund-street in conformity with the details of the existing building. Separate accommodation will be made for children, as well as further accommodation for the nurses and servants, and the lavatories and baths will be reconstructed. The new accommodation for the children consists of a large ward for eighteen girls and young children, a ward for eight boys, a ward with three beds for ophthalmic cases, and a spare ward, and there will also be a day-room, ward kitchen, linen-room, lavatory, and bath-room, &c. Accommodation for ten nurses and six servants will be provided on the upper floor. The total cost of the work, exclusive of the furniture, is £4,587, and the contract has been taken by Messrs. J. Harley and Son, Smethwick.

Canning Town, E.—A new public hall, erected for public and municipal purposes in South West Ham, from the design of Mr. Lewis Angell, the borough engineer and architect, was opened last week. It includes two main floors, and has a façade of 73ft. to the Barking-road, the height from the ground to the top of the pediment being 73ft. The building is Classic in character freely treated, the materials used being red brick and carved Portland stone, and is in harmony with the public library adjoining, opened last year, of which building Mr. Angell was also the architect. The entrance-hall and corridor are laid with Venetian mosaic by Messrs. Diespeker and Co, of Holborn Viaduct. On the left side of the ground floor is the minor hall, 49ft. by 24ft. On the right side of the main corridor are situate public offices, and a committee-room, 28ft. by 18ft., is provided at the end of the corridor. Prisoners' cells and waiting-rooms are provided at the end of the building in the event of a police-court being held. The large hall on first floor is 80ft. by 50ft. on the floor line, with a height of 35ft.; the gallery and stage add 38ft. to the length. The hall will comfortably accommodate about 1,200 persons. The hall is approached from the right and left of entrance-hall by staircases, also by two staircases at back. An emergency exit and external staircase are also provided on either side of the centre of the hall. The front gallery is approached by two separate entrances and staircases. The contractor is Mr. Abram Kellett, of Willesden, whose tender was £17,984. The work has been carried out under the immediate supervision of Mr. H. Shaw as chief architectural assistant, and Mr. J. M. Jefferson as clerk of the works.

Clifton, Bristol.—A grand pump room and spa have been built on Sion Hill, Clifton, and were publicly opened last week. Mr. G. Croydon Marks, of Birmingham, was the architect, and Messrs. Philip Munro and Son were the engineers. The front elevation of the Pump Room faces the Leigh Woods, and is Greek in character. The material is Bath stone, with a deep moulded plinth of blue Pennant stone. In the centre is a portico, 20ft. by 12ft., supported by six Doric columns, and beneath the portico and over the main entrance is a canopy, supported on carved trusses, again upheld by life-sized Caryatides. The portico and alcove are paved with marble mosaic, and the doors, windows, and woodwork in the pump room are oak, likewise the floor laid for dancing. The pump room interior measurement is 100ft. in length by 57ft. in width, while the panelled ceiling is 27ft. from the floor. The general contractor was Mr. A. J. Beaven; the marble was supplied and fixed by Messrs. Lee Brothers; the stained glass by Messrs. Bell; the heating arrangements by Messrs. T. Harris and Son, Wine-street; and the carving was executed by Mr. J. P. Steele—all of Bristol. Adjoining the Pump Room is the Clifton Hydro, containing, in addition to bedrooms and private suites of apartments, a general dining-room, 52ft. by 24ft., and also a drawing-room, 50ft. by 24ft., and to the right is a suite of Turkish baths.

Edinburgh.—Plans are shortly to be presented in Edinburgh Dean of Guild Court for extensive alterations on St. Patrick's Roman Catholic Church, Cowgate. The building, then used as a Presbyterian place of worship, was acquired by Bishop Gillis in 1855, since which time it has retained its old form. Its sombreness, however, has been relieved by frequent decoration and slight internal improvements. Now it is proposed to remove the gallery, except a portion on the south side under the tower, to be used as an organ loft. To make up for the loss of sitting accommodation thus brought about, the lobbies and staircases will be removed, the present chancel, used merely as a Lady altar, and the large area, so set free, furnished with pews. Accommodation is to be found for the principal altar and for side chapels on the north side, the porch on the west will be converted into a bapistery, and a covered way is to connect the presbytery with the church. The plans also provide for the erection of box confessionals in place of the rooms now used for that purpose, for the admission of more light by the gallery windows, and for the construction of a staircase on the south leading to the choir. It is estimaied that the cost will reach about £1,000, and that the work will be completed by the beginning of winter. The architects are Messrs. Buchanan and Bennett, George-street, Edinburgh.

Higher Tranmere.—A King memorial chapel, added to the Birkenhead workhouse at Higher Tranmere, was opened by the Bishop of Chester last week. It has been built from designs by Mr. J. Francis Doyle, of Liverpool, and is Late Gothic in style. It is seated with open pitch-pine pews for about 300 worshippers, and consists of a nave 63ft. by 24ft., north and south transepts each 14ft. 6in. by 9ft., chancel 20ft. by 18ft., and a vestry 9ft. by 10ft. The roof is of plain pitch-pine, unvarnished. The transepts at the junction of the roof with the nave are curiously wrought out with cambered beams deeply moulded, and supported on carved corbels of red sandstone. The chancel has all its fittings and choir-stalls worked out of ash timber. The floor is laid with wood blocks, the chancel being tiled, and the sacrarium laid with encaustic tile. The font is the old one from Oxton Church, reworked and slightly reduced in size. Externally the church is built of grey brick and red stone to harmonise with the main building, of which it is now a part. The roof is slated with Bangor slates. Mr. John Thomas, of Oxton, was the general contractor, and Mr. Samuel Gunning the clerk of works.

Liverpool.—The memorial stone of a new Welsh church, dedicated to St. Deiniol, and situated in Upper Parliament-street, was laid on the 2nd inst. The building will be in the Early English style, carried out in local grey brick, with Runcorn stone dressings, and will consist of nave, aisle, and chancel, with the usual vestry accommodation. The contract for the erection of the church, which will contain sittings for 300 persons, is £1,430, the work being carried out by Messrs. Patterson and Son, Soho-street, from the designs and under the superintendence of Messrs. Richard Owens and Son, Westminster-chambers, Crosshall-street, Liverpool.

Newcastle-on-Tyne.—The Eldon dining hall and grill-room, Grey-street, Newcastle, was reopened yesterday (Thursday), after having been closed for more than two years, owing to the failure of a roof. The interior of the building was then completely taken out, and the front rased to the ground. The building, which is five stories in height, has been re-erected by Messrs. Walter Scott and Co., Limited, from the designs of Messrs. Oliver and Leeson, architects, Newcastle. The panelling in the dining hall is in the style of Louis the Sixteenth, the delicate colourings which were in favour at that period being employed. The decoration and upholstering have been carried out by Messrs. Robson and Sons, Northumberland-street. The ceiling is decorated with embossed tapestry, and the floor is laid with Lowe's patent pitch-pine blocks.

Oban.—The new church which occupies the site of the old parish church of Oban, built in 1821, has just been opened. It is Norman in style, and covers an area of 91ft. by 45ft. There is a tower and spire, rising altogether to the height of 110ft. The lighting is effected by six windows on each side, glazed with cathedral glass in tinted shades in lead lattice-work. Over the pulpit there is a three-light window of cathedral glass. The walls are built of bulb-faced Ben Cruachan granite, with dressings of Giffnock freestone, and the tower and spire are built entirely of Giffnock freestone. The accommodation of the body of the church is for 450 people, and the gallery 110—making a total of 560. The seats are of pitch-pine. The pulpit has carved capitals, bases, and columns, and stairs leading up to it on each side. The ceiling has been painted a sky-blue tint, and is coved from the wall with hammer-beam principals. The architect of the church was Mr. Alex Shairp, Oban, and the contracts were carried out by the firm of Messrs. D. and J. Macdougall, Oban.

Shaldon, Devon.—The new Church of St. Nicholas, Shaldon, was recently dedicated. For some years there has been a church at Ringmore, about half a mile from Shaldon; but it became in such a dilapidated condition, and the ventilation was so bad, that it was decided to abandon it for public worship and build a church at Shaldon. The church, which has cost £3,000, is 105ft. in length and 50ft. in breadth, giving seating accommodation for 450 persons. The walls are of red sandstone, and the windows of Polyphant stone. The roof is a temporary one of iron. The organ which did service at Ringmore has been removed to Shaldon, having been rebuilt by Mr. H. Ivey, of Newton Abbott. Mr. Edmund Sedding, of Plymouth, is the architect, and Mr. R. J. Blowey, of the same town, the builder.

Sheffield.—The hospital and dispensary, built in 1858-60, and enlarged in 1870, is now being reconstructed, at a cost of £50,000, on an enlarged site between West-street and Eldon-street, containing 5,900 square yards. The first section of the work, the eastern block forming one-third of the entire scheme, is now in hand, and is nearing completion. This block, over 170ft. in length, has a basement story, in which will be good storage room, workshops, and lavatories, and a staff room; also lavatory accommodation for the out-patients, with direct approach from the waiting halls above. There are a drying closet, boiler and engine-rooms, coal stores, &c.; and in the western wing, owing to the rapid fall of the ground, a chapel and also an entertainment room are provided. To the rear will be the mortuary and laundries, and a covered approach to the Nurses' Home. The ground floor facing Westfield-terrace is devoted to the out-patients' department. There are a waiting-hall for 150 dispensary patients, an accident room, an electrical room, and rooms for dental work. These rooms are 15ft. high from the floor to the domed concrete ceilings. To the right is the administrative department, with porter's residence, matron's office, and tradesmen's entrance; a hall and main staircase, board-room, with secretary's office and other accommodation. To the left are two wards, 29ft. wide, for 18 and 16 beds respectively, and close at hand private wards, ward kitchen, wardrobe, and sister's room. At the extreme ends are blocks for lavatory and w.c. accommodation. The first and second floors are devoted to the accommodation of in-patients, and are arranged on the same general lines. On both floors the main corridor, about 280ft. in length, separates the front rooms from the wards. On the first floor is a ward for boys, containing 18 beds; a centre ward of 18 beds for men's surgical cases, and between it and the 16-bed ward for women is placed the operating theatre, with students' gallery. Across the corridor are special wards and matron's rooms, and on the other side rooms for the resident medical staff, clinical, and microscopic rooms. On the second floor, to the east, is situated the children's ward (18 beds); in the centre, the men's medical ward (18 beds), and to the west the women's medical ward; a ward for special cases, and nurses' dining-room, and wards for ophthalmic patients. These are all 13ft. high from floor to ceiling. The floors are constructed with English steel girders and cement concrete, covered with polished teak block herring-bone boarding, laid in bitumen, and with marble terrazzo pavement. On the top floor in the centre block are the kitchen, servants' hall, and bedrooms for the servants. The building is designed in the style of the English Renaissance. The principal fronts are faced with thin bricks, with dressings of Weldon Wood stone. The elevations to the courts are of local bricks. The basement story is faced internally with local Stand Hills stone. The floors and roofs are constructed with Siemens-Martin steel girders, imbedded in cement concrete, and the flats covered with asphalte. The block now nearing completion has been executed in two sections, the basement story and the superstructure. The following contractors are employed on the works:—Mr. P. Molloy for the excavation, Mr. George Webster for the masonry and brickwork, Mr. Higgins for the plastering, Mr. H. Waddilove for the plumbing and glazing, and Messrs. J. and J. Rodgers for the painting, all of Sheffield. The Phœnix Fireproof Flooring Co., Manchester, have the the contract for the concrete flooring and girders, and Messrs. John Tomlinson and Son, of Leeds, for the joiners' work. Mr. H. Harlow acted as clerk of works until his retirement from ill-health, and has been succeeded by Mr. H. Buchanan. Mr. J. Webster is the masons' and general foreman. Mr. Hadfield, of the firm of Messrs. M. E. Hadfield, Son, and Garland, architects, of Old Club Chambers, has designed the building, and is directing the work.

Stafford.—The building committee of the Staffordshire General Infirmary recently met for the purpose of examining the tenders for building the new south wing, children's wards, and the reconstruction of the administrative and centre block. Tenders were received for the general work from Messrs. Foster and Dicksee, Rugby; Willcock and Co., Wolverhampton; John Bowen, Birmingham; A. F. Whittome, Stafford; Henry Lovatt, Wolverhampton; and John Gethin, Frankwell, Shrewsbury; and for the plumbing work from Messrs. Dent and Hellyer, London; Messrs. Corcoran and Son, Scarlett Bros., and Thomas Till, Stafford. The tender of Mr. John Gethin, being the lowest, amounting to £9,051, for the general work was accepted.

Wolverhampton.—The foundation-stone of the new chapel to be erected in the grounds of the Orphan Asylum, Goldthorn Hill, was laid on the 2nd inst. by the Earl of Dartmouth, with Masonic honours. The chapel, which is being erected by Messrs. H. Willcock and Co., builders, Darlington-street, Wolverhampton, from designs by Mr. F. T. Beck, architect, also of Darlington-street, is cruciform in shape, 100ft. long, 50ft. wide across the transepts, and 25ft. across the nave and choir. The height is 45ft. It is in the Tudor style, and will harmonise with the existing buildings. It is arranged with nave, chancel, and two transepts, and will provide seating for 400 persons. The organ will be placed in the north transept. The materials used for the exterior are pressed faced bricks, relieved with diaper work and stone dressings, to match the existing buildings. Internally, the walls will be finished in stucco, relieved with stone quoins and bandings, the upper part of the chancel walls being faced entirely with stone, and the lower part stuccoed, which will admit of future decoration in frescoes or mosaics. The floors of the aisles are to be laid with tiles of special design, and the floors under the seats with wood blocks. The seats and other fittings will be of red deal or pitch-pine. The reredos is to be of oak, as also the Communion-table, pulpit, and choir-stalls.

At Monday's meeting of the School Board for St. Thomas-next-Exeter, the clerk reported the total cost of the Okehampton Board Schools at £4,682 8s. The claim of the contractor was for £5,190 5s. 4d. The matter was referred to arbitration, and the award fixed the amount at £3,551 2s., and disallowed £1,639 3s. 4d.

The Castle at Norwich, for many years used as a prison, has been acquired by the City Corporation, and is being fitted up as a museum. It will be opened by the Duke and Duchess of York in October.

The memorial stone of a cottage hospital for Crewe was laid last week. Mr. J. Brooke is the architect, and Mr. J. Gethin the builder.

The Earl of Rosebery, who presented the swimming bath to the People's Palace some years ago, has now offered to add a number of washing baths at a cost of £500.

Engineering Notes.

Newcastle-on-Tyne.—A party of student members of the Institution of Civil Engineers were shown on Friday over some of the extensive works in course of construction for the North-Eastern Railway Co., and intended to facilitate the traffic to and from Newcastle. At the invitation of Mr. Charles A. Harrison, engineer to the North-Eastern Railway (who is the president for the year), and under his guidance, the party proceeded by train to Pelaw, and walking thence to Felling, they inspected the works that are in progress there for the widening and straightening of the line; and then proceeding by Gateshead to Newcastle, they passed on to the inspection of works of a different character, but with the same object—the widening of the line from the Manors to the High-Level approaches. The party—including Mr. D. Shanks, of Glasgow, contractor for the Pelaw and Felling widening works, and Mr. Stewart, the resident engineer—made an examination of the works on the section, which extend over 1¾ miles, and which will, when completed, provide four, in lieu of two, lines of way. On these works of widening and straightening 300 men are employed, and good progress has been made since the commencement of the works —about four months ago. The old station at Pelaw Main is to be replaced by a new one, on the island plan; and goods-yards will also be provided at Pelaw. Felling Station will become a duplicate of the new one at Pelaw, and will occupy what is now the goods-yard; whilst a new goods-warehouse will be placed further west. A large warehouse at Gateshead is also nearly finished. The plans for the widening from the Manors to the Castle were produced, and explained by Mr. Harrison and Mr. Bulmer. For this section of the work, which includes the rebuilding and widening of the Dean-street bridge, Messrs. Walter Scott and Co., of Newcastle, are the contractors. The cost of the works for the widening from Pelaw to Felling is £50,000; and for the shorter, but heavier, masonry work from the Castle to the Manors, may be also put at £50,000—exclusive of the cost of the land in each case.

CHIPS.

A memorial Primitive Methodist chapel which has been erected in Cemetery-road, Southport, was opened on Wednesday week. The cost has been £1,600.

The Penistone board of guardians have instructed their architect, Mr. Wild, to prepare plans for an extension of the workhouse infirmary.

The half-yearly report of the Midland Railway Company states that good progress has been made during the past half-year with the works for widening the main line between London and Bedford. The whole of this widening will probably be completed and ready for traffic early next year, thus providing four continuous lines from London to Glendon Junction, a distance of 75 miles.

The foundation-stone of the Verdin technical and intermediate school at Winsford was laid on Saturday by the donor, Mr. Joseph Verdin. The schools are being built from designs by Messrs. Woodhouse and Willoughby, of Manchester, Mr. James Fowles being the contractor.

The free public library at Airdrie, N.B., was formally opened on Friday. It has been built from plans by Mr. Arthur, provost of the burgh.

Alderman James Weeks Szlumper, M.Inst.C.E., the Mayor of Richmond, Surrey, upon whom the Queen has conferred the honour of knighthood, is 60 years of age, and has been specially identified with railway enterprises. He laid out and constructed the Manchester and Milford, the Pembroke and Tenby, the Whitland and Cardigan, and the Barry and other lines. He is justice of the peace for Cardiganshire, Surrey, and Richmond. For several years he has occupied a leading position on the local governing body of the latter town.

Mr. Walter Bird has been elected the master of the Tylers and Bricklayers' Company, with Mr. Augustus Henry Bird as the upper warden, and Mr. George John Newson as the renter warden.

New South Wales is, says the *Australian Building Journal*, to a certain extent ahead of England in its regulations as regards plumbers, at all events with those over which the Water Supply and Sewerage Boards have jurisdiction, as they have not only to be registered, but also to pass an examination, whilst the passing of the Plumbers' Registration Bill is still in the stage of being "hoped for" in England, although there is a system of permissive registration.

Correspondence.

LITTLEBOROUGH LOCAL BOARD OFFICES COMPETITION.

To the Editor of the Building News.

Sir,—Mr. Wild, Clerk to Littleborough Local Board, informs me he has forwarded you the result of competition for Local Board Offices, &c., but he has only given the names of the 1st and 2nd, although the assessor has awarded the third place to myself.

He requested me to write you and ask you to give my name as the third in order of merit. Will you kindly do so in your report?—I am, &c.,

Chas. T. Taylor, A.R.I.B.A.,
10, Clegg-street, Oldham.

DARLINGTON PROPOSED NEW SCHOOL COMPETITIVE DESIGNS.

Sir,—My attention has been called to a paragraph in your last issue referring to these designs and stating Mr. E. R. Robson, architect, London (to whom the designs had been submitted by the school board), had placed them in the order given in your paper. Mr. Robson did not place any other plans in order of merit beyond the 1st and 2nd. I think, in fairness to the other competitors, this letter should appear in your next issue.—I am, &c.,

F. T. Steavenson, Clerk to School Board.
Darlington School Board, Clerk's Office,
August 8.

MR. NORMAN SHAW'S SYSTEM OF HOUSE DRAINAGE.

Sir,—I believe there have been many houses in London and suburbs (erected in the so-called "Queen Anne" style) drained by a system of open heads to the soil-pipes into which the lead bend from the w.c. discharges. It would be of interest to many of your readers if the owners or agents of some of these houses would give their experience of it.

I am surveyor to some property of the kind built under well-known architects upon a Crown Estate, and during the last 10 years have done away with the brick cess-pit at the foot of soil pipe with its open grating, and substituted a siphon trap, so that the only other past complaints were of the slopping over of water, in cases where the lead bend from w.c. was not low enough into the hopper, which defect was easily remedied.

The chief point, now, is that the sanitary authority of this Metropolitan district has served notice upon me to abolish the whole thing, and substitute close soil-pipe, and vent of full bore for the open hopper-heads, on the ground that a *nuisance* has been proved to its satisfaction to exist, although neither complaint nor illness has occurred. The work has to be done within 14 days.

If any similar action has been taken by any vestry or district board in the past within the knowledge of any contributor to the Building News, particulars and result would be acceptable, inasmuch as these local boards, where the sanitary committee is often composed of members who know nothing of sanitation, are pushing matters to extremes under the Public Health Act, at the instance of their officers; all which action on their part practically goes no small way towards the confiscation which finds too much encouragement at this *fin desiècle* date.—I am, &c.,

August 1. E. W. Hudson, F.S.I.

VENTILATION OF SEWERS.

Sir,—I am glad to see some correspondence in your columns upon this important question, especially so as the campaign has opened by a condemnation by a medical officer of high standing and a surveyor of long experience, of those 19th-century abominations, "sewer gratings in the roads." What I desire to urge is, that whether these gratings allow the escape of disease germs, as your correspondents imagine, or whether they allow the escape of a most sickening vapour containing a large excess of carbonic acid, as recent investigations show, it must surely be obvious to every thinking man that sewers ventilated into the streets are ventilated in the *wrong place*, as it is in these very streets and in the atmosphere thus polluted that the inhabitants of our large towns are obliged, not only to move about in the performance of their daily duties, but their dwellings obtain their air supply largely from the same scientifically-polluted source, the extent of the pollution varying, of course, according to atmospheric condition, and being greatly augmented by a heavy rainfall following a period of dry weather, when millions of cubic feet of the noxious air of the sewers of towns must be absolutely displaced and driven direct into the often foggy or moist, still atmosphere of the roads and streets, to form for days, perhaps, the breathing air for the population.

When will our leading sanitary engineers, medical officers, and sanitary boards have the courage to break away from this almost universal but obviously unsanitary way of sewer ventilation? And when will the County Council of London set an example to other municipalities by so doing?

One word with regard to the recent letter of Mr. Hurst, who appears to be opposed to ventilating sewers into the open air at all, on the ground of the objection raised by Dr. F. W. Clark in his report (noticed in the Building News of the 13th inst.)—viz., "that the less the movement of the air of sewers, the fewer disease germs will be carried into the outer air."

The recent "sewer air investigations" made by Mr. Parry Laws, F.I.C., for the Main Drainage Committee of the London County Council (which fully bear out the previous investigation of Drs. Carnelly and Haldane), show, I think conclusively, that the number of micro-organisms are less in sewer-air than in the outside air at the same time, and are related to the latter and not to the micro-organisms of the sewage. The conclusion arrived at by Mr. Parry Laws is that the organisms found in sewer air "probably do not constitute any source of danger."

It is, however, clearly shown in these investigations that sewer-air contains a large excess of carbonic acid, and it is suggested that it may contain "some highly poisonous chemical substance, possibly of an alkaloidal nature, which, though present in but minute quantities, may, nevertheless, produce, in conjunction with the large excess of carbonic acid, a profound effect upon the general vitality." Mr. Hurst, in his letter, condemns sanitary engineers for availing themselves of the "assistance of the wind and induced currents of air" to ventilate sewers; but do not the important and able investigations above referred to show the absolute necessity of a much greater and much more regular and scientific method of diluting sewer-air with fresh air than is obtained by the present system of vertical shafts at intervals along the sewers, opening either into the roads or above the roofs of houses? Surely the excess of carbonic acid in the sewer-air should be lowered, and the air thus be made and kept purer in the sewers, and rendered more fit to be discharged in selected positions into the open air. Speaking from practical experiments which I carried on for many months on a section of a large main sewer, I feel convinced that such a result can be obtained, and at a comparatively small outlay; but reliable means must be adopted to secure constant, but gentle, air currents in the sewers, independently of the wind, which, however, can be utilised when it has sufficient force. Checking the rush of air through the sewer by the insertion of cotton-wool filters in the street shafts, which your correspondent, Mr. Buck, says the city engineer of Worcester has decided to adopt, will not, I imagine, tend to reduce the excess of carbonic acid in the sewer-air. It appears to me to amount to a partial blocking-up of the existing defective, but necessary, system of admitting fresh air into the sewers.—I am, &c.,

Archibald H. Ford, Assoc.Mem.Inst.C.E.
High-street, Portsmouth.

Sir,—Dr. Clark and your correspondents give expression to thoughts which must have crossed the minds of many sanitary surveyors while engaged in carrying out sanitary schemes involving the recognised system of ventilation. Fashions obtain in sanitary science as in other matters, and the hermetically sealing of sewers has been followed by the other extreme of inducing air currents through them, and the discharging of the noxious gases thus manufactured against our dwellings, either through inlet gratings beneath our noses, or up shafts next our bedroom windows. Ventilating-pipes capped by air-extractors of every design emitting foul odours disfigure our houses on every side, so that the Eastern patriarch would not now find our modern housetops a savoury resting-place in the cool of the evening. But I venture to think that Dr. Clark's practical proposals do not logically follow his theoretical conclusions. He says, "we must be content to provide small outlets here and there at high elevations which shall act solely as safety-valves"; and then he goes on to propose an outlet-pipe from the sewer at every house, and in some cases dispenses with the intercepting trap; the result being that some of these so-called outlet-pipes will act as inlets, and will thus create the draughts through the sewers which he wishes to avoid; and, moreover, being connected direct to the sewer, will transmit sewer-gases up the house soil-pipes. It seems to me these proposals would aggravate, rather than lessen, the evils of the present system.

To give practical form to the conclusions of Dr. Clark and your other correspondents, we appear to require some radical alterations. We do not want to induce air currents through our sewers or drains, therefore all inlets should be abolished. On the other hand, as we do not want sewer-gas brought to our houses, the intercepting trap, required under by-law 56, should in all cases be retained, and the open end of a soil-pipe, or even a small pipe taken up from a soil-pipe, would be sufficient safety-valve for any gases in the house drains. Now all we have to do in the sewers is to prevent such an accumulation of sewer-gas as shall force the intercepting traps, and at the same time we do not want to discharge sewer-gas near our dwellings. In small towns, a shaft taken up a tree from the flush-tank at the head of each branch sewer, would probably be sufficient safety-valve, together with another shaft as the sewer leaves the town. In larger towns some intermediate shafts might be necessary, taken up a public building rather than a dwelling-house. Practical experience would show how far apart these safety-valves could be placed; but, probably, if the sewer were free with a continuous flow through it, a distance of 1,000 yards between each shaft would not be too much.—I am, &c., Sanitary Surveyor.

CHIPS.

A marble statue of the late Mr. George Holloway, who represented Stroud in the Conservative interest from 1886 to 1892, was unveiled at Stroud on Monday. The statue is the work of Mr. T. R. Essex, a native of Stroud.

The tender of Messrs. Morgan and Evans has been accepted for an addition to business premises of Mr. E. B. Ford, in accordance with drawings, &c., prepared by Mr. Robert Williams, A.R.I.B.A., of 17, Effingham-road, S.E., and Llantrissant, Glam.

Two three-storied semi-detached villa residences are being erected on the Ashby-road, Burton-on-Trent, for Mr. T. Roadknight, from the plans of Mr. R. E. Carpenter, architect, of Burton. Mr. G. Kennard, of Stapenhill, is the builder.

During the removal of whitewash from the internal walls of Poughill Church, Devon, two frescoes have been discovered. That on the north wall represents St. Olaf, King and Martyr, and that on the south wall St. Christopher.

Miss Philippa Fawcett, the only child of the late blind Postmaster General, and who took a place above the Senior Wranglers of her year, has announced her intention to commence business as a civil engineer.

The tender of Mr. W. A. James, builder, of Cowbridge, has just been accepted for the Young Men's Institute, to be built at Cowbridge, from the designs of Mr. Robert Williams, A R.I.B.A., of 17, Effingham-road, S.E., and Llantrissant, Glam.

With the completion of the organ, the new concert hall, Henshaw's Blind Asylum, Manchester, was formally opened on Friday, when Mr. J. Pyne presided at the new instrument. This organ has been built by Mr. Wadsworth, of Manchester, the case being designed by Messrs. Heathcote and Rawle, the architects for the building. This last extension, including the large concert hall, kitchens, girls' playroom, and other accommodation, has, with the organ, cost £11,000.

At Sandon-road Wesleyan Chapel, Birmingham, a stained-glass memorial-window has been placed at the south-west end of the building. The window is of two lights, each measuring 22ft. high and 3ft. wide, surmounted by a quatrefoil. In the two upper compartments, the subjects depicted are the Resurrection and Ascension of Christ; and in the two lower, the Adoration of the Magi and Christ in the Temple among the Doctors. The canopy and base have been treated in the Perpendicular period of stained-glass work. In the quatrefoil, the Holy Ghost is represented as a dove. The work has been executed by Messrs. Swaine, Bourne, and Son, King Edward's-road, Birmingham.

Intercommunication.

QUESTIONS.

[11190.]—**Skittle Alley.**—Will some of your readers be good enough to give me a section and short rough specification for the construction of the floor of an American skittle alley?—L. H. G.

[11191.]—**Architectural Tourist.**—Are there any old examples of churches and domestic buildings to be found in Surrey, and which would be the centre most convenient for a tourist to do some sketching? Is Hampshire a good county, and what district would be most profitable? I want chiefly old work.—Tourist.

[11192.] — **Building Lines.** — In Surrey-street several new blocks and hotels have been erected of red brick and terracotta of more than ordinary pretensions. These buildings have been set back 5ft. or more from the old houses on the west side, but I observe that a newly-built hotel has a large bay window projecting some feet in advance of the bay windows to houses lately erected. May I ask what rule has allowed this greater projection from those adjoining? The case appears to be one calling for an explanation from those who have the laying down of building lines in narrow streets.—Critical.

[11193.]—**Chancel Screens.**—Are there any examples near London of chancel screens carried up to the full height of chancel arch, and, if so, are these of stone or iron?—Enquirer.

[11194.]—**Testing Drains.**—Can a vestry insist on the drains of an old house being tested? I should like to have a legal opinion, as there appears to be a difference of practice in London.—House.

[11195.]—**Ornament.**—As a student I should like to be informed whether there are any treatises on ornament that would be of service in preparing for the examination at South Kensington?—Alpha.

[11196.]—**Joints for Stoneware Pipes.**—Will a practical correspondent of the Building News give me the names of the makers of joints for stoneware pipes? Those, at least, which have been formed to give the best results in different soils.—H. D.

REPLIES.

[11183.] — **Levelling with the Theodolite.**—Although the theodolite, whether "cradle" or "transit," can be used for travelling, yet no experienced engineer would for a moment dream of making a longitudinal section with it, nor would any young engineer or surveyor be allowed by his "chief" to so employ it. It is quite unnecessary to mention its disadvantages for that purpose, which, among others, are its weight and the greater number and complexity of its adjustments and difficulty, comparatively, of setting up. I have myself used the theodolite for "putting in a level" for the foundations of a bridge, for which, with the same instrument, I had just previously aligned the two centre lines; but in this case, as in other similar instances, a B.M. was mighty handy, and one setting up of the instrument did the business, which is a very different matter from making a section many miles in length. In a word, the theodolite is not the proper instrument for taking levels, and should be neither regarded nor employed as such.—P. S. Strettonne.

Mr. George Inness, sen., the well-known landscape painter of New York, died on Friday, while staying at Bridge of Allan. No other painter has reproduced the aspects of nature in the American climate with deeper feeling, or with a better command of technical resources.

An isolation hospital containing twelve beds, together with detached administrative cottage and disinfecting chamber block, has just been completed for the Lancaster Lunatic Asylum. There are also in course of erection a new block for 70 patients employed in the estate workshops, blocks for 50 nurses and 25 attendants, and the enlargement of the women's hospital to give 37 more beds. Mr. E. Howard Dawson, A.R.I.B.A., of Lancaster, is the architect for the whole of these works, the total cost of which exceeds £20,000, the sum per bed provided being slightly under £100. The work is entirely in local hands.

The parish church at Etruria, Staffs, which suffered damage from mining operations, and has been closed for some months during repairs, was reopened on Wednesday week. Part of the walls and piers have had to be rebuilt, and they have also been braced with strong iron rods which extend across the interior of the building. The church has also been re-decorated by Mr. Bickley, of Hanley. The west gallery has also been removed. Mr. Charles Lynam, F.S.A., of Stoke-on-Trent, was the architect, and Mr. Leonard Price, of the same town, the builder.

The corner stones of the Manchester Talmud Torah School for the Hebrew education of Jewish children were laid on Monday. The buildings are being erected in Bent-street, Cheetham, and the western end of the structure will abut upon Torah-street. At present only a portion of the projected scheme is being carried out. This consists of three classrooms and a large hall, the latter being 50ft. by 20ft. It is proposed ultimately to add two wings to the school. At present accommodation is provided for from 120 to 150 children, and the estimated cost is about £1,200. The architects are Messrs. Ogden and Charleton, Spring Gardens, Manchester; and the builders, Messrs. W. Brown and Son, Salford.

Legal.

THE PURCHASE OF TRAMWAYS.

THE decision of the House of Lords upon the recent tramway cases, to the effect that a local authority when taking over a tramway need only pay a price to be arrived at by estimating its cost of construction and allowing for depreciation, is likely to have a widespread effect in the way of discouraging this class of engineering enterprise. The judgment lately pronounced is final, as matter of law, and the meaning of the statute must be taken as settled; but it may still fairly be doubted whether this was the real intention of the Legislature; while it is pretty certain that the mere possibility of such a result never occurred to those who make and who invest in tramways. It may be a good thing that tramways should be worked by local authorities, though, practically, the experiment has yet to be tried, and it is by no means certain of being successful. But whichever view may be taken of this, at all events, the present state of uncertainty will prejudice all future work of the kind, while the judgment just given will seriously diminish the value of all shares in such concerns. Some people think that a blow of this kind hits only wealthy people, but this is quite a mistake, for it falls far more heavily upon the small investor who has put his savings in a concern which he looked upon as something like a railway.

If at the end of 21 years a tramway company is compelled to sell its line, plant, &c., at the market price for such things, without anything for goodwill, and without any payment for rental value, to say nothing of compensation, which admittedly cannot be claimed, then assuredly capital will not readily be forthcoming for such ventures in the future. An ordinary person who bought tramway shares looked to get a fair income and also to have his principal money repaid him. Now he will find that, though fair dividends have been earned, his shares have fallen to pieces. It is not so easy as it looks to work up a successful tramway business, and when this has been done, and a good road made and maintained for 21 years, it seems hard that nothing should be paid for it but the old iron value of the plant. Parliament can still alter the law, and stop the harm that this judgment must cause, by passing a short Act making a reasonable compromise. Until this is done, the business of tramway construction, which is of importance to many classes, must seriously suffer, if it does not come entirely to a standstill; for though local bodies can buy up tramways ready-made and get bargains, they have no powers to lay lines or to incur expenses of this kind on their own account.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

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On Saturday, memorial-stones were laid of a new Wesleyan Methodist chapel situate in Irlam-road, Flixton. The cost of the building will be £635. Mr. H. M. Ward, of Manchester, is the architect.

New Technical Instruction Buildings are about to be built at Stafford for the Staffordshire County Council. The buildings will be built at the corner of Earl-street and Victoria-square, and will include offices and meeting rooms for the committee, art and science classrooms and laboratories, and cookery kitchen. The building will be two stories high, with an ornamental frontage of red brick, faced with stone. The architects are Messrs. Bailey and M'Connal, of Walsall, and Mr. H. Lovatt, of Wolverhampton, is the contractor. Mr. Lovatt is engaged in erecting the County Council Buildings in the same town.

The foundation-stones of a new Wesleyan chapel at Arthington, near Leeds, were laid on Monday. The chapel, which will be erected from plans by Mr. W. H. Beevers, A.R.I.B.A., Bond-street, Leeds, will be Early English in style. It will be built of Shipley stone, with ashlar stone dressings lined with brick. The whole of the interior fittings will be of polished pitch-pine, and the windows will be in stained glass. Accommodation will be provided for 150 worshippers. Adjoining will be a schoolroom for 60 scholars, and in addition there will be a vestry and a caretaker's house. The principal contractors are Messrs. Rhodes Brothers, Shipley. The cost is estimated at about £1,400.

LEGAL INTELLIGENCE.

Height of Corner Buildings. — The Kensington Court Case Once More.—In the Queen's Bench Division, on Friday, before Mr. Justice Mathew and Mr. Justice Kennedy, the appeal case of "The London County Council v. Worley" was heard. It was an appeal by the London County Council against a decision of Mr. Curtis Bennett, a Metropolitan police magistrate, refusing to impose penalties under the Metropolitan Management Act, 25 and 26 Vict., c. 102, s. 85, which imposes a penalty of 40s. for every day on which a building is continued of a height exceeding the width of the street, after written notice to reduce it. The ground on which the magistrate had refused to convict was that the proceeding was out of time under section 107, which says that "no person shall be liable for the payment of any penalty or forfeiture unless the complaint has been made before the magistrate within six months after the commission or discovery of the offence." The original offence in the completion of the building, at the corner of Kensington-court and the High-street, above the height allowed (without the license or leave of the Council) was on the 8th of February, 1893. The enactment (sec. 85) is:—"No building shall be erected on the side of any new street of a less width than 50ft. which shall exceed in height the distance from the front of such buildings to the opposite side of the street without the consent in writing," &c., "and every person committing any offence under this enactment shall be liable to a penalty of £5, and in case of a continuing offence to a further penalty of 40s. for every day during which such offence shall continue after notice from the Board." In April, 1892, there was notice from the Council to the builder that the building would be an offence, and this was received by the owner. In July, 1892, the building was roofed in, and the wall then was of the prohibited height, and so the offence of erection was completed. In October, 1892, there was a penal notice to the builder for the erection of the building above the height limited. In November, 1892, there was a summons against the builders for the penalty for the erection of the building. The magistrate doubted whether the case came within the enactment—i.e., whether the building was "erected" on the side of a new street, the front being in an old street and the side of the house in the new street. In June the case came before the Court, and the magistrate was overruled, and in October, 1893, there was a conviction for the penalty for the original offence, the erection of the building. In February, 1893, the building being completed, the builders withdrew. On March 1 last the Council proceeded against the owner, on a penal notice in December, to recover the penalty of 40s. a day for continuing the building, that is from December 23, 1893 (the date of the notice), to March 7, 1894. The magistrate thought the proceeding out of time, as being beyond the six months limited by the Act. The magistrate, however, stated a case, on which the Council appealed against his decision. Mr. Dickens, Q.C., contended for the owner that a proceeding should have been taken against the owner for the original offence within the six months. The Court came to the conclusion that the magistrate was wrong, and that the penalties were recoverable. Mr. Justice Mathew, in giving judgment, said he had tried to discover a doubt in favour of the building owner, but was unable to do so. The construction of the statute was perfectly clear. The offence charged against the owner was the continuance of the building after the notice, and it seemed to him clear that the penalties were recoverable. The contention was that the offence could only be continued by the party proceeded against for the original offence, the erection of the building; but that was an erroneous view, and the magistrate ought to have imposed the penalties. Mr. Justice Kennedy concurred, though, he said, not without hesitation. Case sent back to the magistrate with the direction that he ought to have convicted.

An Asphalting Dispute.—In the City of London Court, on Thursday, Deputy Judge Robins and a jury had before them the case of "The Brunswick Rock Asphalte Co. v. Church," in which the plaintiff company, whose offices are at 9, Gracechurch-street, sued the defendant for £6 for work executed according to agreement. Plaintiffs' case was that in February defendant called at their offices for a price for repairing a carriage-way, providing the necessary concrete and asphalte, &c., at Denman-street, London Bridge. A price was given of 9s. 6d. a yard, but subsequently defendant called again and asked for a price for the whole job, and a written estimate agreeing to do the work for £6 was handed him, and accepted. The work was done; there had been no suggestion that it was not properly performed; yet defendant had tendered to plaintiffs £3 18s. 6d. in settlement, and paid the money into court. Defendant's case was that he was told 15 yards of asphalting would be required, and only 7½ had been laid down. The judge said no verbal communications could stand in law against a written agreement, and there was no mention in the written estimate of any number of yards. Defendant said he would plead that he had been induced to enter into the agreement by fraud. The judge, in summing up to the jury, commented on the serious nature of the charge alleged against the plaintiff company by defendant in order that he might get behind the written agreement, and directed them that, unless they believed the company had used fraud to obtain this small order, they should find for the plaintiffs. The jury returned a verdict for the plaintiff company.

In Re Geo. Davies.—An adjourned sitting was held last week, before Mr. Registrar Giffard, for public examination under the bankruptcy of George Davies, the sole surviving partner of the firm of Aldin Brothers and Davies, builders, formerly carrying on business at the Roland Works, South Kensington. The liabilities were returned at £15,958, of which £11,269 were unsecured, with available assets £4,377, subject to preferential claims £195. The debtor ascribed the insolvency to the heavy drawings of his late partners, and the deficiency upon the trading was also accounted for by an alleged over-valuation of the assets at the time he joined the firm. The debtor stated that the business was established many years ago by Mr. Aldin, senior, who died in 1871, being succeeded by his two sons, William and Charles Aldin. He joined the firm in January, 1890, having been previously employed for about 21 years in the business. At the time he became a partner he introduced capital to the amount of £1,000 into the concern, another partner, who then retired, leaving his interest (£4,000) in the business. Mr. William Aldin died in September, 1892. Mr. Charles Aldin died in April of this year, and, through the complications which had arisen in consequence of the death of his partners, the business became crippled for want of capital. The examination was ordered to be concluded.

Re William Horrox.—At the Manchester Bankruptcy Court last week, this bankrupt—an architect—applied for his discharge. The Official Receiver reported that the receiving order was made on the 3rd May last, and according to the bankrupt's statement of affairs, the liabilities to rank for dividend were £97 15s. 2d.; and the assets, so far as they were not assigned to creditors wholly or partly secured, were estimated to produce £1. The bankrupt is an architect by profession, but acting sometimes as clerk of works; he attributed his insolvency to his inability to pay the sum of £94 15s. 2d., the amount of the taxed costs he had become liable for in an action instituted against him by Mr. W. P. Hartley, of Aintree, jam manufacturer. The bankrupt was adjudged a bankrupt in the Leeds County Court on the 13th August, 1867. Bankrupt's solicitor explained. The Judge granted the bankrupt his discharge, subject to his consenting to judgment against him for £25. In the event of the debtor not consenting, the discharge to be suspended for two years.

An Agent's Commission.—Keast v. Howard.—This action, heard in the City of London Court on the 2nd inst., before Mr. Roxburgh, assistant judge, and a jury, was brought by Mr. W. J. Keast, builder, Pratt-street, Camden Town, against Messrs. Howard Brothers, timber merchants, 109, Fenchurch-street, to recover £48 15s. 4d., commission on the sale of timber. The defendants denied the indebtedness, and counterclaimed for £4 13s. 7d., balance of an account for timber supplied. The plaintiff had acted as the defendants' agent for the sale of timber in Bedfordshire, Buckinghamshire, and Hertfordshire, his remuneration being a commission of 5s. per standard on all deals and battens sold, and 3d. a square on "matching and flooring." But, in addition, the plaintiff said he was entitled to the whole of the difference between the prices obtained from his customers and the minimum prices furnished by the defendants. His claim for commission on this basis amounted to £48 odd, and after deducting £25 8s. 9d. in respect of the timber purchased by himself, it left a balance due of the sum claimed. The defendants' version of the arrangement was that nothing was said at the time of the plaintiff's engagement, in March, with regard to extra profits, although the plaintiff might have been told in May, when the matter was mentioned, that they would do what they could with regard to it. The only commission to which the plaintiff was entitled was £20, and after deducting the price of the timber supplied, it left a balance in defendants' favour of £4 13s. The jury found that the plaintiff was entitled to 5s. per standard and 3d. per square, plus half profits on the sale prices, from the commencement of the employment. It having been agreed that only the principle on which the commission should be assessed should be tried, a formal verdict was entered for the plaintiff for the amount claimed, and for the defendants on the counterclaim, subject to a reference of the figures to Mr. Harrison.

Is an Arcade a Building or a Street?—Vestry of St. Martin-in-the-Fields v. Bird.—In the Queen's Bench Division, on Tuesday, Justices

Mathew and Kennedy heard an action brought by the Vestry of St. Martin-in-the-Fields for a declaration that the defendant, Mr. William Bird, was the person liable to execute drainage works at the Lowther Arcade, Strand. The case raised the question whether the vestry or the defendant was liable to put in order the drainage of the Arcade. The point turned upon the construction of section 250 of the Metropolis Local Management Act, 1855. The Arcade was a passage arched over by a common roof, with a range of 25 houses and shops. The vestry said it was the duty of the owner to put and keep the drainage of the Arcade in repair, while the defendant maintained that the drainage arrangement of the Arcade came within the definition of a sewer, because it drained more than one house, and that therefore it was the duty of the vestry to attend to the drainage. Plaintiffs submitted that the Arcade was a building or premises within the same curtilage, and that the sewage was carried off by a drain within the meaning of section 250 of the Act of 1855. Defendant's counsel argued that the Arcade was not a building or premises within the same curtilage as defined by the section; that the shops in the Arcade were separate dwellings, and that each of them drained into what he maintained was a sewer under the control of the vestry. Mr. Justice Mathew said, in his opinion, the vestry were liable to repair the sewer. Each tenement in the Arcade stood by itself, and was occupied as a dwelling-house, and had its own curtilage. Therefore, there would be judgment for the defendant. Mr. Justice Kennedy concurred.

A Preston Arbitration Award.—Mr. Thos. Wainwright, the umpire in the arbitration between the Preston Corporation and Mr. John Fletcher, has made his award. A claim was made by Mr. Fletcher against the corporation for damage done to his land by the laying of a sewer at Ashton-on-Ribble. The original formal claim of Mr. Fletcher was for £400 as compensation. This was amended the day before the arbitration to £1,221 13s., and this was the lowest estimate given by any of the claimant's witnesses, the highest being by Mr. Harding, who put the damage at £1,790 8s. The corporation valuers assessed the damage at from £20 to £50. The award is £323.

A Sheffield Street Improvement Arbitration.—The town clerk of Sheffield has received the award of Mr. Joseph Smith, of Bradford, as arbitrator between Messrs. G. H. Hovey and Son and the Corporation. Last Christmas Messrs. Hovey's premises were burned down, and before they could rebuild the corporation served them with a notice to set back their building-line so as to widen Castle-street and Angel-street. By the line prescribed 209sq.yds. of Messrs. Hovey's land was thrown into the street. The corporation offered £6,500 as compensation for trade losses contingent upon the compulsory restriction of the site. The total claim was for something like £21,000, and the witnesses for the corporation fixed the loss at sums ranging from £6,866 to £7,450. The arbitrator has awarded £11,706, and the corporation have to pay the claimants' costs.

Alleged Infringement of Ancient Lights at Newcastle.—In Chancery Division on Wednesday, Mr. Justice Stirling had before him a motion for an interlocutory injunction on behalf of the Co-operative Society of Newcastle-upon-Tyne against the Masonic Hall Company, Newcastle-upon-Tyne, to restrain the defendants from proceeding with the building of a Masonic Hall in High Bridge-street so as to obstruct the ancient lights of plaintiff's premises. Mr. Graham Hastings, Q.C., who appeared for the plaintiffs, said that the street in question was 18ft. wide, and his clients had a large building upon one side of the street, in which they carried on a printing business. The premises had a large frontage, and their chief business was carried on in that portion of the building fronting the street. Opposite the plaintiffs' premises was a building 33ft. 6in. high, and the defendants were proposing to build a new Masonic Hall from Pilgrim-street to the Reindeer Inn, and to carry it to the height of 66ft. 6in. Counsel then proceeded to read a number of affidavits in support of the contention that the proposed building would obstruct the plaintiffs' ancient lights. Mr. Buckley, Q.C., on behalf of the defendants, opposed the motion on the ground that there would be no material interference with plaintiffs' business; that the plaintiffs' premises were for sale, as they intended to remove to another place of business; and, further, that should they remain the actual business would be materially benefited, rather than injured, by the proposed new building. Affidavits were read in support of the learned counsel's contention, and his Lordship, in giving judgment, said that in his opinion there had been a clear case made out for an interlocutory injunction, which he accordingly granted. Injunction accordingly.

In re H. G. Heywood.—Harvey George Heywood applied last week for an order of discharge. The debtor formerly carried on business as a builder in Bridge-road, Hammersmith, and he attributed his failure to loss in connection with building speculations, inability to realise his various mortgaged properties, and to other causes. The liabilities were returned at £7,764, and the assets had realised £194. The Official Receiver opposed the application, and the order of discharge was suspended for two years.

Chancel Screen at St. Peter's, Eaton-square.—At the London Consistory Court on Wednesday, a petition was presented by the vicar and churchwardens of St. Peter's, Eaton-square, for a faculty to remove the present pulpit, to erect a wrought-iron screen, to which shall be attached a wrought-iron pulpit, and to make such alterations and additions in the south transept and south-east chapel as will enable them to use them as a side chapel. The vicar said the estimated cost of the alterations was £2,100, which had been already promised. Mr. John S. Paul, assistant to Sir Arthur Blomfield, who had prepared the designs, described the proposed screen as being in height 16ft. to the top of the cornices, and the gates 3ft. 6in., the width of the central opening being 6ft., and the side panels 2ft. 9in., the chancel arch 40ft. high from floor. A memorial was presented objecting to the screen. The Chancellor, in delivering judgment, said he was satisfied that it was desirable there should be a chancel screen, with gates. The only objection was its great height; but if the parishioners withdrew their opposition he would allow the faculty to go. The case would be adjourned for that purpose. The faculty for the side chapel would be granted.

CHIPS.

The Duke of Norfolk publicly opened on Wednesday a new road and bridge which he has had constructed near Arundel Castle, and which he has presented to the borough.

The Duke and Duchess of Rutland opened on Wednesday a convalescent home for Leicestershire in Charnwood Forest. The home has been erected at a cost of £6,000, and will accommodate 40 patients.

The galleries, rooms, staircases, and balustrades in the spire of Ulm Cathedral, the highest stone structure in Europe, have just been completed. The spire rises 16ft. higher than those of Cologne Cathedral, and was finished structurally three years ago; access is possible to an open balcony incircling the spire 450ft. from the ground.

The first commission of the peace for Eccles, made known on Wednesday, includes the name of Mr. Frederick Smith, architect, of that borough.

The Tyne Theatre, at Newcastle, was reopened on Monday night, after extensive alterations and improvements, carried out by Mr. G. H. Moor, of West Blandford-street, Newcastle.

The Westminster Schools, Hoole, near Chester, are being warmed and ventilated throughout by means of Shorland's patent Manchester stoves and patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The London County Council's Bill for providing a southern approach to the Tower now only awaits the Royal assent, having passed through all stages in both Houses of Parliament.

The city council of Liverpool have voted an increase of £75 a year to the city surveyor's salary, for the performance of all duties in connection with the inspection of theatres and other places of entertainment.

On Sunday services will be held for the last time prior to rebuilding in Kea Church, Cornwall. The contract for the nave and chancel of the new church has been signed by Mr. Carkeek, of Redruth, the first contract being for £2,750. It is hoped, however, that funds will come on sufficiently well during the next three months to go on at once with the tower and spire and vestries. The total cost is estimated at £4,500. Mr. G. H. Fellowes Prynne, F.R.I.B.A., of Plymouth and London, is the architect.

A supplement to the Egyptian *Journal Officiel* contains a statement of the conditions under which architects are invited to compete for the prizes—amounting in all to £E1,000—offered for the best and four next best designs for the new Museum of Antiquities at Cairo. This programme can be seen at the Commercial Department of the Foreign Office, London, between the hours of 11 a.m. and 6 p.m.

The theatre at Hanley was reopened on Monday, having been remodelled and enlarged so as to afford 800 additional seats, and also redecorated. The architect is Mr. Frank Matcham, of London, and the building contractor has been Mr. C. Cornes, of Hanley. Messrs. De Jong, of London, have done the plaster ornamentation, Messrs. Binns and Co., Halifax, executed the decorations, which are in the French style, and are on an elaborate scale, and the upholstering was by Messrs. Brookfield and Windows, of Stafford.

WATER SUPPLY AND SANITARY MATTERS.

Manchester Main Drainage.—The works for the main drainage of Manchester were exhaustively described by Mr. William T. Olive, resident engineer under the corporation of that city, in a paper read before the Institution of Mechanical Engineers last week, at the annual meeting at Owens College, presided over by Professor A. B. W. Kennedy. Mr. Olive said the question of floods claimed the serious attention of the corporation when in 1872 the River Medlock rose to a height of 25ft. above the ordinary water line, and caused an enormous amount of damage. Reports on the flood question were received; but Salford Corporation were the first to take active steps by appointing a Conservancy Board for the whole watershed of the Irwell. To Salford belonged the credit of first launching out into extensive works of main drainage. In 1887 Manchester was recommended to adopt the system in operation at Leeds, and the necessity for action was considerably hastened by the contemplated construction of the Ship Canal. Operations were begun in 1890, and since that time work had been continuously in progress, and had comprised 22 contracts for main intercepting sewers, tanks, buildings, machinery, and filtering beds. The plan now being proceeded with is an intercepting scheme, whereby, as far as practicable, the new main sewers are carried along the valleys at such depths as to intercept the existing sewers, and convey all the sewage to one main outfall, which forwards it to the sewage works at Davyhulme, five miles distant from the city. A gravitation system has been aimed at and attained, although in some places at the expense of very flat gradients. Nevertheless, it is believed that the sewers will be perfectly self-cleansing. The calculations for the sizes of the sewers have been based upon a present daily water supply of 20 gallons per head, together with five gallons as a margin for increase and for subsoil water—in all 25 gallons per head for a prospective population of 625,000. The main intercepting sewers vary in size from 3ft. wide by 2ft. high to 14ft. by 10½ft. All the sewers up to 5ft. diameter have been built in two rings of brickwork; from 5ft. to 10ft. diameter in three rings; and the main outfall, which is 14ft. wide by 10½ft. high, in four rings. In the smaller sewers blue bricks have been used for the inner ring, and common reds for the outer or back ring. Both hydraulic lime and cement mortar have been used, according to the nature of the ground. By far the larger portion of the work has been done in tunnel. The greatest difficulties to contend with have been presented by the old sewers, which to a large extent follow the same lines as the new, sometimes running about the same level, side by side, or crossing over, under, or through. At Erskine-street, Stretford-road, there is a large junction chamber or bell-mouth, where the combined flow of a 7ft. and a 9ft. sewer discharges into the main outfall sewer of elliptical section, 14ft. by 10½ft. The length of this sewer to the storm overflow chamber is about 3,535 yards, and it varies in depth from 37ft. to 45ft. below the surface of the ground. The storm overflow chamber measures 51½ft. long by 26ft. 2in. wide. In passing under the Bridgewater Canal the main outfall sewer had to be constructed in two cast-iron cylinders, each 8ft. 9in. diameter. From the storm overflow chamber to the tanks, a distance of 4,259 yards, the main outfall sewer is diminished in size to 10ft. diameter, with a fall of 1 in 2,000. It averages 15ft. deep, and has been laid in open cutting and through fields. At the outfall works there are eleven settling tanks, all open to the air, each 300ft. long and 100ft. wide, having an average depth of 6ft., a total water surface area of about 7½ acres, and a holding capacity of 12⅓ million gallons. The floors are of cement concrete, and all the walls of brickwork. The floors of the tanks are level transversely, and fall 1 in 150 from the overflow end to the inlet end. After the sewage leaves the 10ft. outfall sewer it flows through an inclined screen. Immediately behind the screen the chemicals—sulphate of alumina and milk of lime—are added, and mixed with the sewage by an agitator. The land owned by the corporation for filtration, apart from that occupied by the tanks and buildings, is about 325 acres—namely, 112 acres at Davyhulme and 213 acres at Flixton, two miles distant. Only thirty acres are at present laid out, in two beds. The beds are drained by 18in. mains, socketed pipes with puddle joints, laid about 200ft. apart and parallel to the centre bank; into these pipes 6in. agricultural drain-tiles laid 30ft. apart are connected.

Yeadon Water Supply.—The reservoir at Reva, on Hawksworth Moor, just constructed for the Yeadon Waterworks Company, was formally inaugurated last week. Mr. A. E. Preston, the engineer, in giving a description of the work, said the reservoir had been formed by an earthen embankment about half a mile long, 50ft. high at its highest point, and 250ft. wide at the base, with a watertight puddle wall in the middle carried 40ft. below the original surface of the land. The area when the reservoir was full would be 16¾ acres; the height was 765½ft. above sea-level, and the holding capacity 95,000,000 gallons. The streams flowing into the reservoir were fed by an area of about 760 acres of moorland, in the Millstone grit formation. Filter beds have been constructed below the reservoir, and from these the water was carried through Guiseley to Yeadon by means of 10in. iron pipes, which had been laid by Mr. Henry Wilson, of Great Horton; while the other works had been constructed by Mr. John Brigg, of Bingley. The cost of the reservoir had been about £23,000, and the total cost of the new works, including Act of Parliament, land, &c., would be about £30,000.

STAINED GLASS.

Boston Church.—One of the large four-light windows on the south side of the nave of this fine old church has just been filled with stained glass. Figures of the founders of the Christian Church, SS. Peter and Paul, the last of the Prophets, and the first of the Martyrs occupy positions in the chief openings, together with illustrations of their ministry and work. The window has been designed and executed by Messrs. Powell Brothers, of Park-square, Leeds.

CHIPS.

The value has been sworn at £48,498 of the personal estate of Mr. William Calder Marshall, of 115, Ebury-street, R.A., the well-known sculptor, who died on June 16 last, aged 81 years.

A subscription portrait of Mr. John Corbett, formerly member for Mid-Worcestershire, was unveiled on Monday at the Corbett Hospital, Stourbridge, which he founded last year. It was executed by Mr. Henry T. Wells, R.A.

The foundation-stone of the new church of St. John the Baptist at Lock's Heath, Sarisbury, Hants, was laid on Tuesday week. The church will consist of nave, south aisle, and chancel. Mr. Ewan Christian is the architect, and Messrs. Cornish and Gaymer, of North Walsham, Norfolk, are the builders.

The new buildings of the Yorkshire College at Leeds will be opened by the Duke and Duchess of York on Friday, October 5th. The extensions, which include an examination hall and library, have been erected from designs by Messrs. Alfred Waterhouse and Son, and were illustrated by a double-page perspective and a plan in our issue of May 6, 1892.

The first sod of the sewerage works for Heywood will be cut by the mayor of that borough on Monday next. The contract has been taken by Messrs. Townsend, Watson, and Yates, of Sheffield, whose tender of £20,177 was the lowest of fifteen received.

Murillo's "Death of St. Clara" has just been purchased by the Dresden Royal Picture Gallery from Lord Dudley's collection for the sum of £10,000.

Kenyon Baptist Chapel, Solon-road, Brixton, was reopened on Sunday, after renovation carried out by Messrs. Higgs and Hill, of South Lambeth, by whom the chapel was erected (as a memorial to the late Mr. William Higgs, the head of that firm) in 1884.

A new Primitive Methodist chapel has just been opened at Hull; it has been erected at a cost of £4,000.

New Free Methodist Schools are in course of erection in Carpenters' Lane, Foleshill. Messrs. G. and I. Steane, of Coventry, are the architects, and Messrs. G. Kelly and Son, of Foleshill, the builders.

The fifty years' services to the town of St. Helen's, rendered by the present mayor, Alderman A. Sinclair, were publicly recognised on Friday by the presentation of his portrait, painted for the subscribers by the Hon. John Collier, and hung in the council chamber of the town hall.

A memorial Celtic cross has been placed in Hatherleigh churchyard as a memorial to the late Lieut.-Col. Pearse, 1852—94, the winner of the Queen's Prize at Wimbledon in 1875. It is constructed of Gunnislake granite, and stands over 11ft. in height. The work was carried out by Mr. Petherick, of Hatherleigh, from designs by Messrs. S. and J. Hooper, of the same place.

The Cannock school board at their last meeting adopted plans prepared by Messrs. Bailey and M'Connal, of Walsall, for the enlargement of the Five Ways Schools, and instructed the same firm to prepare plans for the enlargement of the schools at Rawnsley.

A new parish church at Balranald, North Uist, was opened for public worship last week. The building is seated for about 400, and is a substantial stone one, having a belfry, in which is mounted a bell of 5cwt. It is furnished in varnished pitch-pine, and is inclosed with a stone wall.

Our Office Table.

The Council of University College, Liverpool, made an important appointment on Friday, when, on the unanimous recommendation of the senate, Mr. Fred M. Simpson, of Westminster, was elected to the professorship of architecture. Mr. Simpson was articled to Messrs. Bodley and Garner, gained the Royal Academy Travelling Studentship in 1884, and during 1891-2 was editor of the *Architectural Association Notes*. His executed work has been chiefly in the domain of Domestic architecture. Mr. Simpson will at once take his place on the board of the School of Architecture and Applied Arts, and proceed to active organisation of classes and appointment of teachers in readiness for the coming session.

Sir James D. Linton and Mr. James Orrock have returned to the attack on the management of the National Gallery, and again complain that in consequence of the dry, and as they contend, excessive heat maintained in the rooms, the destruction of numbers of our great painter's works in which asphaltum was used as a medium, are rapidly cracking and going to pieces. They state that at a recent visit to the Gallery they noticed that fresh cracks were visible in many of the British pictures, including Wilkie's "Blind Fiddler," No. 99, "The Village Festival," No. 122, and "Knox reading the Bible," No. 894; Stothard's "A Greek Vintage," No. 317, Stanfield's "Entrance to the Zuyder Zee," No. 404, Turner's "Orvieto," No. 511, the "Apollo and Daphne," No. 520, and "Italy—Childe Harold's Pilgrimage," No. 516; and Constable's "Valley Farm." They suggest, as a remedy, that water in grated troughs should be employed to temper and moisten the heated air, while refrigerators might be introduced in the summer months to secure an equable temperature. Messrs. Linton and Orrock write as usual strongly; but the matter demands the attention of the director and trustees of the collection.

By the way, some of the frescoes in the Houses of Parliament are said to be in a lamentable state. Dyce's fresco in the Queen's Robing Room, to which Sir Julian Goldsmid lately called attention, being perhaps the most conspicuous example. The First Commissioner of Works, Mr. Herbert Gladstone, has appointed a small committee of experts to examine the frescoes, to report upon their condition, and to suggest means of averting their total disappearance.

Several pictures have been acquired for South Kensington Museum during the past year, according to the report of Mr. Armstrong, Director of Art. Among those acquired by purchase are two water-colour paintings by J. F. Lewis, R.A., both Oriental subjects. Mr. Jas. Orrock, R.I., has given a valuable oil picture, a rocky landscape, by Henry Dawson, whose work was unrepresented; the Department have also received a collection of 66 water-colour paintings from Mr. I. E. Taylor, including examples of the work of Glover, Havell, the two Sandbys, Eldridge, Cozens, Girtin, and other eminent artists at the end of the last and beginning of the present century. Miss Elizabeth Anderson has bequeathed oil and water-colour paintings, principally by Clarkson Stanfield, R.A.

Amongst the latest acquisitions made by the authorities of the Louvre is a statuette sculptured in wood, which has been purchased for 10,000f. According to M. Maspero, the renowned Egyptologist, the work of art in question dates back to the eighteenth dynasty of the Pharaohs. It represents a lady of that period lightly draped in a robe of transparent gauze, and in the opinion of the expert the beauty of the carving and the delicacy of the proportions render the statuette the most remarkable piece of sculpture which has been discovered in Egypt during the present century.

The ceremony of opening a new convalescent home at Pegwell Bay, near Ramsgate, presented by Mr. J. Passmore Edwards to the Working Men's Club and Institute Union, took place on Monday. There was a large attendance, including Mrs. Edwards and the Mayor of Ramsgate, who made appropriate speeches. Mr. Hodgson Pratt, president of the union, in proposing a vote of thanks to the donor, alluded to the gratitude which the 80,000 members of the 400 or 500 clubs affiliated to the union felt towards that gentleman, whose gift was the more appreciated on account of the unostentatious manner in which it was given. Mr. Passmore Edwards, who was received with enthusiasm, formally declared the home open. The building, which was formerly the Clifton Hotel, contains some thirty rooms, which include accommodation for patients needing isolation. Mr. Maurice B. Adams, F.R.I.B.A., supervised the alterations, which have been carried out by Messrs. Jarman and Sons, of Ramsgate.

Red tape has not yet been abolished in the architect's office at the Education Department, if a letter from "A Vicar" which appeared in Monday's *Standard* is genuine. The writer asserts that a small alteration having been required to his school by the Department, he sent a plan of the proposed works drawn to ½in. scale, in compliance with orders, for approval. After a considerable delay a letter was received, returning the plan and estimate, and curtly stating "that the plans should be drawn to ⅛in. scale (Requirements ii. and iii. of Schedule VII. of the Code), and Rules 13 (b) and 6 should be observed." The consequence is that the work, which was to have been done during the holidays, cannot be completed before the school reopens, and great inconvenience will be caused.

The Building Trades Exchange, which it was recently resolved to establish for Glasgow and district, was opened on Wednesday at 30, Gordon-street, Glasgow, with Sir William Arrol as president, and Mr. W. M. Cunningham as secretary. The premises include a general room, a private room for members, two sample rooms, and an apartment to be used as an office by the secretary and for the meetings of the directors. Private drawers are provided for members, and there is a safe-room for the deposit of plans and valuable documents. Already there are about 120 subscribers, consisting of architects, measurers, builders, and others connected with the building trades in the west of Scotland.

The battle of the sites for the public buildings at Hull has at length been settled. The town council propose to erect in one block a public hall, technical school, and central free library, and no fewer than five sites have been suggested. Three of these embraced property in the neighbourhood of Waterworks-street, Carlisle-street, Prospect-street, and Waltham-street, and the estimated cost ranged from £210,000 to £280,000. Adoption of any one of these sites would have necessitated very extensive improvement, which would open out important thoroughfares. Alternate sites, which did not propose any street improvements, were submitted, situated in Albion-street and Prospect-street respectively, the former being estimated to cost £60,000 and the latter £57,000. The town council have by 24 votes to 18 finally adopted the Albion-street site.

Trade News.

WAGES MOVEMENTS.

Bolton.—Two hundred masons struck, on Friday, as a protest against the importation of sawn stone.

Perth.—The strike among the slaters of this city was brought to an end on Monday, when the masters agreed to pay the additional halfpenny on the wages, thus making the rate 8d.

Halifax.—The joiners' strike, after lasting a little over a month, has been settled. The men accept the masters' offer of an advance of a farthing per hour, with an alteration of one of the rules, so that six months' notice of future alterations to rules or wages shall expire at the end of either June or December.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Abertillery.—For the erection of four cottages at Oak-street, Abertillery, for Mrs. H. Lewis. Mr. D. J. Michael, Old Post-office Buildings, Abertillery, architect:—

Bagley, N., Abertillery (accepted) ..	£805 0 0
Syrett, J. F., and Co., Abertillery...	800 0 0
Barnett, F.	758 15 0

Abertillery.—For the erection of two cottages in Aberbeeg-road, for Mr. W. Bobbett. Mr. D. J. Michael, Old Post-office Buildings, Abertillery, architect:—

Bagby, N.	£354 0 0
Warr, T.	340 0 0
Barnett, F.	336 0 0
Fairclough, J. (accepted)	330 0 0

All of Abertillery.

Bath.—For the erection of a park-keeper's lodge in the Crescent Fields, for the city council:—

Chancellor, E. (accepted)	£406 0 0

Bath.—For a ladies' cloak-room in the park, for the city council:—

Wibbey (accepted)	£74 0 0

Bedminster.—For building new schools at Merrywood, Bedminster, for the Bristol school board:—

Bevan, A. J., Bristol (accepted).

[In lieu of tender from Humphreys, withdrawn after acceptance on account of error of £1,000.]

Birkenhead.—For repairs to the sewer wall:—

Tomkinson, W., and Son, Dansie-street, Liverpool (accepted) ...	£726 0 0

Boston, Lincolnshire.—For alterations to the workhouse. Mr. S. Sherwin, architect:—

Greenfield, W.	£340 0 0
Leafe, J....	331 0 0
Lucas, J. (accepted)	329 0 0

[Architect's estimate, £350.]

Bradford.—For carpet-beating works in Drummond-road, Bradford. Rycroft and Firth, Bradford, architects:—

Accepted tenders.
Masons:—Brown and Craven.
Joiners:—Wilkinson K., and Sons.
Plumber:—Fisher, A.
Plasterers:—Sugden, B., and Sons.
Slaters:—Hill, A., and Son.
Painter:—Arundel, J.
All of Bradford.

Bromley, Kent.—For the construction of a new road, with sewer and surface water-drain, for Mr. Lloyd. Messrs. Hugh S. Cregeen and Son, surveyors:—

Heskett, A., Bromley	£436 10 0
Lansbury, F. and W., Bromley ...	360 0 0
Woodham, J., Lewisham	359 0 0
Peill, E., and Sons, Bromley* ...	319 10 0

* Accepted.

Burley, Hants.—For constructing a brick roadside bridge at Burley, for the Ringwood highway board:—

Barrow, H. (accepted)	£54 0 0

Canterbury.—For an iron fence and gates at Castle-street churchyard, for the city council:—

Drury and Biggleston (accepted) ...	£62 10 0

Cregina.—For the new bridge at Cregina, for the Radnorshire county council:—

For masonry work:—

Davies and Son, Newtown (accepted)	£138 0 0

For iron and steel work:—

Horshay Co. (accepted)	£205 0 0

Durham.—For proposed additions, &c., to Whitworth Hall, for Mrs. R. Duncombe Shafto. Mr. H. Henry, Durham, architect:—

Kell, J., Durham (accepted) ...	£1,148 10 0

Deptford.—For providing and fixing a complete system of low-pressure hot-water apparatus, for warming the whole of the Hughes-field School, now being enlarged, for the London School Board:—

Fraser and Fraser	£536 0 0
Kinnell, C. P., and Co.	530 0 0
Berry, Z. D., and Sons	518 0 0
Wharton, W. H.	490 0 0
Cannon, W. G.	488 0 0
Maguire and Son	467 8 0
Wenham and Waters, Ltd.	450 0 0
Ellis, J. C. and J. S., Sheffield* ...	419 10 0

* Accepted.

Devonshire.—For the construction of the Exeter, Teign Valley, and Chagford Railway:—

Dickson Brothers, of London (accepted).

Failsworth.—For the construction of sewage purification works, for the local board:—

Freeman, Geo., Hollinwood (accepted) ...	£5,728 12 8

Finsbury.—For inclosing one end of the entrance lobby with glazed framing at York-road Board School:—

McCormick and Sons, Canonbury-road*	£48 10 0

* Accepted.

Grimsby.—For the erection of public conveniences in Ribay-square, for the town council:—

Siminson, T.	£653 0 0
Marrows, H.	650 15 0

[Neither tender accepted, the borough surveyor to carry out the work at an estimated cost of £500.]

Hackney.—For providing two new w.c.'s at Homerton-row Board School:—

Davenport, W. J., Clapton (accepted)	£131 0 0

Haywood, Lancs.—For the construction of sewerage works, for the town council:—

Townsend, Watson, and Yates, Sheffield (accepted)	£20,117 15 3

[Lowest tender of fifteen received; highest nearly £36,000.]

Hendon, Middlesex.—For new billiard-room, &c., for Mr. R. Bousfield, Q.C., M.P. Mr. George Hornblower, A.R.I.B.A., 20, Fitzroy-street, W., architect:—

Tout, W. (accepted)	£650 0 0

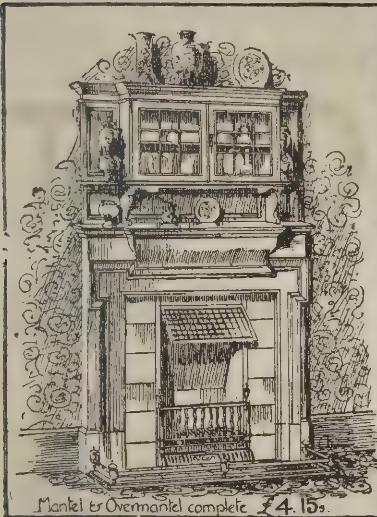
Kentish Town.—For building new story to Messrs. Carr's ink factory, Kentish Town. Mr. L. Sargant, architect:—

Davenall, H. G., Southampton Works, Gospel Oak (accepted) ...	£400 0 0

Kineton.—For the erection of a public hall. Mr. T. T. Allen, of Stratford-on-Avon, architect. Quantities by Mr. H. Hugh Allen, Edmund-street, Birmingham:—

Harris, J., Stratford-on-Avon (accepted)	£648 0 0

[Thirteen tenders varied from £820.]



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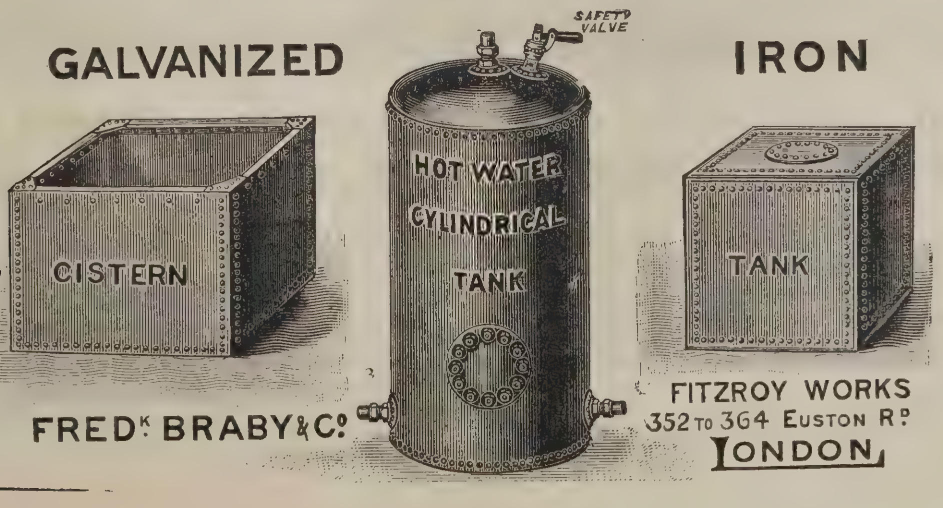

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LIVERPOOL.—For the supply of a 25-ton floating crane, for the Mersey Docks and Harbour Board:—

Armstrong, Mitchell, & Co., Newcastle-on-Tyne (accepted) ...	£7,800	0	0

LIVERPOOL.—For works at the underground conveniences, Crown-street, for the city council:—

Structural works—

Raffle and Campbell, Liverpool (accepted)	£189	10	0

Fittings—

Doulton and Co., Lambeth (accepted) ...	62	0	0

LIVERPOOL.—For additions to the refreshment pavilion, Sefton Park, for the city council:—

Raffle and Campbell, Liverpool (accepted)	£159	10	0

LIVERPOOL.—For works of painting at St. Luke's Church:—

Mooney, W., Liverpool (accepted) ...	£75	0	0

LIVERPOOL.—For rain screens at St. George's Hall, for the city council:—

Kerr, G., William Brown-street, Liverpool (accepted)	£125	0	0

LIVERPOOL.—For works of painting at the Main, Bridewell, for the city council:—

Trevitt, T. B., Liverpool (accepted)	£176	0	0

LONDON.—For "The Brook" Fever Hospital, Shooter's-hill-road, S.E., for the Metropolitan Asylums Board. Mr. T. W. Aldwinckle, F.R.I.B.A., architect. Quantities by Mr. W. T. Farthing (Sections 1 and 2), Mr. R. R. Batstone (Section 3), Messrs. W. H. Barber and Sons (Section 4), Mr. H. Riley (Section 5), Messrs. Corderoy, Selby, and Corderoy (Section 6), and Messrs. Fowler and Hugman (Section 7):—

Section 1.—Scarlet-fever pavilions, A, B, C, and D:—

Higgs and Hill, Crown Works, South Lambeth	£40,400	0	0
Wallis, G. E., and Son, Bexley-road Works, Maidstone ...	40,000	0	0
Leslie & Co., Kensington-square.	39,965	0	0
Shillitoe, J., and Son, Bury St. Edmunds	37,860	0	0
Kirk and Randall, Woolwich ...	37,650	0	0
Johnson, W., & Co., Ltd., Wandsworth Common	37,589	0	0
Adcock, W. J., Dover	36,050	0	0
Wall, C., Ashburnham Works, Chelsea, S.W. (accepted) ...	32,652	0	0

Section 2.—Scarlet fever pavilions E, F, G, and H:—

Higgs and Hill	£41,000	0	0
Wallis, G. E., and Sons	40,666	0	0
Leslie and Co.	40,614	0	0
Kirk and Randall	38,275	0	0
Johnson, W., and Co., Ltd. ...	38,079	0	0
Shillitoe, J., and Son	38,000	0	0
Adcock, W. J.	36,490	0	0
Wall, C. (accepted)	33,316	0	0

Section 3.—Isolation wards and workshops:—

Leslie and Co.	£13,325	0	0
Shillitoe, J., and Sons	12,900	0	0
Wall, C.	12,713	0	0
Johnson, W., and Co., Ltd. ...	12,370	0	0
Wall, H., and Co. (accepted) ...	12,347	0	0
Kirk and Randall	12,325	0	0

Section 4.—Diphtheria pavilions, &c.:—

Hall, Beddall, and Co., Pitfield Wharf, S.E.	39,997	0	0
Wallis, C. E., and Sons	38,185	0	0
Leslie and Co.	37,597	0	0
Shillitoe, J., and Sons	35,400	0	0
Kirk and Randall	35,346	0	0
Johnson, W., and Co., Ltd. ...	34,688	0	0
Wall, C. (accepted)...	30,347	0	0

Section 5.—Nurses' home:—

Leslie and Co.	24,680	0	0
Wallis, G. E., and Sons	24,590	0	0
Lovatt, H., Wolverhampton ...	24,370	0	0
Higgs and Hill	23,500	0	0
Kirk and Randall	23,168	0	0
Johnson, W., and Co., Ltd. ...	23,095	0	0
Godson, G., and Sons, Kilburn ...	22,950	0	0
Shillitoe, J., and Sons	22,000	0	0
Wall, C. (accepted)...	19,138	0	0

Section 6.—Portion of administrative block, water tower, medical superintendent's house, &c.:—

Leslie and Co.	£28,521	0	0
Johnson, W., and Co., Ltd. ...	26,318	0	0
Shillitoe, J., and Son	26,000	0	0
Kirk and Randall	25,951	0	0
Wall, C. (accepted)	23,095	0	0

Section 7.—Portion of administrative block, laundry, boiler-house, steward's house, &c.:—

Leslie and Co.	£23,515	0	0
Kirk and Randall	21,601	0	0
Johnson, W., and Co., Ltd. ...	20,963	0	0
Wall, C.	20,898	0	0
Wall, H., and Co.	20,400	0	0
Godson, G., and Sons	20,109	0	0
Shillitoe, J., and Son (accepted)	19,750	0	0

LONDON.—For the erection and completion of the Ship Aground, Lea Bridge-road, Clapton, for Mr. F. Hurdle. Messrs. Edmeston and Gabriel, 42, Old Broad-street, E.C., architects. Quantities by Messrs. G. R. Tasker and Sons, 38, John-street, Bedford-row, W.C.:—

	Shop.				Fittings.		
Kellett	£2,260	0	0	...	£72	10	0
Spencer	2,115	0	0	...	120	0	0
Higgs, F. and H. F.	2,097	0	0	...	76	0	0
Carmichael, J. ...	1,948	0	0	...	92	0	0
Godfrey	1,894	0	0	...	89	0	0
Young and Lonsdale	1,860	0	0	...	80	0	0
Toms, E.	1,855	0	0	...	95	0	0
Prior, W. A	1,840	0	0	...	75	0	0
Godson and Sons ...	1,833	0	0	...	71	0	0

LONDON.—For additions and repairs to houses in Bartholomew-square and Henry-street, E.C. Mr. E. B. I'Anson, 7A, Laurence Pountney-hill, E.C., architect:—

Johnson and Co.	£2,715	0	0
Young and Lonsdale	2,420	0	0
Ansell, C.	2,320	0	0
Wynne	2,290	0	0
Garrett	2,170	0	0
Adams	1,986	0	0
Beer and Gash	1,894	0	0

MAIDSTONE.—For Sewerage works in Camden-street, for the town council:—

Pryer, A. N., and Co. (accepted) ...	£59	12	0

[Lowest tender received.]

NEWPORT, SALOP.—For carrying works of water supply, for the local authority. Mr. Wyatt, engineer:—

Accepted tenders:—

Constructing and building tank and pumping station:—

Whittingham, E.	£673	0	0

Machinery:—

Massey, A. and W. J	622	0	0

Iron pipes:—

Roberts and Co	514	0	0

Laying the pipes:—

Wyatt, Whitchurch	240	0	0

Sluice valves and hydrants:—

Blakeborough and Co...	53	0	0

Earthenware pipes:—

Wyndham and Co.	18	0	0

RADNORSHIRE.—For a new police station at Caban Coch, for the Birmingham corporation and the Radnorshire county council. Mr. S. W. Wilkins, county surveyor:—

Williams, J. D., Kingston	£835	0	0
Deakin, S. W., Knucklas	834	0	0
Davies, E., and Son (accepted) ...	790	12	0

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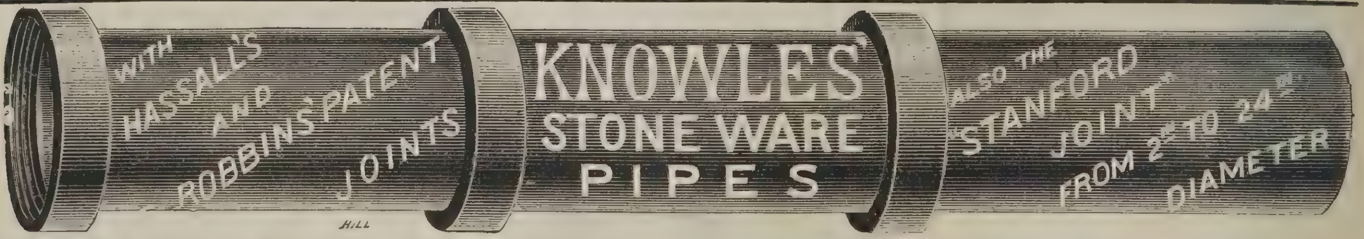

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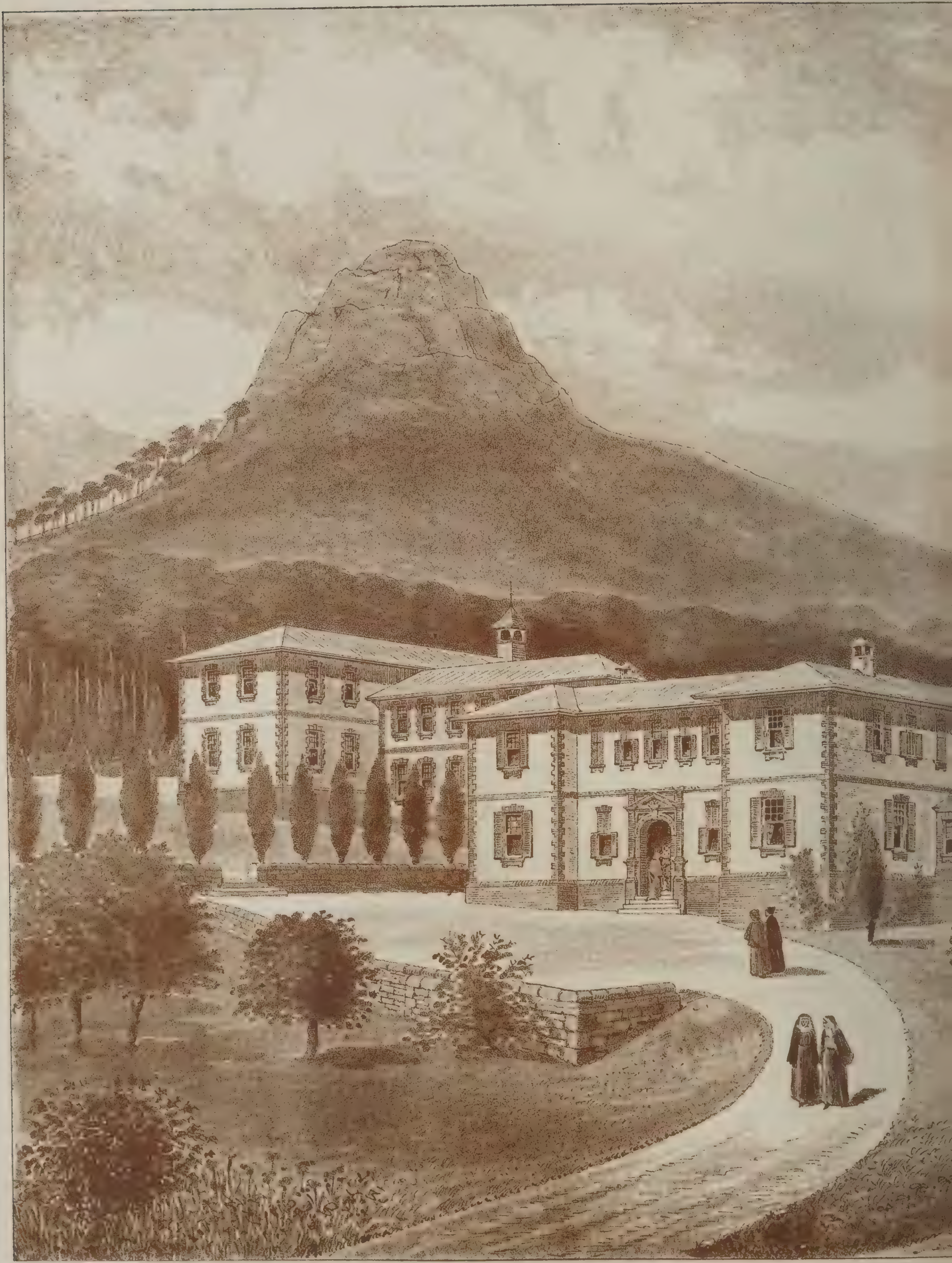
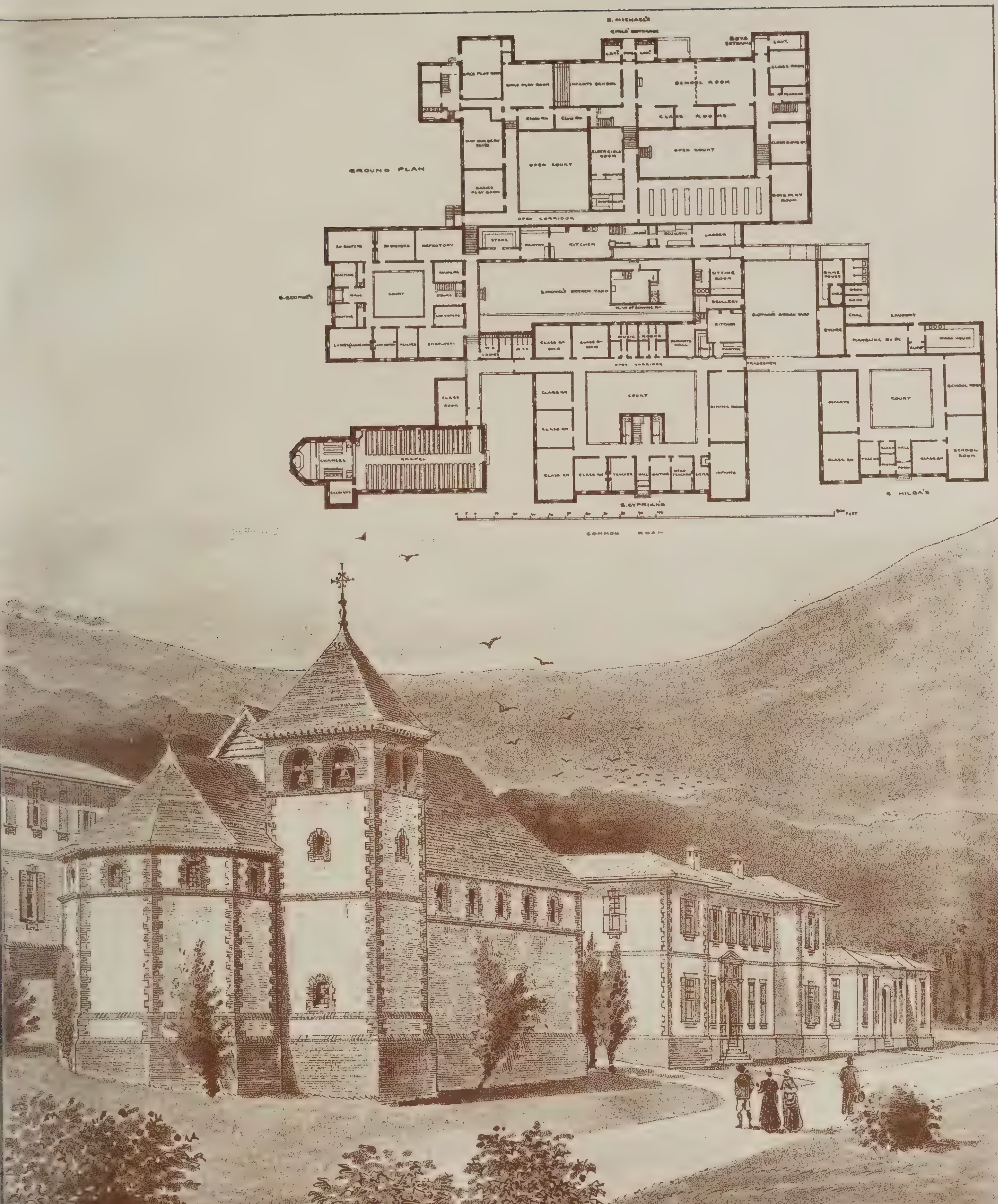
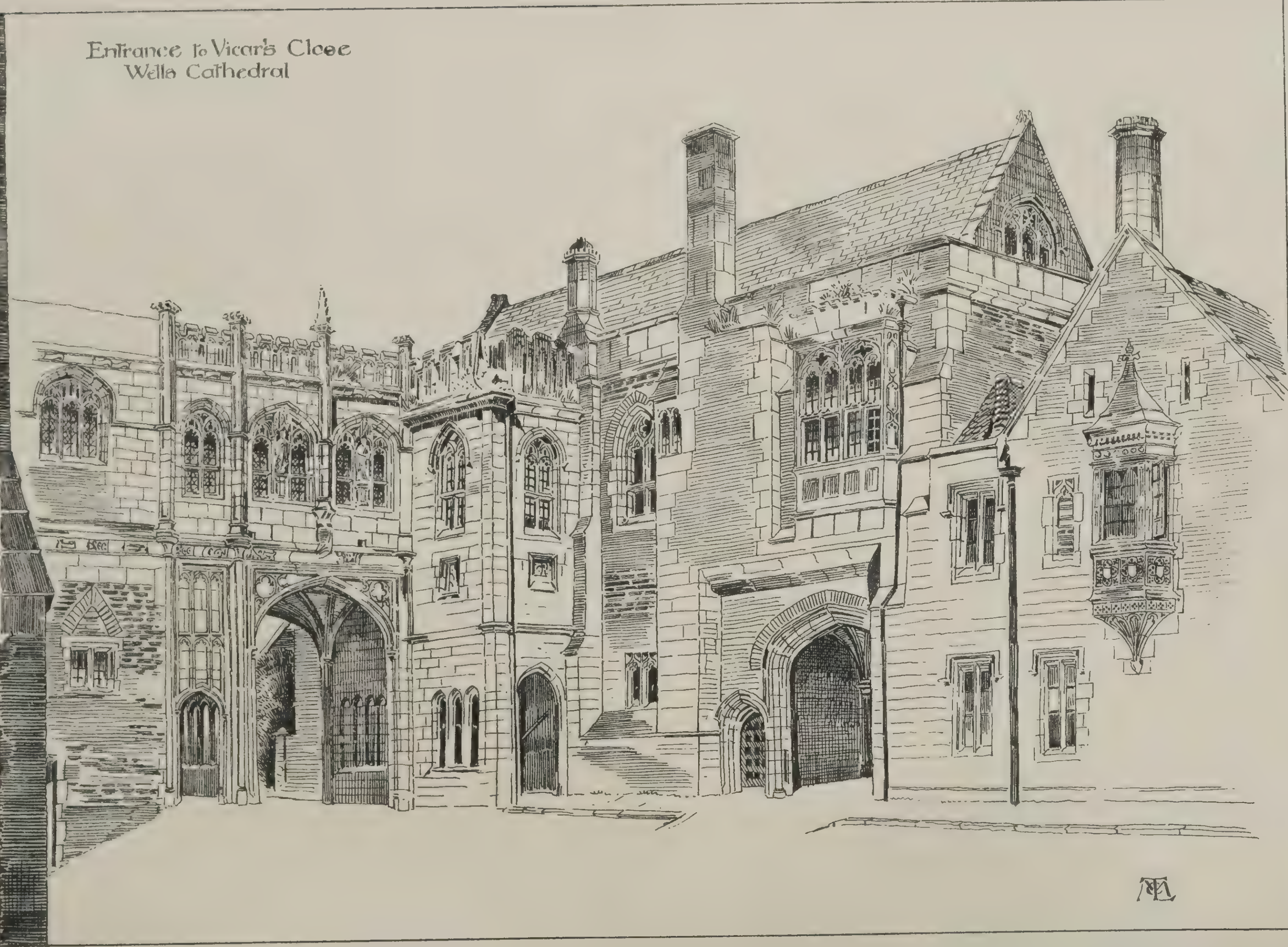


VIEW OF S·GEORGE'S HOME CAPE TOWN

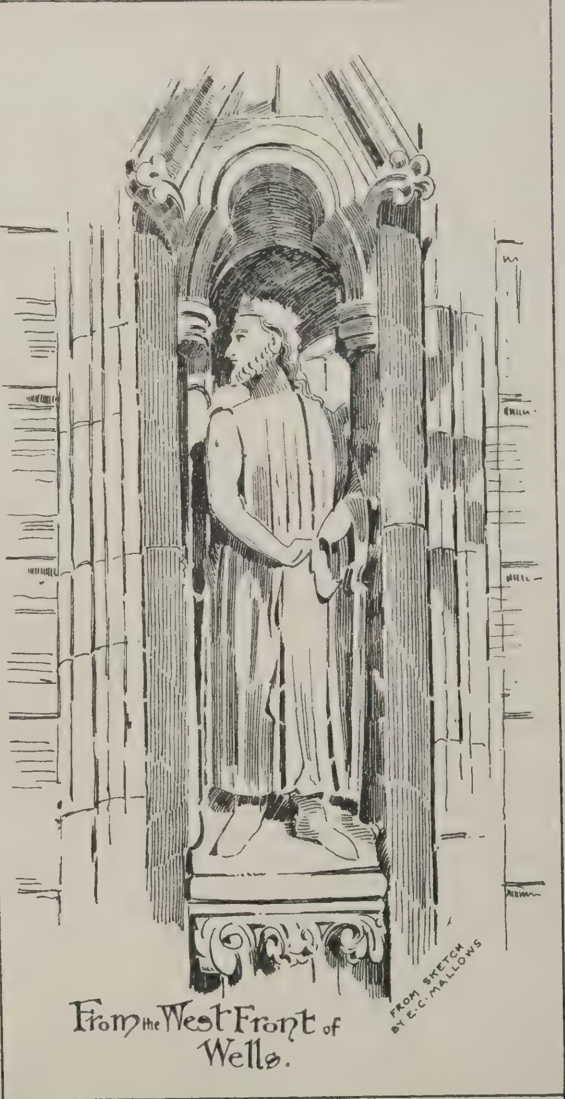


"Photo-Tint," by James Akerman, 6, Queen Square, London, W.C.

South Africa. Sydney Stent, Architect.



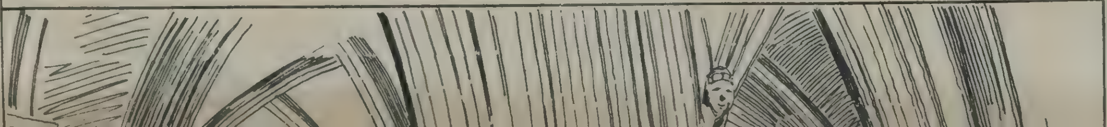
Entrance to Vicar's Close
Wells Cathedral



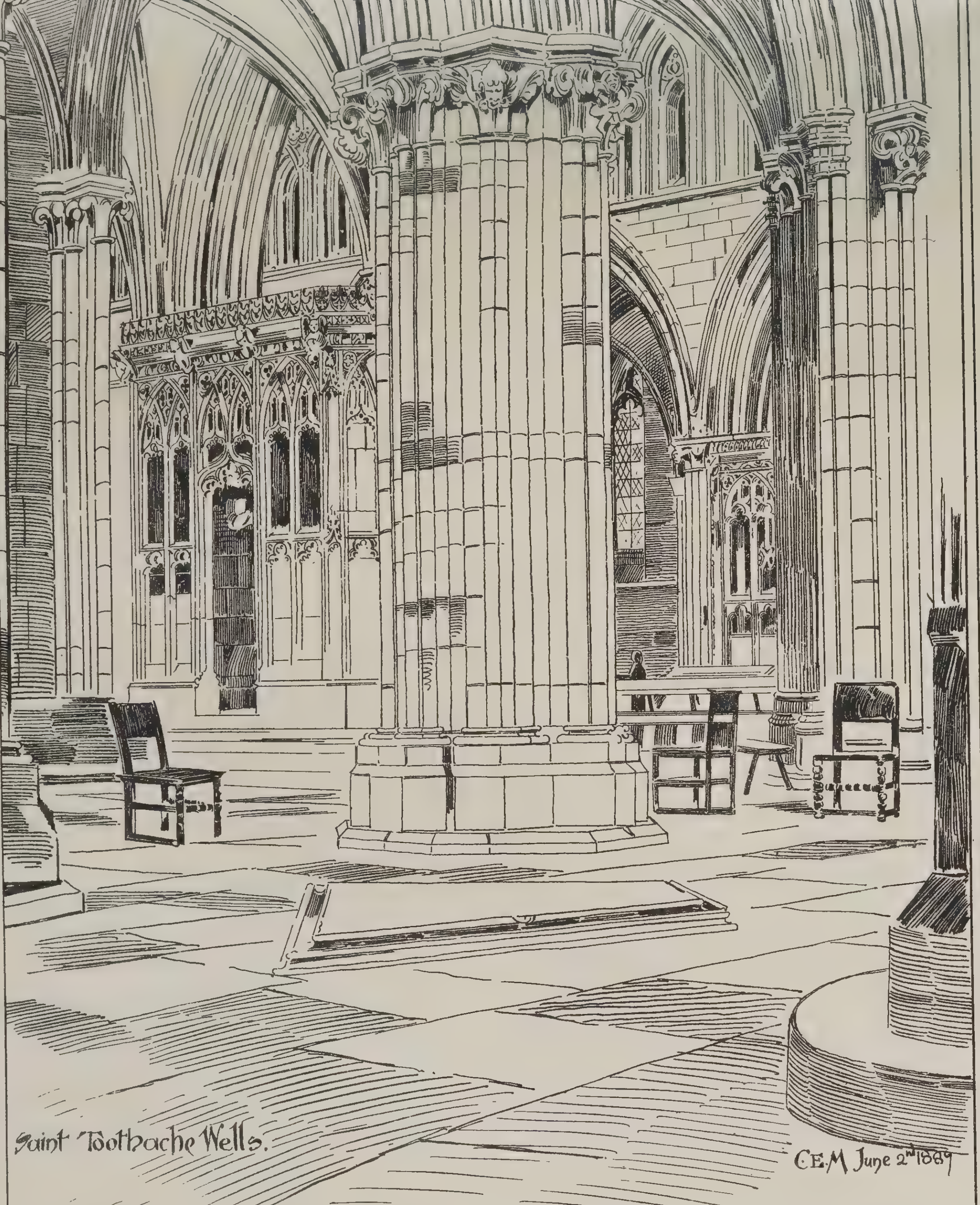
From the West Front of
Wells.

Architectural · Association · Excursion · Somersetshire · 1894

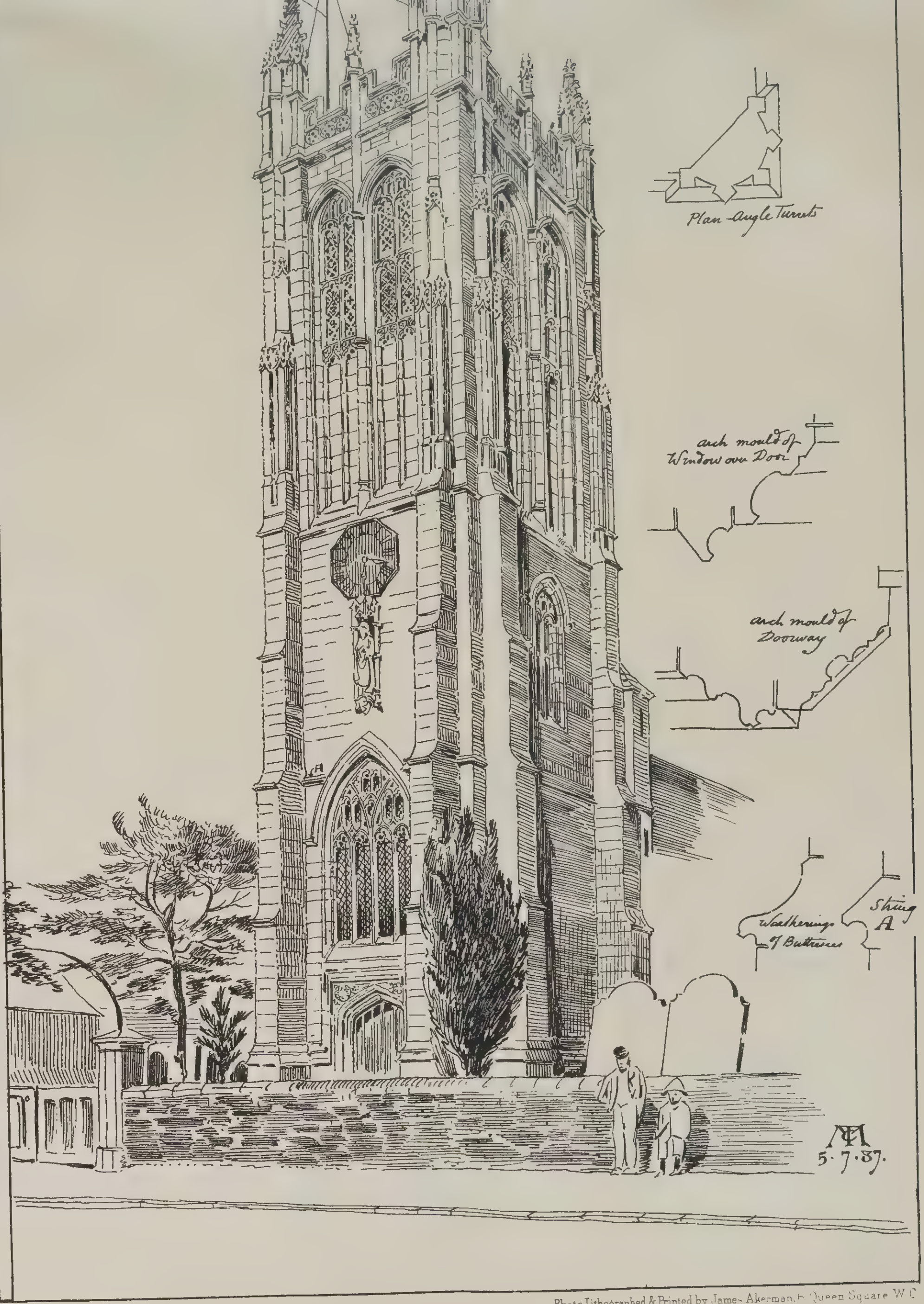
FROM SKETCHES BY C.E. MALLOWS AND THOMAS MAC LAREN



Tower of Evercreech Church



SKETCH IN S. TRANSEPT LOOKING INTO NAVE



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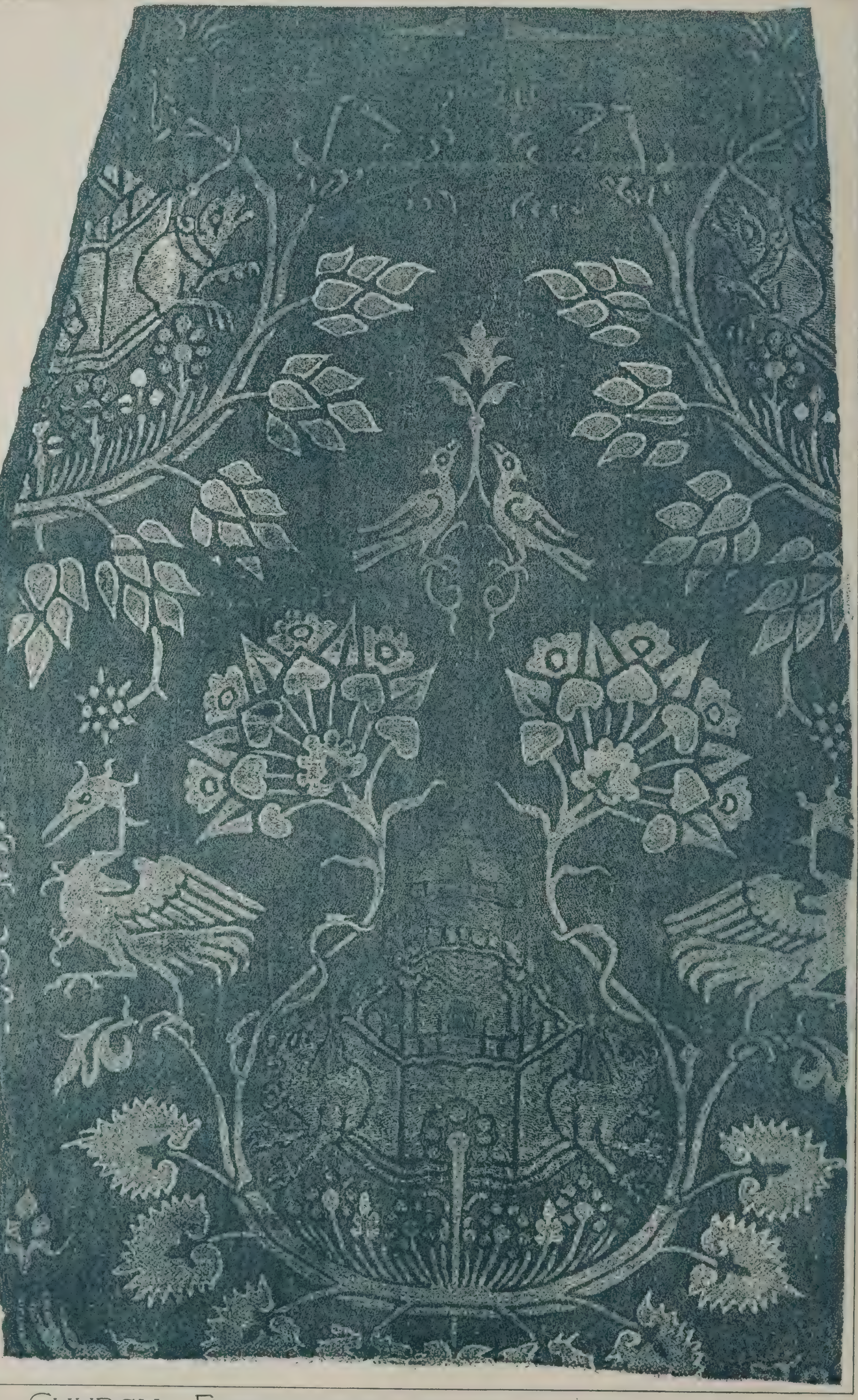

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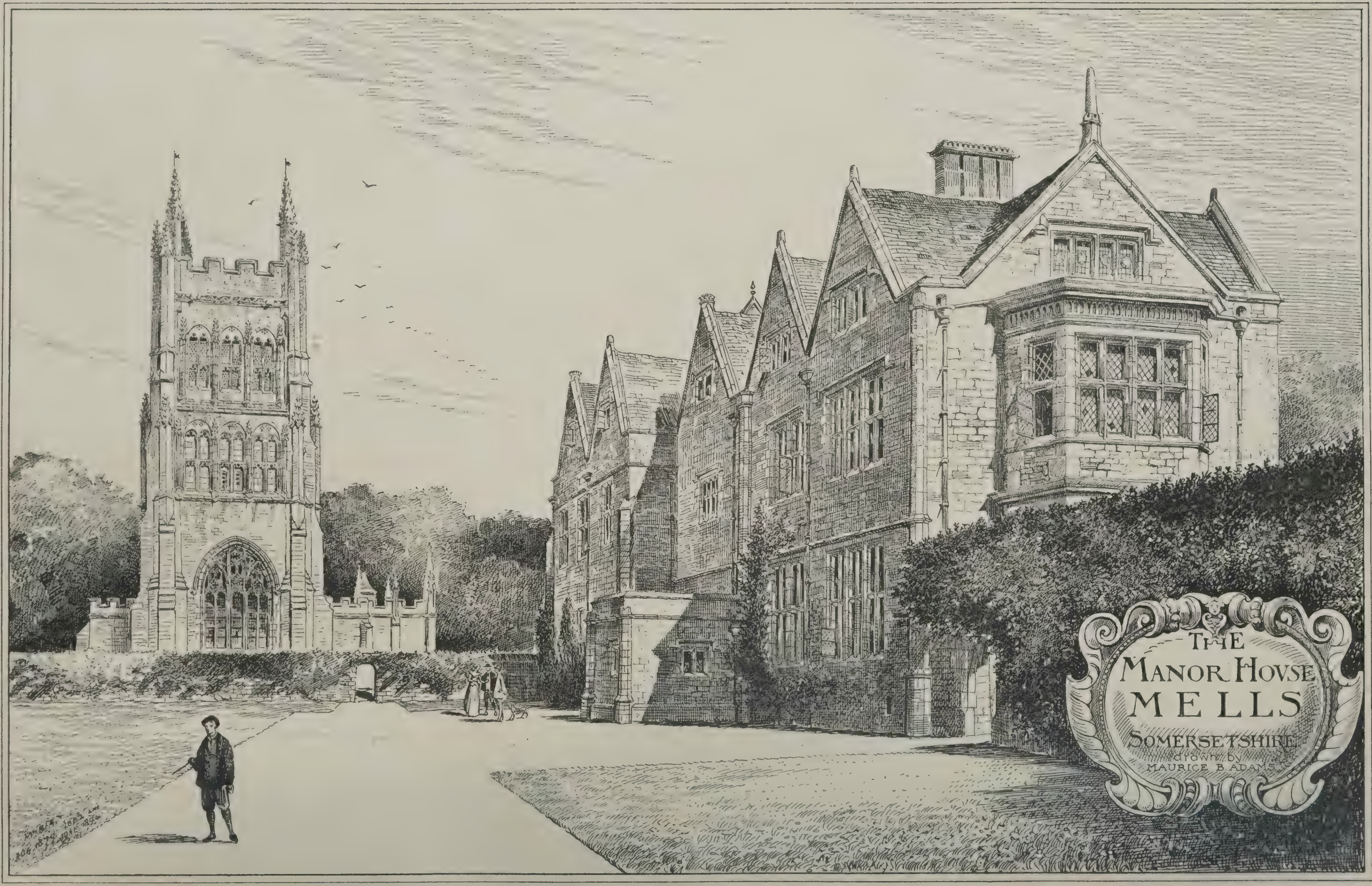

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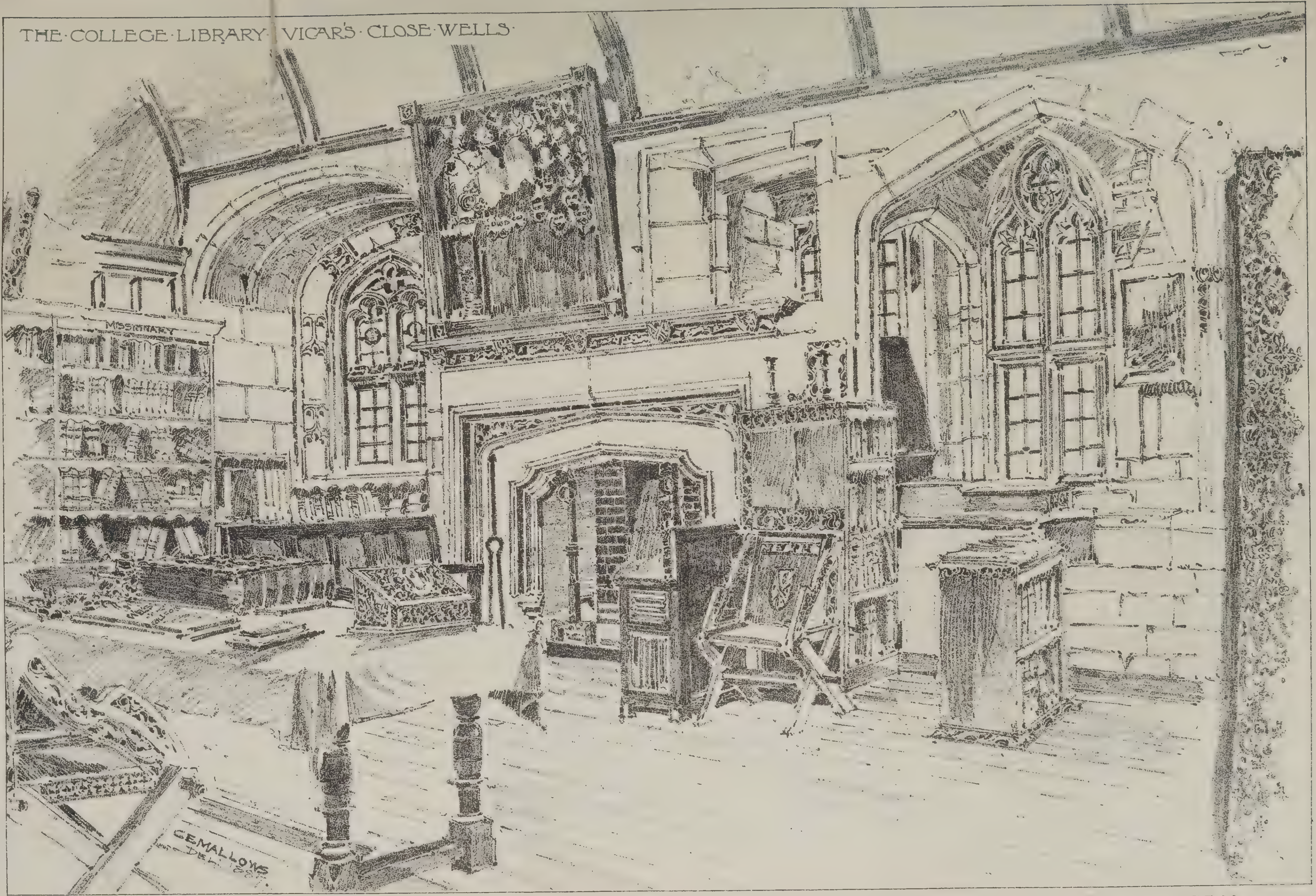

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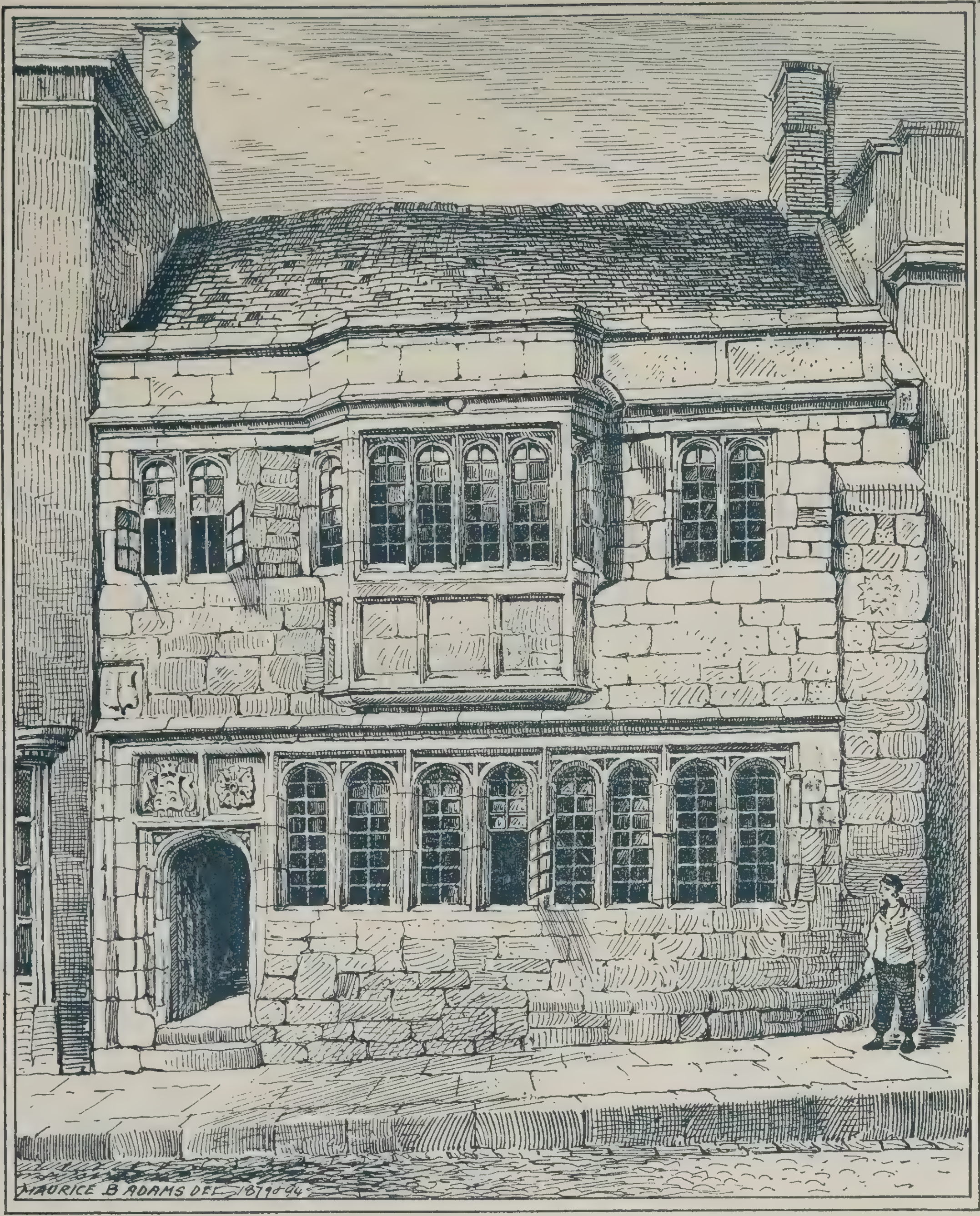

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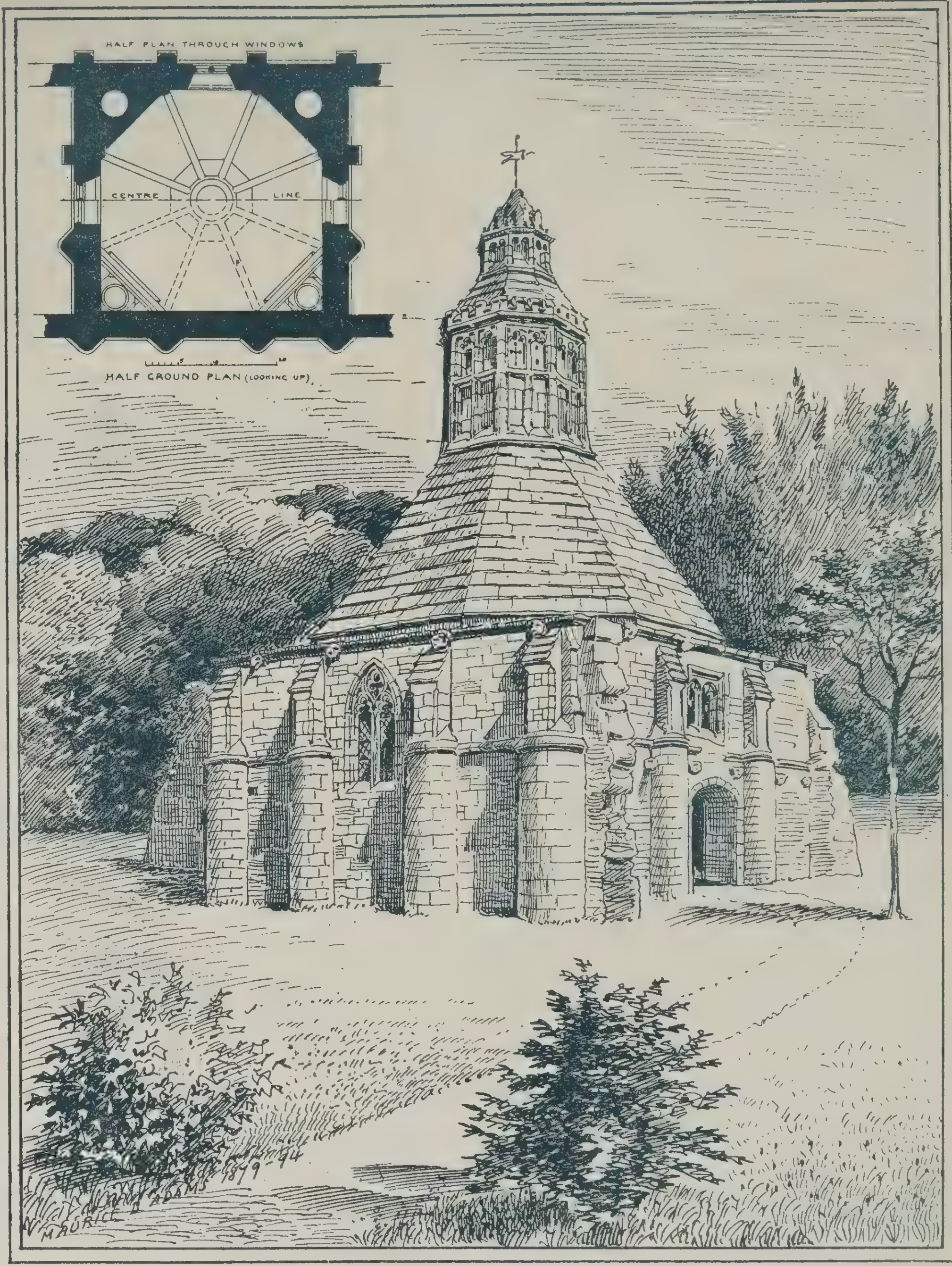

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UNIVERSITY OF ILLINOIS

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2067.
FRIDAY, AUGUST 17, 1894.

CRACKS AND SETTLEMENTS.

FEW buildings of any magnitude are quite free from cracks and settlements. It is often a matter of the utmost importance to ascertain their cause. The architect naturally desires to do so in every case, that he may guard against them for the future. The owner has an interest in finding it out, that he may prevent the injury from going further. The builder naturally wishes to clear himself, if he has been unjustly blamed for the defects that have appeared in his building; and the outsider, if by chance the evil seems chargeable to outside interference, is equally anxious to show that it is not of his making. Amongst all these conflicting interests the facts are often in danger of being misinterpreted, for there are very few failures of this class which do not at first sight seem capable of more than one explanation. A great number of small details may have to be ascertained, and balanced one against the other, before one theory is conclusively proved to be true and another to be false; so that the first need in these inquiries is to avoid jumping to a conclusion, and to keep a fair and open mind.

We will begin with cracks traceable to the foundations. Firm, undisturbed earth will safely bear from one to two tons per superficial foot. Clay, if covered up from rain and sunshine, will carry from three to four, or even five, tons per foot, and hard, compact gravel considerably more. If greater weights are put on these substances respectively, the superstructure will sink, and as the pressure is likely to differ at different points, it will probably sink unequally. The more unequally it sinks, the worse it will crack, and this will happen, too, when a small part of the soil is softer than the bulk of it, and almost as much when a small part is harder. This is why pieces of old footings and concrete which may be met with in digging out the trenches for a new building should be removed and not made use of. Having long been subjected to pressure, the probability is that they would sink or settle less than the concrete or footings of the new work, and cracks in the walls above would appear on each side of them.

The clay that will carry most weight is a stony clay, or a mixture in different proportions of clay and gravel. In some places, for instance in the Essex district to the north of London, there is a good deal of what may rather be called "shaly" clay. It is free from stones, and tends to split into horizontal flakes, or *laminæ*, with a smooth, soapy surface. While this clay is protected from the weather, as it is, for instance, below the inner walls of a building, it will safely carry a great weight, provided always that it cannot escape laterally at a lower level. But once let a trench be dug, even at a distance of many feet, and these soapy, slippery flakes will begin, by degrees, to slide towards it. If the trench is wet, the process goes on faster. The flakes, as they reach the damp part, break into smaller and smaller fragments, and finally melt into mud. Each particle which does so, makes room for another particle behind to take its place, and so, in time, a sinking or sliding of the clay takes place at an angle so slight that any movement in it would at first seem quite impossible. "You have no need to plough your fields here," said a London architect to an inhabitant, after his first experiences with this shaly clay; "you only need to take off the grass and cut shallow trenches a dozen yards apart, and the fields would plough themselves."

It is quite otherwise with the stony clays of London. Their tendency to slip is incomparably less. Even if they had a tendency to lamination, the pebbles they contain would bind the beds together. But, apart from this, they are of a firmer, more coherent nature. It is of these, and such as these, that the textbooks speak when they state that the angle of repose in clay—the steepest slope which it can permanently be made to keep—is one of about 40°. There is plenty of shaly clay which, even while fairly dry, could hardly be trusted to keep half as steep a slope, and which, when wet, would soon spread itself out into a horizontal mass.

Failures in rock foundations, if uncommon, are difficult to guard against. The rock, at the level of the footings, may all be equally sound and equally hard, and yet, at a little distance beneath, fissures and cavities may exist which no one knows of. Our readers may remember, three or four years ago, the unaccountable fall of the central tower at Barmouth new church. The tower was by no means lofty, the span of the tower-arches was only moderate. They had, to all appearance, ample abutment, and the rock on which the building stood was of the hardest description. But an artificial terrace had been cut out in the mountain side to receive the structure, and this terrace was afterwards enlarged by blasting. It seemed probable that either in its formation or its enlargement the rock foundation had been shattered: unless, indeed, the shaking caused by the explosions had acted directly on the recently built work of the tower and its supports, and so caused the calamity.

Settlements may be produced from bad concrete or imperfectly built footings. Some builders seem to think that any sort of bricks, from shuffs to clinkers, are good enough to go underground. Now, it is obviously true that colour here is of no consequence. As far as that goes, the bricks may as well be black, as white or red. But it happens that in a London brick clamp, the dark or vitrified bricks are almost always the bent or twisted ones: and a bent brick will break and settle with a very little pressure on the top of it. Some mysterious settlements may perhaps be explained by remembering this obvious fact. When the concrete in a foundation fails, it is generally through carelessness in mixing or badness in the materials. Concrete properly made with one part of the best Portland cement to two of sand and six of clean beach shingle, will require 30 tons per superficial foot to crush it when three months old; but if imperfectly mixed, or not entirely free from loam or dirt, it will give way with a small fraction of this weight. So it will if the cement is allowed to set and then "knocked up" again with water; but this fault, from the nature of the case, is rarer in concrete than in brickwork.

A common evil is the building of brick arches and brick piers with soft rubbers. The architect is tempted to employ them from the ease with which they can be cut to shape; but in features which bear a heavy load, this softness is really a drawback, and not a recommendation. The builder of the last generation rejoiced in his camber arches of malm stocks, and in thousands of cases these arches have cracked and allowed the superstructure to settle. The modern architect is fond of using orange-red rubbers in similar positions, and time may probably show that he does it with a similar result. At any rate, such bricks should not be trusted to where the load is heavy. The piers should have in addition a solid core, and the arches a sufficient quantity of half-brick rings above or behind those of the weaker material; and this suggests another way in which unsightly cracks arise. A facing of gauged work with fine joints is commonly attached to a backing of ordinary brickwork, which has comparatively thick beds of mortar. After a time the mortar in the backing gets compressed, and in a height of 10 or 20ft. the work sinks perhaps a quarter or half an inch. Now if it stood alone, this would matter little; but the facing is attached to it, and this facing, having thin beds, scarcely sinks at all. Yet the weight behind must pull it down, and as it cannot come down in a plane face, it bulges and cracks. The same thing happens with stone quoins or stone jambs bonded into brick walls. The joints of the stone are not only finer, but fewer than those of the bricks: hence the latter settle down, and the stone has to bear all sorts of irregular strains.

Columns are liable to crack from many causes. We have known all the nave piers of a new church to fall for want of a simple calculation as to what weight was coming on them, and how much they would safely carry. In this case they were of Corsham stone, which cannot be trusted with more than $1\frac{1}{2}$cwt. on the square inch as a permanent load. Had they been of hard York, which will safely bear 6 or 8cwt. on the same area, they might be still remaining. The London contractor thinks nothing equal to Portland stone; but this, as to many of its qualities, is a mere superstition, and it is especially so as to its resistance to crushing. Corsham stone will bear a little more than Box Ground, Caen a little more than Corsham, and Portland a little more than Caen, but none of them have half the strength of the North of England sandstones. Columns, however, more often fail through faults connected with their bedding than through the actual weakness of their material. We once found a foreman of the old school packing up the space between the foundation of a great tower-pier and the pier itself with bits of broken brick, slate, and tile! This pier had 300 tons to carry, and though it did not fail, because the foreman's method of jointing was discovered and amended in time, mysterious settlements appeared in other places, and were found to be the result of similar practices. Hollow beds are a notorious cause of unsightly cracks in piers. The beds of stonework should be perfectly true and square; but if there must be an error, let it lean to virtue's side—or, in other words, let the beds be almost imperceptibly convex. The slightest hollowness throws the weight on the edges of the stone, and the upshot is that these edges, or some of them, flake off. We have a well-known instance in the granite piers in Farringdon-street, which support the Holborn Viaduct.

Cracks due to insufficient abutment for important arches are serious. But it is surprising to see how an arch will sometimes adapt itself to the weight it has to carry, losing, indeed, its original form, and most of its beauty, but fitting itself for, and actually doing, the work laid upon it. The great tower arch at Newark will recur to the mind of everyone who knows it as an illustration of what we mean. It has changed surprisingly from its original Gothic shape, having even become lop-sided from unequal pressure. Yet it has stood safely for centuries, and may stand for centuries more. The old church at Grosmont, skilfully restored by Mr. J. P. Seddon many years ago, showed another case of insufficient abutment. Here the strain from below the central tower, in the course of ages, had pushed the long row of nave piers much out of the upright, and even threatened to overturn the western wall. But the cracks which are traceable round central towers in many of our cathedrals arise rather from unequal sinking of walls than from want of resistance to the tower arches. Norwich, in spite of its lofty spire, is remarkably free from them. Examples, however, are easily found, and in most of them the origin of the evil is the great difference in weight between the central tower and the walls which surround it.

It may seem at first that a cause which affects a great cathedral tower cannot much concern us, who are not likely to have cathedrals to build. But this cause is also one of the commonest of those which produce cracks and settlements in smaller buildings. Wherever a low porch comes out from a high wall, or a low wing from a higher building, there is liable to be a crack at the junction from unequal sinking. We do not mean by this, unequal sinking into the ground on which the building stands. If the area of the concrete is evenly proportioned to the weight on it, a sinking of this sort will not occur. But cracks and settlements may still appear, as they very often do, in such a place. The cause of them, as of some others we have noticed, ultimately lies in the mortar-joints. If a house is 50ft. high, and its projecting porch only 10ft. high, there will be a pressure on the mortar beds of the house wall where it joins the porch of perhaps 2 or 3 tons per foot super.; while on those of the porch wall, which bonds into it, there will be hardly any pressure worth mentioning. The result is that the house-wall sinks down slightly, while the porch wall does not; and so the bricks which bond the one to the other get cracked across. A similar cause brings about, or is liable to bring about, the same result in all sorts of places where any part of a building, with great weight on it, is fixed to another which carries little weight. A good plan is to build the heavy part first, and let it get its sinking done, before the light part is attached to it; and another way is to connect the two, not by bonding bricks, but by a chase, so as to allow of some vertical movement. Bonding can then be effected by wrought-iron ties, which will bend and not break.

Settlements of walling from shrinkage of timbers or decay of timbers belong, as a rule, to second-rate or third-rate work. Brickwork should not rest on plates built into the wall; and lintels should have discharging arches over them. We have said nothing of the mode of building which brought down the tower of Chichester Cathedral, and threatened that of Peterborough, because the making up of vast columns out of a shell of ashlar and a core of worthless rubble is not practised in the present century, even by our friend the jerry builder.

BUILDING OFFENCES, AND THEIR PENALTIES.

PENALTIES for continuing an offence under an enactment of the Metropolitan Management Act are sometimes imposed against builders and owners who endeavour to evade the Act by pleading that the complaint has not been made within the time mentioned in the Act. The builder often takes no notice of the official intimation, and so allows the time to pass by till it is too late to be enforced. It is necessary that builders and owners should understand their liability to penalty which has been made clear by the decision in the Queen's Bench Division in the appeal case of the "London County Council *v.* Worley." The appeal was against a decision of a Metropolitan police magistrate, who refused to impose penalties under a section of the Metropolitan Management Act for continuing a building at a height exceeding the width of the street after notice to reduce it. The building in question was a corner building to Kensington-court and the High-street. The magistrate in this case refused to convict on the ground that the proceeding was out of time with Section 107, which says: "No person shall be liable for the payment of any penalty unless the complaint has been made before the magistrate within six months after the commission or discovery of the offence." The offence, it seems, originated on the 8th of February, 1893, when the building was completed contrary to the Section 85, which expressly states that "no building, except a church or chapel, shall be erected on the side of any new street of a less width than 50ft., which shall exceed in height the distance from the front of such buildings to the opposite side of such street without the consent, in writing, of the London County Council, &c." A penalty of £5, and in case of a continuing offence, a further penalty of 40s. for every day, is exacted against any person committing the offence. The builder received notice from the Council of the offence in April, 1892; in July, 1892, the building was roofed-in, the wall being of the prohibited height. Again in October, the builder received a penal notice, and in Nov. 1892, a summons for penalty for the erection. The magistrate who heard the case doubted whether the building was erected on the side of a new street, the front being in an old street and the side in the new street. The Court overruled the magistrate, and a conviction for the penalty for the original offence, the erection of the building, was made. The building having been completed in Feb., 1893, the builders withdrew, and the Council proceeded against the owner on a penal notice to recover the penalty of 40s. a day for continuing the building, from the date of notice. These are the main facts of the case as reported. When the case was heard on appeal, the Court decided that the magistrate was wrong, and that the penalties were recoverable. Mr. Justice Mathew said he had tried to discover a doubt in favour of the owner, but was unable to do so. The offence was the continuance of the building after the notice. The contention was that the offence could only be continued by the party proceeded against for the original offence—the erection of the building; but he held that was an erroneous view, and the magistrate ought to have imposed the penalties. For the owner it was argued that the proceeding should have been taken against the owner for the original offence within six months.

The owner of a building which has been erected in excess of the statutory height is, according to this decision, liable, although the time has elapsed. In this case the offence was for a continuance of the building after the notice—a point that was made clear by the judge. The grounds of the magistrate's rulings look, however, reasonable, and may seem to encourage builders in resisting penalties imposed for any trangression of the statute. Section 107 seems to afford a loophole of escape, for it says in effect: No person is liable for any penalty unless the complaint is made within six months after the discovery of the offence. Upon this ground the magistrate refused to impose the penalty. The six months is a sufficient time in which to discover any transgression or violation of the Act; but, from the report, it appears no proceeding was taken against the owner of the building in question within that time. The original offence was the completion of the building above the height allowed without leave of the Council in February, 1893, when the builders retired; but previous to that, in April, 1892, the first notice was given to the builder, who was subsequently summoned, but let off by the magistrate on a technical point, as above stated. Next, the Council proceeded against the owner; but the magistrate again thought the proceeding out of time. These interruptions to the course of the law may well have disheartened anyone, except a central authority like the L.C.C., from going further. The decisions of the magistrate on technical points naturally encouraged the owner and builder to continue the building. We have in this case a good illustration of the working of the present administration of the Building Act—how uncertain the law is, and how often magisterial decisions are at variance with the real intentions of the Metropolitan Building and Management Acts. The decisions of the magistrates are generally based on some technical point or interpretation, instead of upon the larger issues or the real meaning of the Act. If any justification were demanded for a properly-constituted tribunal to try questions of this sort, we have ample proof of it here. Between the magistrates' decisions and the appeal to the higher court considerable delay and costs are entailed upon owners and builders. Not only so, but the frequent reversals of judgment leave a bad impression on the public mind.

TYPICAL ARCHITECTS.

AN American author lately descanted on the several "Types of Architects" with some freedom and humour, but he mixed up those characteristics which were accidental with those which were inherent and personal; and we thus had the "successful architect," the "sensitive architect," and the "engineer-architect" as distinct types, whereas these differences might very well have been all found in the same individual. We prefer rather to note those distinctions which are mutually exclusive or cannot possibly overlap in the same person. These will be found chiefly to depend on individual character and temperament. One able essayist tells us, "A man is a method, a progressive arrangement; a selecting principle gathering his like to him, wherever he goes. He takes only his own out of the multiplicity that sweeps and circles round him." But the architect, in his choice of clients, certainly is not so happily circumstanced, as he sometimes gets a "Tartar" of a client, and he cannot often "gather his like to him." He may get a "screw" one day and a "tyrant" the next, so that, although every man may be a "selecting principle" in some senses, he certainly cannot help himself, or pick and choose among building owners. If the architect could select his own circle of clients all would go well and smoothly; and, contrariwise, if every employer could select his architect after his own heart, it would be much easier and better. Men of like views as to style, of similar taste and habits would be selected on either side, and there would be less of heartburnings and friction, and far fewer disputes to settle by law. No doubt. But there is something in conflict. Opposition is often beneficial, and a blessing in disguise, and many exemplifications of sturdy and vigorous growth have been traceable to the "clash of interests," to one strong, robust, practical mind coming into contact with another mind of sensitive nature and artistic culture. Variation of this kind has generally produced the best results in architecture, as in nature. The practical man and the artist stand at opposite poles, between which there are various degrees. Nor is it too much to see that these several types of the profession have been called into existence in response to the public demands. Business, planning, construction, sanitary science, and art reflect so many distinct requirements of the public. Rarely is it possible to find one individual a master of all of them. Each gathers to himself a certain practice, and it is thus we have five or six distinct species in the profession. Let us glance at each of these in turn.

The "practical" architect looks at matters pertaining to his profession in a common-sense and business-like manner. Never having troubled himself much about art and its manifestations, he takes a perfunctory way of discharging his functions. In his dealings with his clients, the letter of his instructions is carefully studied; he readily acquiesces in the views of the client as to plan, and does not scruple to carry out his notions as to the position of rooms, or, if need be, to copy some other building which embodies his client's wishes in arrangement, while in elevation he is ready to relieve himself of the duty of design by reproducing some other building. He regards his duty to be simply that of giving his client what he asks for, of becoming a mere instrument, instead of advising or putting into artistic order his requirements. This short-sighted view of his calling finds ready acceptance amongst many of his own class, who do not always know what they want. In carrying out the contract, Mr. Trudge looks at everything through the quantities and specification. He prides himself on his economical and inclusive estimates. Any eccentricity on the part of the employer is met by a curt and frank acquiescence. If it is the addition of a bay-window or the extension of a room, Mr. Trudge refers to the bill of quantities to see whether any deduction or cutting-down of expense in another place can be made. He is particular, too, about superintending the works, in making personal inquiries about materials, and in selecting fittings. More trouble is taken by him in observing an easement, in adjusting differences, and in testing girders, than in such matters as the design of any detail or the preparation of a scheme of decoration, or the selection of a wall-paper. The practical man in competitions is more particular about complying with the letter of the conditions than his artistic brother: he regards the exact areas of the rooms scheduled, the accommodation and limit of cost, instead of considering these opportunities as escapades for his imagination and inventive skill. Trudge looks at the problem in a matter-of-fact way, not at the possibilities of design.

Another typical representative of the modern school is the "planner." He is the possessor of a certain cleverness in arranging buildings, and will spend hours over ruled sectional paper and a geometrical problem. When he designs a domestic building, everything else goes by the board except plan. We have known such even take out a patent for a plan of public buildings. He prides himself in being able to get more rooms on a given area than anybody else, in affording easy and direct access to the main apartments, in avoiding unnecessary corridors and passages, in giving ample light, and in being compact in his arrangement; but he does not trouble about elevations or sections. These he generally leaves to a draughtsman in his office. If a better or larger room can be obtained by the use of a girder, he does not scruple to employ one to carry a wall, for he holds that construction is of minor importance and ought to be made to suit the plan and be subservient to it. An architect addicted to plan takes a very one-sided view of his vocation, and has seldom any artistic impulses: he is a thorn to the competition assessor, for the simple reason that his plan may be good, but his elevations are atrocious.

Generally speaking, a planner makes a better design for a hospital, or asylum, or school than other kinds of building, as the architecture of this class of structure is not a material feature. He puts in for buildings such as baths and washhouses, public libraries, and schools, in which he can exhibit his skill, and he can generally tell you offhand how much more accommodation he has got than Mr. So-and so has, or that his baths or schools erected at Trumpington-on-Sea have cost less than any in the district per head. But his elevations never appear to suit his plan: they have been prepared by a draughtsman who has tried to fit decent garments on to a remarkably awkward figure The expert plan-man, like the expert sanitarian, is too much of a "faddist" to take a complete view of the functions of the architect, and is inclined to delegate to others the duties of construction, design, and decoration.

Next we have the "inventor" type, who is almost invariably as great a "bore" on some particular scheme for building walls of concrete, or inventing a roof which shall stand without ties, or a floor of iron and concrete to resist fire. We see him puzzling his brains over some such problem. He will even introduce a dome for the sake of applying his recent invention. Though exceedingly inventive, he is full of hobbies, very apt to tire the patience of his assistants and clients by constructing models, in writing books on his favourite hobby, or lecturing upon the advantages of his system. A problem in construction or an exercise of *tour de force*, is far more attractive to him than a simple plan or elevation, and what Trudge would look on with impatience, and would probably hand over to the contractor, he regards with peculiar interest. It may be such a thing as an improved sash-window or fireproof floor; but whatever it is, it receives more personal attention than the other duties. Although more conscientious than the pushing architect, the inventive individual is somewhat troublesome, especially if he happens to be that particular sort known as the "sanitary inventor," whose main idea of the architect's duty is to introduce a correct system of drainage and ventilation, no doubt very desirable, but which may be so persistently pushed, that the building is regarded more in the light of a showroom for particular specialities in apparatus and traps, than as a residence in which the sanitary necessaries are complete but not obtrusive. These are matters to which especially the adage applies: "The end of art is to conceal art." Would that inventors could be made to think so! The sanitary specialist is too aggressive in his method.

Another large and important representative is the man who places art above everything else, and who affects to despise all the three preceding qualifications of the architect's functions. Mr. Push-Art is chiefly an "artist" in that particular school which raises it to a separate entity, and who does not care to look at it in its commonplace sense and everyday application. His plans and elevations are usually full of whims—irregular rooms, ingle-nooks, oriels and bays, and all kinds of eccentricities. He pays more attention to the latest idea in the shape of a chimney-piece or door-knocker than to good planning or construction. In competition work all his strength is centred upon his elevations and perspective sketches. Mr. Push-Art has great aversion to the humdrum of building routine, and readily delegates all the practical details to the contractor or clerk of works. If a "Queen Anneist," he produces an extraordinary mixture of features that shock the mediocre taste, and he is nothing if not erratic or distinctly *outré*.

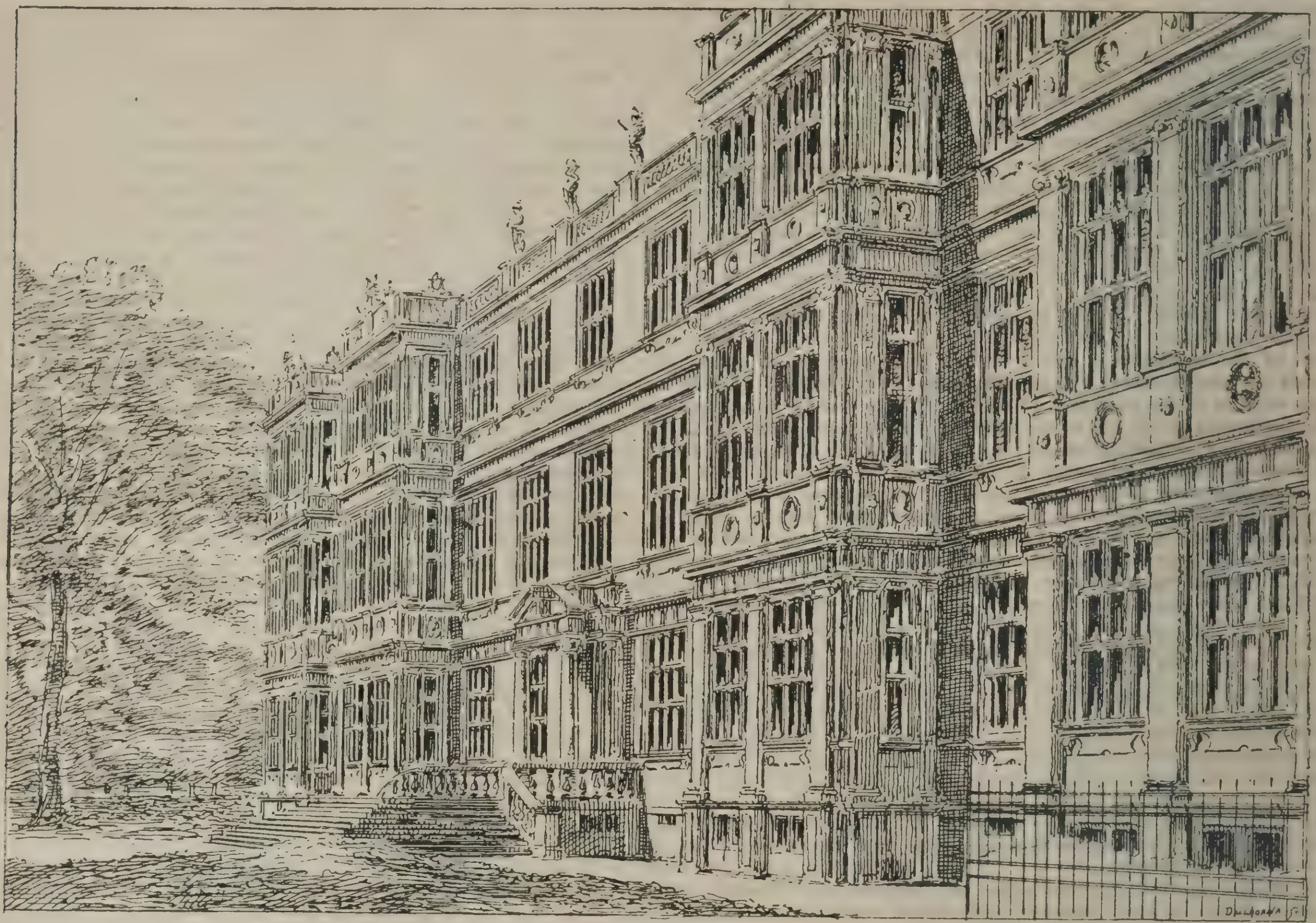
It is needless to say the "art" man is supercilious, does not pretend to be a business man, or a strong plan-man or constructor, and is very awkward in his dealings with contractors and tradesmen. Looking upon art as the be-all and end-all of architecture, he justly esteems his services, and thinks they ought to be paid for at a higher rate than his client is disposed to give. Mr. Push-Art is particularly sensitive—too fragile for the business relations and rebuffs of business, and too refined to mix with builders and workmen. Everything he has to say has to go through the contractor or clerk of works. He is seldom seen on the scaffold, and therefore it is his sketches are hard to carry out to give him satisfaction. It is extremely difficult to carry out a stone or wood detail that will satisfy him. Another weakness of his nature is that he cannot conduct business, his temperament not being suitable. He may have right ideas of the community of art, of co-operative principles of industry; but somehow he has not the organising qualifications necessary to carry them into effect.

Lastly, we may refer to a well-known type of practitioner whose qualifications are self-complacency and a desire to push himself to the front. We have many such in all professions. He is first in advertising his pretensions, in obtaining a commission by some trick or artifice before his more competent brother. Mr. Bluster does not mind a little subterfuge, or in stealing a march on a brother professional whenever an opening occurs. No opportunity is missed by him in sounding his own praises wherever he can. He goes to any trouble in presenting his card to an intending builder, or in canvassing a committee. Of course, Mr. Bluster is a member of the Institute, or of some society, and has a string of initials after his name, reads papers, and so on. He takes care to advertise himself in every newspaper—by publishing paragraphs, by giving lists of fictitious tenders, by writing letters to professional and other papers, and losing no opportunity in pressing his claims forward. Whenever he gets a job he takes care to place his name conspicuously on the board as architect. Being sociable, he easily obtains invitation to his client's table to festive dinners and meetings, where he hob-nobs with Mr. Squire So-and-So, leading politicians, councillors, or tradesmen. Being talkative, he readily obtains a passport to society when he expatiates on his success and his talents. Mr. Bluster has ability of a sort in being able to make people believe without proof. He generally knows where to go for his designs and his contracts, and his business qualifications are a trifle above many of his compeers. Above all, he knows what people to get at, has a keen insight into human weaknesses, and by a little tact is able to get at the "right side" of his clients. These are a few of the main types of the profession which appear to preserve their individuality. They represent fairly the different classes of men which the modern professional system has created. A combination of these types in one individual is seldom seen, but their distinctive merits point to qualifications which the public appear to patronise.

THE ARCHITECTURAL ASSOCIATION EXCURSION, 1894.—II.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

LAST Friday we illustrated several of the more important buildings to be seen in this rich district, which has been so well chosen for the Architectural Association Excursion this week. To-day we continue our series of drawings, which will be completed in our next number. We will now finish our notes on the places seen by the excursionists in the order in which they were visited. Croscombe Church, the first item down on the programme for last Monday, was referred to when we printed the interior sketch showing the screen with our first article. It stands amidst a group of stone mullioned cottages on the slope of the hill, overlooking the "Valley of the Cross," with the village inn, of 15th-century date, adding quaintness to the charming picture, in which the mutilated stone cross in the high road marks the skyline of the landscape. The broad flight of steps to the churchyard enhances the elevation of the tower's base, and the stone-built Perpendicular spire, by contrast with the more usual Somersetshire towers, is considerably increased in interest. The belfry stage is cleverly managed, and the panelling about half-way up gives interest, a good feature being also made of the parapet below, where a canopied figure marks each of the four faces of the tower. The cornice has some very spiritedly-carved gargoyles, and admirable buttresses unusually treated are introduced in a suggestive way, and taking the splay on plan at the angles. A good sketch of this tower and spire, by Mr. T. Maclaren, appeared in the A.A. Sketch-Book, Vol. VIII., New Series. The inside of Croscombe Church is its chief glory, on account of the uncommonly elaborate Cinque Cento screen and pulpit, the roof over the chancel



LONGLEAT WILTS

FROM "THREE·PERIODS·OF·ENGLISH·ARCHITECTURE"·BY·THOS·HARRIS·F·R·I·B·A·ARCHT.

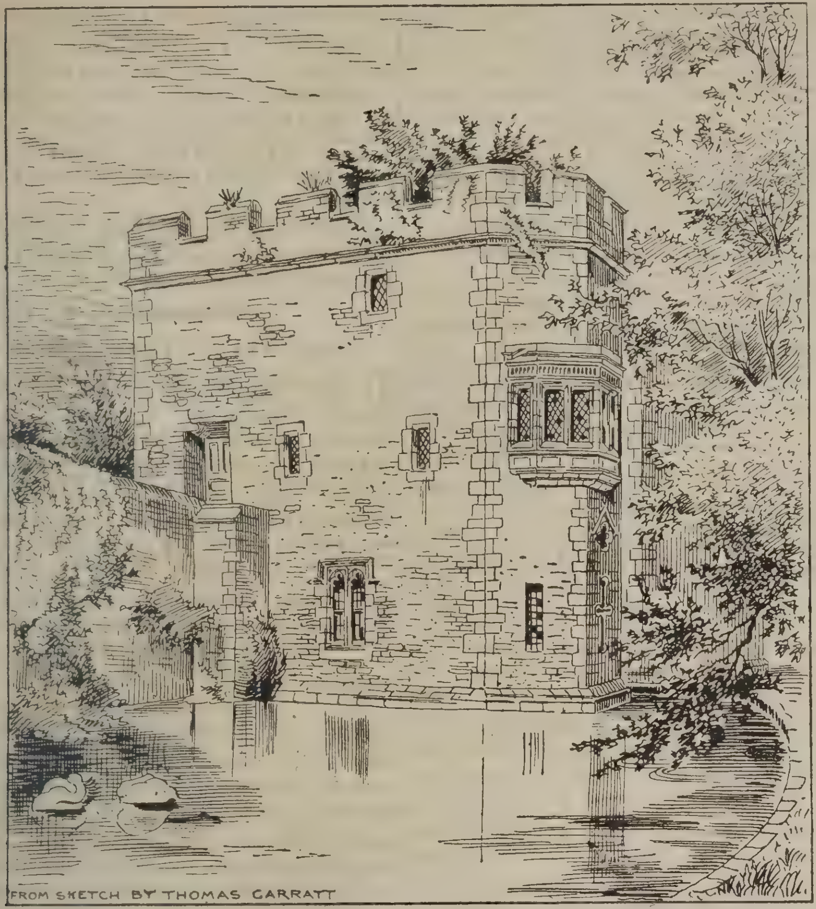
being, too, of the same character and date. The A.A. Studentship was awarded to Mr. A. E. Bartlett for his set of measured drawings of this work, which we published in the Building News for July 26 and Sept. 27, 1889. The Fortescue arms figure on the screen, and those of Bishop Lake, who governed the See of Bath and Wells from 1616 to 1626, are carved in the pulpit, while all the work is clearly of the same date and detail. The pulpit has, however, the advantage of some colour decoration, enriched with a moderate use of gilding in parts. The late Mr. Sedding had the fabric in hand for some time when he repaired the roofs, which were in a sad state before he was called in, greatly to the risk of the barrel vault with its 15th-century carved bosses over the nave. The curious visitor can but notice the position of the chancel arch, which is located several feet west of the choir screen, where it is supported by corbels. The pewing of the nave has poppyheads throughout, and some very handsome brass candelabra, put up by Hugh Fortescue, a rich mill-owner of the district, in 1707, deserve particular mention. The 15th-century Hall of the old Manor House of the Fortescue family is now used as a Baptist chapel.

The next place seen was Chewton Mendip, away over the hills to the north of Croscombe on the main road to Bristol, among the spurs and combes of the Mendips. The ornate Late Perpendicular tower of the church, following the Taunton type, is one of the richest and largest to be seen throughout the county, and inside the building the monument to Lady Frances Waldegrave and some good, richly carved oak seatings are worthy of note.

We gave a view and plan of this tower, which stands on the top of the hill, in our pages on July 31, 1885, when the Rev. Prebendary Philpott wrote to us a comparative description respecting it and that of St. Mary's at Taunton, which, of course, has been rebuilt. The Chewton tower, which Sedding restored, is certainly much more satisfactory in its proportions, and has the advantage of a plain wall-space on the flanks of the ground stage. The iconography of the western face is interesting, with an heroic statue of the *Salvator Mundi* under a canopy, standing on a corbel over the west window, and having His foot resting on a globe, representing the world. On either side of the figure are images of angels in adoration, holding ribbons with legends, others bearing emblems of the Passion, and the lowermost ones kneeling on the hood mould of the window. The height of the tower to the top of the parapet is 105ft. 6in., and to the top of the pinnacles it measures about 120ft. Between the buttresses at the base it scales 20ft. wide.

Tuesday, as we have before mentioned, was spent in Wells, and on Wednesday the proceedings began at Mells by visiting the Manor House and Church, of which we gave a lithographic sketch last week. Leaving Nunney Castle (see lithographic view herewith) south of Frome to the eastwards, the excursionists made the return journey to Wells through Shepton Mallet, where a halt was made after a considerable drive of about an hour and a half, passing little of architectural interest on the way. At "Shepun," as the locals call the village, the Market-place, with its incongruously quaint 16th-century hexagonal cross and shelter surrounded by the tile pented stalls about the square overlooking the church tower, forms a composition of that natural and unsophisticated character such as the water-colourist may often search for in vain. The accompanying outline sketch will serve to give a notion of the picture. The height of the cross shaft is said to be 51ft., and its builders are recorded to have been Walter and Agnes Buckland, who put it up about the year 1500. The tower of the church, like many another in these parts, is a good one; built after the fashion of those at Yatton and St. Mary Redcliffe, at Bristol, it is crowned with a squat, incomplete spire, covered with lead. A view of this tower is furnished in Wicks's folio, "Towers and Spires." The nave roof is a magnificent one, elaborated with 350 panels of diverse patternings, and built in oak, and left free from the horrid varnish which disfigures so much of the carved work in neighbouring churches. This roof is one of the finest to be seen in the entire district. The building was for some time in the hands of Sedding, who repaired it generally. Doulting, with its double transeptal Barn belonging to the Abbots of Glastonbury, is close to Shepton Mallet, and the sketch reproduced herewith gives an idea of its uncommon plan and good proportions.

Yesterday (Thursday) was devoted to the seat of the Hoares at Stourhead and to Longleat House, of which latter mansion we print a drawing, taken by permission from Mr. T. Harris's recently issued book, entitled "Three Periods of English Architecture." A view of the former building figured among our illustrations last week, when some references to both houses were given. In the beautiful grounds of Stourhead is the High Cross of Bristol, dating from the 14th century. Pilton is the first place to be seen to-day (Friday), and here the Mediæval Barn, also built by the monks of Glastonbury, is the chief attraction. It has beautiful carvings in the gables representing the Evangelists, and its traceried or cusped windows give a further richness to the design, which is also marked by some admirably massive buttresses. The scraping process was so thoroughly applied to Pilton Church, that much of its interest has gone, though the building stands well, and has a chancel very similar to that at Ditcheat. The Barn at Pilton was illustrated in the Building News for July 20th, 1883, and drawings of it will be found in Parker's "Domestic Antiquities," Vol. II. Evercreech Church, the next halting place, is famous among its compeers, and furnishes a familar example of the Wrington or Wells type of Somersetshire towers. We gave a good sketch of it last week, and another drawing of it appeared in our issue for December 28, 1888, when we gave two other towers—viz., those of Huish Episcopi and Banwell. Evercreech Tower is 130ft. high, and resembles very much that of Wrington ("B. N.," July 31, 1885), which stands out as the masterpiece of the third type of the towers of Somerset, the two others being Taunton and Bristol. St. John the Baptist at Glastonbury, second perhaps to St. Cuthbert's at Wells, is also of the Evercreech and Wrington type, which last certainly is the best of the three. We published some time ago some pencilings ("B. N.," Jan. 26, 1883) of the



FROM SKETCH BY THOMAS GARRATT

ENTRANCE · GATEWAY · BISHOP'S · PALACE · WELLS · SOMERSET
ARCHITECTURAL ASSOCIATION XN · 1894

comical carvings which add so much interest to the exterior of the church at Evercreech, but there is not much to detain the architectural visitor inside the building. Mr. John L. Robinson, R.H.A., the hon. photographer of the A.A., has been busy taking several views of all the places visited. The final halt on to-day's excursion is to be made to Bruton, a quaint, straggling old town, chiefly distinguished for the varied and numerous wrought-iron signs, which give so much piquancy to its main street. (For details of these sign stays, we may again refer our readers to our own sketches in the "B. N." for Nov. 24, 1882.) The old "hospital" at Bruton, with its quad and chapel and hall, presents a singularly admirable example of Late Domestic Gothic, dating really from 1617, when its founder, Hugh Sexey, built the institution for ten old persons. The unassuming character of this work should furnish the modern practitioner with a guide, and help to restrain any inordinate endeavour to secure effect with needless ornamentation. The old vicarage is considered also an object of interest. The church at Bruton has a tower of much beauty, and scale is given to its size by the minor tower above the southern porch. The roof over the nave, too, is a grand one, with traceried ribs ranging with the tie-beams. The beautiful clerestory is due to the niches between the windows, and the crypt under the chancel is of Transitional Norman. The building was very much restored by the late Herbert Carpenter, 20 years ago, at a cost of £5,000. A visit to Glastonbury to-morrow (Saturday), with its abbey, splendidly towered church, abbot's kitchen, ancient tavern, and the "tribunal," will close the excursion. Mr. H. D. Searleswood has again acted as hon. sec. to the excursion party.

LOADS ON COLUMNS OF HIGH BUILDINGS.

A LETTER in the *Engineering Record*, signed H. H. Quimby, discusses the question of moving loads in many-storied buildings. The writer refers to the wretched details permitted in the steel skeleton type of structures. He says "Almost every column of a high building carries at every tier floor area that is divided by partitions into from two to four spaces, intermediate columns, generally four, and the chance of getting the full load on even one story is quite slim, and where reduced by multiplication of the stories it may, like the infinitesimal of an infinitesimal, be dropped from the equation." These observations do not apply to warehouses, where each floor is packed, in which case the columns should be designed for full loads. These remarks are intended to apply to live loads on the lower columns of lofty buildings. The effect of pressure on foundations due to live loads is less than that due to dead loads like those of the walls. An instance of this is given by the writer. The architect of a Chicago building, ignorant of the nature of the soil, did not appreciate the difference between the live and dead load in intensity and effect; the columns carrying the walls, a heavy dead load, settled more than the interior columns and caused much trouble and expense. Therefore foundations in yielding soil under high buildings ought to be proportioned for the imposition of a very small percentage of the moving loads. No doubt the question of the relative imposition of the loads on treacheous soils is one that concerns the architect of every high building of the steel skeleton type.

THE BRITISH ASSOCIATION AT OXFORD.

THE British Association is this week holding its sixty-fourth annual meeting at Oxford. The attendances have not been so numerous this year as when the congress has been held in more populous centres, and on the whole the papers read have not, perhaps, been up to the usual standard of quality. Full reports of the proceedings are given in the last and current issues of the *English Mechanic and World of Science*. In these columns we must restrict ourselves as usual to abstracts of a few of the papers of special interest to our readers. The inaugural address given by the Marquis of Salisbury, the President for the year, in the Sheldonian Theatre on Wednesday in last week, was a lucid and popular survey of the principal problems still unsolved by modern science, including the mystery of the elements, of certain of the lines in the solar spectrum, of the nature of ether, of the age of the earth, and of the development and origin of life.

MAGNETIC VARIATIONS

formed the principal topic of the inaugural address by Professor A. W. Rücker, in Section A, Mathematical and Physical Science. It was now established that even where the surface soil was non-magnetic, and even where geologists had every reason to believe that it lay upon non-magnetic strata of great thickness, there were clearly-defined lines and centres towards which the north-seeking pole of a magnet was attracted, or from which it was repelled. Greenwich and Kew were both under the influence of a widespread local disturbance which culminated near Reading. The questions of the nature of the irregularities of secular change and of the causes of local disturbances were intermingled; and information gained on these points might in turn be useful in solving the more difficult problem of world-wide secular variations. Two causes of regional and local disturbances had been suggested —viz., earth currents, and the presence of visible or concealed magnetic rocks. The two theories were not mutually exclusive. Both causes of the observed effects might, and probably did, coexist. He believed that the presence of magnetic matter, magnetised by induction in the earth's field, was the principal cause of the existence of the magnetic ridge-lines and foci of attraction which for so many years they had been carefully tracing. He suggested that the comparison of the observatory instruments and the fluctuations of secular change outside the observatories could best be investigated under the auspices of a great scientific society.

In Section B, Chemistry, Professor H. B. Dixon, F.R.S., of Owens College, deplored the waste of money by local authorities on technical instruction, and urged that the Universities ought to teach the art of research.

In Section C, Geology, Mr. L. Fletcher, F.R.S., Keeper of Minerals in the Natural History Museum, South Kensington, summed up, in a highly technical address, the more important results which have been arrived at in mineralogy since the report of Professor Whewell on the state of our knowledge in 1832, and contrasted the encouragement given to the study of minerals abroad with the neglect of it in this country.

SYSTEMATIC FORESTRY.

The advantages of systematic and scientific forestry were the chief topics of the opening address in Section D, Biology, by Professor I. Bayley Balfour, of Edinburgh University. He argued that attention to scientific forestry in this country would pay landowners, provide labour, stimulate industries, and increase the national wealth, and that therefore it ought to be fostered by the State, by the endowment of professorships and the establishment of practical schools near forests, and assisted by the practical application of botanical studies. Forests, he said, improve the soil drainage and modify miasmatic conditions. Trees prevent extremes of temperature; they increase humidity, precipitate rainfall, and control waterflow. Scientific sylviculture would reap a harvest from land unsuited to agriculture, otherwise barren and waste, and therefore afforestation need not be prejudiced by increased local rainfall. Of forest produce in 1893 we imported £18,000,000 worth. Much of this we could not produce; there remains a large amount we could. The world's consumption is exceeding its reproduction, and the consumption increases. Substitutes are counterbalanced by greater utilisation—for example, the wood-pulp industry abroad and the manufacture of wood-silk now begun in Great Britain. The amount of State-owned forest abroad is small—in Germany 33 per cent., Scandinavia 15 to 20, France 10, Switzerland 4, Italy not 2. The bulk is in the hands of private owners or of corporate bodies, sometimes controlled or limited by the State. But State example, advice, education, make privately-owned forests as well managed as those of the State. Over 9,000 acres at Windsor are mainly covered with specimen trees. Of the 25,000 acres in the Forest of Dean, a portion supposed to be cultivated for profit results in an annual deficit. As to the 63,000 acres of the New Forest, they exhibit "the triumph of sentiment over common sense." Forestry is handicapped because the crop cannot be reaped within the year. An owner who plants may in a few years have a small return from thinnings, but usually the crop will fall to his successor. But in properly managed timber-growing, areas must be so arranged that some part of the forest will be yielding annually its final return of mature crop. Much land yielding 2s. 6d. an acre would pay better under timber. Net revenues abroad differ: Bavaria, 2,000,000 acres, 5s. per acre per annum; Wurtemberg, nearly 500,000, 11s.; Saxony, rather less than 17s. Our State forests result in a loss, and private returns are not available. He suggested the diffusion of knowledge on the subject, and that forest stations should be established as centres of instruction in the north of England and in Scotland.

In Section G, Mechanical Science, Professor A. B. W. Kennedy, F.R.S., Emeritus Professor of Engineering at University College, London, devoted his address, as president, to the critical side of mechanical training—the training to think about a subject, to write upon it, and to come to a rational decision, by exercising a critical sense of proportion which could be best developed by a course of quantitative experimental work in an engineering laboratory.

THE DEPTHS OF THE ENGLISH LAKES.

Dr. Hugh R. Mill gave the results of a bathymetrical survey of the largest English lakes as follows:—

Name.	Length, miles.	Depth, feet.		Volume, million cubic feet.
		Max.	Average.	
Windermere ...	10·50	219	78½	12,250
Ullswater	7·35	205	83	7,870
Wastwater	3·00	258	134½	4,128
Coniston	5·41	184	79	4,000
Crummock	2·50	144	87½	2,343
Ennerdale	2·40	148	62	1,978
Bassenthwaite...	3·83	70	18	1,023
erwentwater..	2·87	72	18	1,010
Haweswater ...	2·33	103	39½	589
Buttermere	1·26	94	54½	537

There are two main types amongst these lakes, the shallow and the deep. The former, including only Derwentwater and Bassenthwaite, are the broadest of all the lakes, and they only average 18ft. in depth. The bed of these lakes is an undulating plain, grooved and ridged into shallow hollows and low shoals running parallel to the long axis of the lake. The second, or deep type, the shallowest of which has an average depth of 40ft., comprises all the other lakes. They are long, narrow, sometimes winding like Ullswater, or slightly curved in outline like Wastwater and Haweswater. The typical form of the deep class of lake is thus a steep-sided flat-bottomed trough, diversified along the slopes by the still steeper conical mounds of *débris* thrown down at the mouths of streams.

THE FLINT IMPLEMENTS OF NORTH KENT.

A joint meeting of the Archæological and Geological Sections was held on Friday to discuss the plateau flint implements of North Kent. Professor Rupert Jones, in an introductory paper, said Professor Prestwich had shown that superficial soils on the North Downs between Sevenoaks and Rochester contain numerous rudely-worked flints, and that these were derived from a gravel, of very great antiquity, originally formed on the side of the old Wealden-hill range or mountain, which once rose about 3,000ft. above where Crowborough and other hills in Sussex now are. Man existed at the time of these gravels, and used the flints for tools. These gravels and the implements left in them were removed by natural agenies, such as rain, rivers, sea, frost, and ice, and distributed by torrential streams on the chalk slopes. He held that the implements were preglacial in age.

In the discussion that followed, Mr. W. Whitaker considered that man must have existed when the gravels were deposited, but he did not admit that these deposits, although ancient, were found in the pre-glacial or even the glacial age. Sir John Evans, while agreeing with the statement as to the geological features of the case, pointed out that any intervention of a glacial period, as suggested by Professor Rupert Jones, was inadmissible, while the evidence as to the palæolithic age in Suffolk being locally post-glacial was irrefragable. The principal outcome of the recent discoveries was the fact that the existence of palæolithic man could be carried further back in time than the valley gravels, inasmuch as they are now found in gravels on the plateaux at far higher levels.

Professor Boyd Dawkins thought these deposits were not of such high geological antiquity as to be out of the range of the palæolithic period. The argument that the ruder implements are older than the higher types found along with them was negatived by the repeated discoveries of all the forms in question in the same deposits in caverns underneath the stalagmite.

General Pitt Rivers did not think the majority of the stones exhibited were of artificial fabrication; some of them were, but not all, while the geological evidence was more or less shaky.

BORE-HOLE WELLS FOR TOWN WATER SUPPLY

was the subject of a paper by Mr. Henry Davey, M.Inst.C.E. At the Cardiff meeting of this association the author proposed a new system of bore-hole wells for town water supply. Since that time the system has been carried into effect at several places, and he described one of the most important examples of executed work—viz., that of the Netherley Pumping Station of the Widnes Waterworks. Four 30in. bore-holes can be put down in a very small fraction of the time required to sink a 12ft. well. Instead of making a large well, the author puts down four bore-holes to accommodate the pumps for duplicate pumping engines. The bore-holes being completed, the pumps are lowered into them and coupled-up to the permanent engines. Immediately that is done the water found in the bore-holes can be pumped and supplied to the town. Should it be insufficient, then a small well would be sunk in the dry to the bottom of the bore-hole pumps. The bore-holes at Netherley, two in number, are sunk in red sandstone rock, and are placed 20ft. apart, each bored to a diameter of 30in. for a depth of 200ft., and to a reduced diameter of 18in. for a further depth of 200ft. and 300ft. respectively, thus making the first hole 400ft. deep, and the second one 500ft. deep. On the completion of the boring the water stood 70ft. to 80ft. from the surface of the ground, when the quantity pumped by the old engine on the same site was 1¼ million gallons per day. On starting the new pumps, it was found that when pumping 2¾ million gallons per day, the water level was lowered to 100ft. from the surface of the ground.

CRETANS IN PHILISTIA.

Mr. Arthur J. Evans, in a paper on "A New System of Hieroglyphics and a Pre-Phœnician Script from Crete and the Peloponnese," showed two systems of writing represented on diagrams, and observed that, as in the case of the Egyptian and Hittite symbols, the Cretan hieroglyphics fell into distinct classes. He gave reasons based on his archæological researches in Eastern Crete for believing what had long been suspected on historic and linguistic grounds—namely, that the Philistines represented the old indigenous Cretan stock, and that they had here the relics and the writing of the Philistines at home in Egyptian monuments. He asked whether the remarkable parallels observed between some of the Cretan pictographs and the earliest form of Phœnician letters might not best explain themselves by this early Cretan colonisation of the Syrian coasts.

THE ASSOUAN RESERVOIR.

A paper on the geography of Lower Nubia was read by Mr. Somers Clarke, F.S.A., who dealt chiefly with that part of Lower Nubia which will be flooded by the proposed Nile reservoir. The difference in size and colour effect of the scenery in the valley of the Nile above and below Assouan was noticed. The Wadi Kenus, the abode of the Beni Kensi tribe, is nearly coincident with the projected Nile reservoir, and if the proposed scheme is carried out a population of about 30,000, inhabiting a cultivated area of some 10,000 square acres, will be displaced. In the Dodeka-Schœnus there are a number of temples and remains of antiquity, and the district is protected by a line of forts, some of very high antiquity. The existence of Egyptian civilisation side by side with the ruder customs of the natives is especially to be observed in the method of burial. The manner of building houses from lumps of earth, crude brick, with flat wooden or vaulted brick roofs constructed in the same way as those used by the ancient Egyptians, was noticed. Reed shelters are also in use. Not only the unique antiquities, but the present people, with all life, animal and vegetable alike, are affected by the projected reservoir. In view of the contemplated destruction, it is of the utmost importance to make an exhaustive scientific investigation of the valley before it is submerged.—Professor Norman Lockyer asserted that the temples of Philæ were founded about 6,000 years B.C. It had been suggested that a careful topographical and engineering survey should be made of all the temples, and that all the inscriptions should be transcribed and translated. Time and money were required for such a work, but the archæological and historical results would be invaluable.—Mr. F. C. Penrose, F.R.S., P.R.I.B.A., desired to express his full concurrence in what Professor Lockyer had said.

The meeting next year will be held at Ipswich, with Sir Douglas Galton as President; that of 1896 will assemble at Liverpool, and in 1897 Toronto will probably be visited.

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REPORTS ON VENTILATION.

In connection with the recent report on the failure of the mechanical ventilation of the Houses of Parliament, the following extracts from the report by the Board of Investigation, composed of leading scientists, engineers, and experts appointed by the United States Government to examine into the various systems of ventilation for the purpose of recommending the most suitable method for the ventilation of the Capitol at Washington, the plenum system, or mechanical ventilation by impulsion, having proved a failure, may be of interest to our readers. The report states that—"It is utterly impossible to thoroughly ventilate such a hall as that of the House, if fully occupied, by any so-called natural ventilation by means of doors and windows."

This is a common-sense decision, as such a very primitive form of natural ventilation could not be safely employed in cold weather, and the statement helps to clear the way for the more scientific and effectual modes of natural ventilation which are now being adopted for public buildings, and which are entirely independent of doors and windows. It was also decided that forcing large volumes of air into the House was not to be recommended, as being dangerous to health and unnecessary. "Were this done," says the report, "perfect ventilation would not be obtained, for this would only provide for the dilution of the impure air, while in perfect ventilation the impurities are not so diluted, but completely removed as fast as formed, so that no man can inspire any air which has shortly before been in his own lungs or in those of his neighbour.

"The relative merits of the upward *versus* the downward systems of ventilation may be estimated from the following considerations:—

"1. The direction of the currents of air from the human body is, under ordinary conditions, upwards, owing to the heat of the body. This current is an assistance to upward, and an obstacle to downward, ventilation. 2. The heat from all gas-flames used for lighting tends to assist upward ventilation, but elaborate arrangements must be made to prevent contamination of the air by the lights if the downward method be adopted. 3. In large rooms an enormous quantity of air must be introduced in the downward method, if the occupants are to breath pure fresh air, or about three times the amount which is found to give satisfactory results with the upward method. 4. In halls arranged with galleries, the difficulty of so arranging downward currents that, on the one hand, the air rendered impure in the galleries shall not contaminate that which is descending to supply the main floor below, and, on the other hand, the supply for the floor shall not be drawn aside to the galleries, is so great that it is almost an impossibility to effect it.

"For these and other reasons the Board are of opinion that the upward method should be preferred."

Tables of phenomenal air-velocities and analyses of mechanical ventilation by impulsion are so many meaningless formulas before *facts* like these.

We have always held that extraction of the hot vitiated air and the products of combustion at the ceiling level, to where they naturally ascend, and admission of fresh air at the lower parts of the building, at a *low velocity*, is the only natural and satisfactory method of ventilation. This opinion is also held by the leading authorities on the subject, ideas regarding the best method to secure ventilation having undergone considerable change within recent years, mechanical ventilating arrangements giving place to simpler and more effectual methods.

The expert who prepared the report on the ventilation of the Houses of Parliament states:—"I think that extraction rightly applied is infinitely better all round than propulsion. I never knew of a system of propulsion pure and simple that effected an efficient and satisfactory ventilation of any large building. In the case of the House of Commons there is no lack of *fresh* air sent in, or that can be sent in; the trouble is rather to get rid of *all* the vitiated air - and that can only be done effectively by a proper system of extraction, by which the vitiated atmosphere would be drawn out from various points. So long as architects employ the plenum system, or propulsion pure and simple, colossal buildings like the Houses of Parliament, the London Law Courts, the National Liberal Club, &c., will continue to be notoriously badly ventilated in every sense of the term.

"This trouble of inefficient ventilation in large legislative buildings, notwithstanding the enormous amount of fresh air that can be passed through them sometimes "without ventilating them," is not at all confined to the Houses of Parliament in this country. For many years the heating and ventilating installation at the Capitol in Washington was the greatest and most perfect example by propulsion pure and simple in the whole world. Two large fans were used for forcing in air under pressure, on the plenum system.

"After years of experience, however, it was found absolutely necessary to adopt extraction [at the ceiling] as well, in order to insure the certainty of the vitiated air being got rid of under all states of the atmosphere."

In a recent work on "Ventilation and Heating" the author says:—

"From a report made by M. Trélat, it appears that the ventilation of the French Chamber of Deputies is in a more unsatisfactory condition than that of the English or American National Assembly Halls.

"The fresh air is delivered at the top of the room, and the currents of air are strong and varied, causing great discomfort.

"The air is delivered by fan propulsion at the ceiling, and is taken out at the floor, giving a downward system of ventilation.

"The apparatus is powerful enough to change the air in the chamber every six minutes; but it can only be worked slowly, owing to the draughts produced, and the air vitiated by respiration is brought back to be reinhaled.

"M. Trélat, as the result of his observations, emphatically condemns downward ventilation."

We have before stated that "engine-driving columns of air through a building is not ventilating it," and these reports furnish additional instances—to the already long list—of the utter inefficiency of the plenum system or mechanical ventilation by propulsion, particularly when on the downdraught principle, the dangers of which are notorious, and we heartily endorse the dictum of the authorities that "the evils of downdraught ventilation cannot be exaggerated, and the employment of it ought, in the interests of the public health, to be made an indictable offence."

"Such a system, if adopted, would prove a standing menace to the health of society."

THE OTIS ELEVATOR.

WE have on our table a copy of a book descriptive and illustrative of the principal buildings of New York, which has been published by the enterprise of the world-wide Otis Elevator Company, Ltd., of Queen Victoria-street. The excellent photo-tint illustrations include many of the most important buildings in the Metropolis of the American continent, and the publication before us is an extract from "King's Handbook of New York City." The more recent structures are illustrated and described, together with a general description of the main features of the city. Particular interest in modern American buildings lies in the fact that the means of communication between the floors is provided for by the Otis elevator, an appliance which is now in operation in nearly all the important structures. Every one of these prominent buildings uses the Otis elevator, we are told, and many of them in numbers which appear surprising to English readers. In every city in America and Europe this elevator has been introduced. It will be superfluous to give a list of the American and English buildings in which the "Otis" elevator is in use. Many of the giant buildings of New York here illustrated, including the Manhattan Life Insurance Co.'s building, the Mutual Reserve building, the American Surety Co.'s offices, Merchants' Exchange Bank, Hotel Savoy, the *World* building, Hotel Majestic, Potter building, the Havemeyer building, the American Tract Society's, &c., are equipped with the Otis. The chief point to notice is that with this form of elevator a given area is made to produce remarkable results in revenue. The Havemeyer building in Church-street, east side, is a good example of the application of seven Otis hydraulic passenger elevators; six of these are arranged round a semicircular area in the building occupied by many eminent business firms and corporations. It is 15 stories in height, fireproof in construction, built of stone and light-coloured brick, with steel frames. Facing three streets, the building is light and cheerful. The owner is Theodore A. Havemeyer, of the great sugar-refining industry.

The rapid increase in height of the New York buildings is seen on looking at the view of the new American Tract Society's building in Nassau-street, which far exceeds in height the old Morse building which is seen next it. The former structure is in course of erection from the designs of Mr. George Read, architect. It is the rapid elevator service which has made these monster buildings possible as well as profitable. Without the Otis elevator they would be quite impracticable, and would remain uninhabited; but with this appliance in regular working order the ordinary staircase service is superseded. Every tenant or visitor entering is provided with an instant and rapid transit to any floor. In the larger buildings several of these elevators are at work; some of them give express services, stopping only at a certain floor, thus affording the visitor the advantage of a speedy and unbroken ascent to the particular floor. The Otis Elevator Co. provide hydraulic, electric, and steam lifts, and among buildings fitted up in London may be named the Albert Gate Mansions, Knightsbridge; the Albert Hall Mansions, Alexandra Hotel, Hyde Park; Euston and Great Northern Hotels, St. Pancras Hotel, Hyde Park Court, Junior Constitutional Club, Piccadilly; New Scotland Yard, Salisbury Estate, in addition to many others, and to buildings in all the chief cities of Europe.

FEUS AND BUILDING LEASES IN SCOTLAND.

THE Select Committee appointed to inquire into the subject of feus and building leases in Scotland have just published their report. The committee concur in the view that it would be desirable to provide by legislation that all existing casualties of superiority should be compulsorily commuted, and that even the stipulation for casualties of fixed amounts becoming due at specified periods, allowed by the Act of 1874, should be prohibited for the future. A majority of the committee consider that the best course would be to provide that compulsory commutation should not be enforced until a casualty of composition should become due, and they would recommend that it should then be in the option of the vassal either to pay the casualty in a capital sum, or to have it converted into an addition to the annual feu duty, arrived at by taking 3 per cent. upon the capital value or amount of the composition. Substantial justice would be done by providing that all future casualties would be compulsorily commuted in respect of a permanent addition to the feu-duty of, say, 1 per cent. on the amount of the composition which had already become due in the ordinary case, and, say, 1½ per cent., where by the terms of the grant a casualty is payable on every sale or transfer of the property. As to the enfranchisement of building leases, the committee advise that provision should be made by legislation for the enfranchisement of building leases in Scotland, whether these leases are for a term of years or upon a tenancy at will. This result might be brought about either by compelling the lessors to sell the value of their interest for a present capital payment, or by providing that the lessee should obtain a permanent right of feu upon his becoming liable for such feu-duty as would represent the value of the rights which the lessor has in the subject when enfranchisement is claimed. The next question adverted to is the acquisition of building land by local authorities. The committee suggest that every elected local authority should be empowered to purchase land by agreement, or compulsorily, for the purposes either of providing sites for dwellings for workmen or other persons, or of otherwise providing for the present or prospective development of the town or village. It appears to the committee that considerable latitude might be left to the local authorities, both as to the purposes for which the land might be acquired, and as to the manner in which it should be dealt with when acquired, whether by letting on lease, feuing, or selling to the persons by whom it was to be occupied.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION ELECTION.

A SPECIAL general meeting for the election of two pensioners on the relief fund, and one child to the benefits of the orphan fund, took place at the offices of the Institution, 21, New Bridge-street, E C., on Wednesday evening, August 15th, the president, Mr. William Shepherd, occupying the chair. There were four candidates for the two vacancies to the widows' pension (of £20 per annum)—viz., Mrs. S. A. Bennett, Mrs. S. Hill, Mrs. S. Lovett, and Mrs. M. Smith. At the close of the poll, Mrs. Hill and Mrs. Smith were declared duly elected. For the orphan vacancy, Thirza M. Smith (a daughter of one of the successful applicants for the pension), being the only candidate, was duly elected by a show of hands. At the close of the proceedings the scrutineers, Messrs. Ernest S. Rider, Thos. Stirling, jun., and H. W. Parker, were thanked for their services, Mr. Roe remarking, with reference to the younger gentlemen (Messrs. Rider and Stirling), how very satisfactory it was to see them following in the footsteps of their respective fathers, by assisting as they had done in the good work in which they had been engaged that evening. A hearty vote of thanks was also accorded to the President for his kindness in attending, and presiding so efficiently, as chairman of the evening.

"KRUSHITE."

MR. JAS. T. PEARSON, engineer, Burnley, has forwarded to us samples of a material which is likely to be extensively used, called "Krushite," now advertised in our columns. This material, which is made of varying degrees of fineness, has been found to be of great value to quarry owners and builders in sawing and polishing granite, stone, marble, and other hard materials in lieu of sand. It is stated that a block of granite can be sawn with "Krushite" at the rate of 4in. in depth per hour, and hard gritstone at 9in. in depth per hour with 1A blades. The "Krushite" is used also in sand-blast apparatus instead of sand, and is being substituted for diamond drills in boring. One ton of this material is equal to 300 tons of the sharpest sand. The specimens sent to us are of nine different sizes or degrees of fineness, varying from the finest emery powder or pepper to the size of small shot or rape seed, and used for different purposes. "Krushite" is without points or edges, free from rust, and will not stain; it is chilled to intense hardness without being brittle, and its action is to roll between the block and saw blade or rubber; hence it retains its spherical shape and cutting power. Unlike sand or emery, it does not become embedded in the blade or rubber, but rolls backwards and forwards, creating a crushing action on the blocks sawn. It is used like sand, and the same machinery is applicable. The wear and tear of the blade or rubber are much lower than when sand is used. Considering the economy of "Krushite" for all sawing and polishing operations on stone, being capable of doing the same amount of work as diamond saws at one-tenth the cost, we have great confidence in recommending it to all quarrymen, builders, and others who are engaged in cutting or polishing operations. Its extreme hardness and the sphericity of its grains make it superior to sand, which often cuts or spoils the face of the stone or blade. We may add that samples of the Krushite may be obtained gratis from the manufacturer.

Messrs. Ralph and Sons, contractors, Plymouth, have commenced extensive alterations at Truro railway station on behalf of the Great Western Company. Additional goods relief lines will be laid down, and by a subsequent contract it is proposed to build a new stone viaduct over the Fal valley, on the north side of the existing wooden viaduct, which will then be demolished.

BRITISH BUILDING STONES.—XII.

SCOTLAND (*continued*).

No.	Quarry.	County.	Geological Formation.	Description.	Colour.	Weight of a Cube Foot.		Water Absorbed per Cube Foot.	No. of Cube Feet to 1 ton.		Remarks. Where used, analysis, crushing strain in tons per ft. super., cost per cube foot.
						Dry.	Wet.		Dry.	Wet.	
						lb. oz.	lb. oz.	Pints.	ft. in.	ft. in.	
390	Hermand ...... West Calder.	Edinb'rgh	Oil-shale series. *Lower Carboniferous.*	Moderately fine-grained sandstone; very silicious; no mica; bedding not observable.	Light greenish-grey.	141 12¼	143 4¾	5¼	15 9½	15 1½	Bank of Scotland, Calton Gaol, St. Mary's Cathedral School, West Port, and St. Andrew's Free Churches, Edinburgh. *Cube stones*, under 5ft. long and not exceeding 15c.ft., 1s. 2d.; not exceeding 60ft., 4s.; under 12ft. long and not exceeding 15c.ft., 3s. 3d.; not exceeding 60ft., 5s. 9d. *Broad stones*, per superficial foot, in sizes not exceeding 7ft. long and 5ft. broad, under 10 superficial feet and 6in. thick, 9½d.; up to 14in. thick, 1s. 8d.; under 35 superficial feet and 6in. thick, 2s. 6d.; up to 14in. thick, 4s. 3d. *Long stones*, per superficial foot, not exceeding 26in. broad, under 5ft. long and 7in. thick, 9d.; 11in. thick, 14d.; under 12ft. long and 9in. thick, 2s. 5d.; 11in. thick, 3s. Stones of *random* lengths not exceeding 5ft. long and 26in. broad—ashlar, 12in. high, 7d.; if cut natural, 8d. per lineal foot; cornice or cope, 6in. thick, 8½d. per super. foot; above 26in. broad will be charged as "broad" stones. The *sundries* in this quarry are founds, rybats, scuntions, jambs, plats, and steps. Ten per cent. has been added to above prices for some time past. Analysis:—Silicious matter, 94·68; carbonate of iron, 2·19; alumina, 0·92; carbonate of lime, 1·56; carbonate of magnesia, 0·27; moisture and loss, 0·38. Crushes with 430·5 to 496·8 tons (B). Shows signs of weathering in Pillars in Meadows, 1888 (Craig).
391	Hildasay......	Shetland..	Granite.	Quartz orthoclase, hornblende, and biotite.	Grey, with greenish tinge.	170 6	170 11½	¼	13 1½	13 1¾	Used in Aberdeen for monumental and decorative polished work.
392	Hill o' Fare. Banchory.	Aberdeen.	Granite.	Much transparent quartz; pink orthoclase, biotite.	Light pink.	161 10	162 3¾	½	13 9¾	13 10¾	There is very little mica in this granite. It is extensively used for monumental work by the Aberdeen granite polishers. Harris, in "Granites," p. 87, says the rock is of a "dark red" colour. The specimen examined here is of a pale salmon tint.
393	Humbie .... Aberdour.	Fife.........	*Lower Carboniferous.*	Fine-grained soft sandstone; small pieces may be crushed between the fingers; minute brown specks in matrix; bedding not distinct.	White.	127 4	137 3¾	8	17 7¼	16 3¾	Royal Exchange, Glasgow; spire of Tron Church. Cube stones: *Clean* rock, under 10ft. cube, 1s. 1d.; *common* rock, 10d· Under 35ft. cube, clean rock, 2s. 3d.; common rock, 1s. 7d. (length not to exceed twice the breadth, or breadth twice the thickness). Broad stones, not confined to lengths, 6in., 9d.; up to 12in. thick, 1s. 2d. per super. foot. Long stones, under 4ft. 9in. long, 6in. thick, 9d.; 12in. thick, 1s. 2d. per super. foot. Stones 10ft. 10in. long 8in. thick, 1s. 10d; 12in., 2s. 2d. per foot, in clean rock. Monumental stones and columns 20 per cent. additional. When the breadth of any stone exceeds three times the thickness, the thickness will be charged at one-third the breadth. Stones cut on natural bed, depth not to exceed twice the breadth, 10 per cent. additional; depth not to exceed three times the breadth, 15 per cent. additional. Stones cut parapet, 10 per cent. additional. Special quotations for large quantities.
394	Huntershill. Bishopbriggs.	Lanark ...	Coal Measures. *Carboniferous.*	Fine-grained micaceous sandstone, brown spots; rubs smooth. No bedding observable.	White, with grey tinge. Light grey.	136 11¼ 127 1¼	144 0½ 134 3	5⅞ 5⅝	16 4½ 17 7¾	15 6 16 8½	Cube stones under 15ft., 1s. 2d.; 20ft., 1s. 4d.; 30ft., 1s. 10d.; 40ft., 2s. 5d.; 50ft., 3s. 3d.; 60ft., 4s. 3d. per cube foot. Broad stones under 6ft., 6in. thick, 8d. per super. foot; up to 35ft. at 2s. 10d. Stones under 6ft., 14in. thick, 1s. 6d.; up to 35ft. and 14in. thick, 4s. 3d. Stones under 6in. thick charged as 6in. Long stones, 4ft. by 12in. by 7in., 3s. each; up to 24in. by 11in., 9s. 8d. each; 12ft. by 12in. by 7in., 20s. 9d.; up to 24in. by 11in., 74s. 9d. each. Columns, 6ft. by 15in. by 15in., 18s. 11d.; 6ft., 24in. by 24in., 63s. 11d. each; 15ft. by 15in. by 15in., 109s. 10d.; 15ft. by 24in. by 24in., 325s. 10d. each. Wheeling steps, 4ft. long, 18in.—6in. broad, 7in. thick, 3s. 3d.; 32in.—6in. broad, 5s. 7d.; ditto 6ft. long, 6s. 1d. and 10s. 6d. respectively *each*. Stones cut parapet 10 per cent. additional. "All material sent by waggon charged 5 per cent. extra for haulage."
395	Kemnay ...... Aberdeen (17).	Aberdeen.	Granite.	White quartz and felspar, with biotite in small specks scattered through the mass.	Light grey.	163 11¼	164 8	¾	13 8	13 7¾	Used for docks and other engineering works. Forth Bridge piers; St. Mary's R.C. Church, Aberdeen, 1860. Crushes with 961·9 to 1285·8 tons (B).
396	Kinneil ...... Bo'ness.	Linlithgow.	*Lower Carboniferous.*	Fine even-grained sandstone, glassy quartz grains in apparent contact; no matrix; no bedding observable.	White, with greyish tinge.	130 5	139 5¾	7¼	17 2	16 0¾	Town-hall, public offices, churches, dwelling-houses, and principal buildings in the locality. Quarry turns cut stone "of any requisite thickness." Cube stones from 5ft. to 10ft., 1s.; 10ft. to 15ft., 1s. 1d.; 15ft. to 20ft., 1s. 4d.; 20ft. to 25ft., 1s. 9d.; 25ft. to 30ft., 2s. 4d.; 30ft. to 35ft., 3s. Length not to exceed twice the breadth, nor breadth twice the thickness. Prices net at quarry. (For prices of other stones see Maiden Park, No. 403. Worked by same lessee at same rates for both quarries.)
397	Kinsteary ...	Nairn......	Granite.	Glassy quartz, with pink orthoclase and biotite.	Pink, spotted with black.	163 7¼	163 15¾	⅝	13 8¼	13 7¾	Used in Aberdeen for monumental and other polished work.
398	Kirriemuir ...	Forfar ...	Old Red Sandstone. *Devonian.*	Moderately fine-grained micaceous sandstone; compact matrix.	Brownish-red.	141 9¾	148 5½		15 9¾	15 1¼	Bank of Scotland, Union Bank, Lisden House, Kirriemuir. Cube stones, 1s. 1d.; ordinary rybats canted, 2ft. tails, 8in. heads, 10d. per linl. foot; flat ditto, 1s. 1d. per linl. foot. Cut rubble stones, 4s. per load, to average a ton. Coursers, 6in. to 7in. high, and 6in. to 8in. on bed, 4½d. per foot linl. Prices for delivering to rail, Kirriemuir Station.
399	Laggan......... Crieff.	Perth	Old Red Sandstone. *Devonian.*	Fine-grained compact sandstone; mica plates parallel to bedding.	Purplish, brown.	155 7¼	159 10	3⅝	14 5	14 0¼	Roundelwood (a villa in Crieff); Mr. Conrie's house and shop, King-street; numerous villas and houses in the locality. Cube stones under 5ft., 1s. per foot; under 10ft., 1s. 6d.; long stones, 3ft. to 4ft. long, 12in. by 6in., 7d.; up to 8ft. long, 12in. by 6in., 1s. 6d. per foot; common founds, 2s. 9d.; rubble, 2s. 2d.; square ditto, 3s. 6d. per ton; half-round cope, 12in. by 6in., 6d. per foot; jambs, 3ft. by 18in. by 5in., 2s. each; jamb lintels, 8in. by 8in., 6d. per foot; monumental stones, 6in. to 9in. thick, 10d. to 1s. 2d. per foot; pavement under 6ft., 4½d.; under 12ft. 6d. per super. foot. The prices are at quarry. Add 1s. 6d. per ton for delivery to rail at Crieff station. "The rock can be got almost any thickness."
400	Lamberkin ... Perth.	Perth	Old Red Sandstone. *Devonian.*	Fine-grained micaceous sandstone; rubs smooth; bedding not distinct.	Blueish grey.	143 12¼	150 5½	5¼	15 7	14 10	Dupplin Castle ("Elizabethan, and polished round and round"); extensions to Blair Atholl and Glenlyon Castles, Freeland House, and many private houses in Perth and the neighbourhood. Cube stones, under 10ft., 1s. 2d.; under 15ft., 1s. 9d.; other stones by special agreement; common rubble, 2s. 3d.; heavy ditto, 2s. 3d.; square cut ditto, 3s. 6d.; foundation stones (common), 2s. 3d. per ton: common rybats, natural bedded, 10d.; cant rybats, 9d.; scuntions, 7d. each. Sills and lintels, 12in. by 6in., under 5ft. long, 8d., and for every additional foot of length, 1d. per foot extra, and for every additional inch in thickness 1d. per foot extra.

No.	Quarry.	County.	Geological Formation.	Description.	Colour.	Weight of a Cube Foot.		Water Absorbed per Cube Foot.	No. of Cube Feet to 1 ton.		Remarks. Where used, analysis, crushing strain in tons per ft. super., cost per cube foot.
						Dry.	Wet.		Dry.	Wet.	
						lb. oz.	lb. oz.	Pints.	ft. in.	ft. in.	
401	Lauriston ... Montrose.	Forfar ...	Old Red Sandstone. *Devonian.*	Fine-grained micaceous sandstone; bedding not observable.	Dark purplish grey.	141 13¼	148 11¼	5½	15 9½	15 0¾	Brotherton Castle, Ecclesgruig House, Fettercairn House, Lauriston Castle, Drumtochly Chapel, part of Sunnyside Asylum. Cube stones not above 5ft. long, and not more than 10ft. cubic, 1s. 2d.; flat rybats, 2ft. long, 12in. to 14in. high, 8in. to 10in. on head, 1s. 6d.; flat ashlar, 7in. to 8in. on bed, 9d. per super. foot; started rybats, 2ft. long, 12in. to 14in. high, 6in. to 8in. on head, 1s.; started ashlar, 7in. on bed, per super. foot, 8d.; courses, 6in. to 8in. high, 4½d. per lineal foot; extra-sized rybats, ashlars, and putt stones, 1s. 2d. per cubic foot; crub, 15in. by 5in. per lineal foot, 7d.; garling, 10in. broad, 3in. to 4in. thick, 6d. per lineal foot; "ruble," 2s. per ton; tabling, 12in. to 14in. broad, 4in. thick, 6d.; broad stones, under 6ft. 6in. thick, 8d.; 9in. thick, 11d.; under 24ft., 6in. thick, 1s.; 9in. thick, 1s. 3d.; long stones, all 14in. by 7in., 3ft., 2s. 3d.; 4ft., 3s.; 5ft., 4s. 2d.; 6ft., 5s. 6d.; 10ft., 13s. 11d. Add 2s. per ton cartage to Perth station, at 12ft. cube to the ton. Quarry beds usually from 12in. to 16in. thick. They sometimes rise to 2ft. and 2ft. 6in.
402	Ley of Hallyburton Coupar Angus.	Forfar ...	Old Red Sandstone. *Devonian.*	Fine-grained micaceous sandstone; rubs smooth; bedding may be observed.	Grey.	149 7¾	155 8	4⅞	14 11¾	14 4¾	Belmont Castle and stables for Right Hon. H. C. Bannerman. This stone can be "cleaned," "tooled," and "polished." It will dress to any form. "It is not so soft," keeps its colour long, is strong and durable, beds from 3in. to 5ft. and 6ft. deep. Quarry is three miles from rail. Cube stones up to 10ft. 1s. in quarry, 1s. 2d. on rail. Common corners in quarries, 24in. by 12in. by 10in. on head; if not natural bedded 10d. each, 1s. on rail; natural bedded, ditto, 1s. in quarry, 1s. 2d. on rail truck.
403	Maiden Park Bo'ness.	Linlithgow.	*Lower Carboniferous.*	Fine-grained sandstone, ochrey matter in matrix and in bedding, which is distinct.	Cream, striped with brown, parallel to bed.	131 5¼	139 3½	6⅜	17 0¾	16 1	Town Hall and buildings, Bo'ness. "Ruble," 1s. 9d.; rough founds, 3s. 6d. per ton; dressed founds, 6in. to 8in. thick, 8d. per super. foot. Chimney heads, plinths, and skews, 12in. by 5in., 6d. per lineal foot. Ashlar, 12in. by 6in., 7d.; 12in. by 8in., 8d.; 12in. by 9in., 9d. per lineal foot. Courser rybats and corners, 1s. 2d. each. Scuntions and backs, 9d. Long stones, 3ft. 6in. by 12in. by 7in., 7½d. per super. foot; 4ft. 6in. by 12in. by 7in., 8½d. per lineal foot; up to 9ft. by 12in. by 8in., 1s. 4d. per lineal foot. All other lengths, breadths, or thicknesses proportioned to above rate. Prices are net at quarry. (See Kinneil, No. 396.)
404	Mill Head ... Brechin.	Forfar ...	Old Red Sandstone. *Devonian.*	Fine-grained sandstone; glassy quartz and felspar; bedding not observable.	Dark grey.	140 4½	146 10½	5⅜	15 11½	15 3¼	
405	Montgomery. Tarbolton.	Ayr.........	Permian.	Fine-grained sandstone, no mica; bedding not distinct.	Brownish red.	116 1¾	128 7¼	9⅞	19 3½	17 5	Parish church, Conservative club, Troon; school and offices, Kirkcaldy; Burgh Buildings, Whiteinch, Glasgow; church, Paisley. Cube stones under 15ft., 8d.; 20ft., 10d.; 30ft., 1s. 1d.; 40ft., 1s. 6d.; 50ft., 2s.; 60ft., 2s. 8d. Broad stones under 6ft., 6in. thick, 5d.; 10in. thick, 8d.; under 35ft., 6in. thick, 2s.; 10in. thick, 2s. 6d. per super. foot. Long stones 4ft. by 12in. by 7in., 1s. 10d.; up to 24in. by 11in., 6s. 11d.; 12ft. by 12in. by 7in., 14s. 9d.; up to 24in. by 11in., 53s. each. Columns 7ft., 15in. by 15in., 16s. 10d.; up to 14ft., 6in. by 15in. by 15in. 72s. 4d. Columns 7ft. by 24in. by 24in., 53s. 6d.; up to 14½ft. by 24in. by 24in., 20s. each. Wheeling steps, founds, scuntions, coursers, rybets, jamb lintels, jambs, pavements, and copes at quarry list prices on trucks at quarry. All stones whose height exceeds the width on bed are charged 10 per cent. additional.
406	Myrestone ...	Forfar ...	Old Red Sandstone. *Devonian.*	Fine-grained micaceous sandstone, rubs smooth; black carbonaceous specks; no bedding observable.	Bluish grey.	150 5½	154 1¼	3	14 10½	14 6½	"Sized" stones containing not more than 10ft., 2½in. thick, 7d.; 3in., 8d.; 4in., 9d.; 5in., 11d.; 6in., 1s. 1d.; 7in., 1s. 3d.; 8in., 1s. 6d.; 9in., 1s. 9d., single faced, per super. foot. Stones up to 30ft. super and 9in. thick (these latter at 2s. 4d. per foot). Double facing under 25ft., 2d.; above 25ft., 3d. extra. Platts, sawn breast, 6d. per lineal foot extra; planed breast, 9d.; bottled, 1s. Selected stones for monuments and pavements—common, medium, and undersize—at quarry list prices, free on rail at Forfar. No stone quoted more than 9in. thick. The quarry is chiefly a pavement quarry. Work is stopped here at present.
407	Newstead ... Melrose.	Roxburgh	Old Red Sandstone. *Devonian.*	A rough unequal-grained conglomerate; no bedding observable.	Mottled brown with slate-coloured patches.	160 10½	164 1¾	2¾	13 11¼	13 7½	The stone from Quarry-hill is sold at 4s. per yard super., or about 5½d. per foot for coursers or blockers from 6in. to 9in. high, 1ft. to 3ft. long, and 6in. on bed of stone. Delivered to rail.
408	Newton ...... Thornhill.	Dumfries	*Permian.*	Fine-grained sandstone; rubs fairly smooth; no mica; bedding indistinct.	Brownish-red.	128 9¼	137 12¾	7⅜	17 5	16 3	Station and hotel; new Memorial Church; Crichton Royal Institution, Dumfries; Parish Hall, Thornhill; church at Greenock; villas at Bridge of Weir. Quarry beds from 1ft. to 4ft. thick. Sized lineal, superficial, and cube stones. All under this head, although less than 12in. broad, will be charged as if 12in. broad, and if more than 12in. broad, the same rate per superficial foot. From 1ft. to 6ft. by 12in. by 8in. per linl. foot, 6d.; from 1ft. to 6ft. by 12in. by 10in. per linl. foot, 7d.; from 1ft. to 6ft. by 12in. by 12in. per linl. foot, 8d. The same lengths 18in. square at the same rates per cubic foot. The pavement in this quarry is sorted as common, 3in., 4in., street, sized flags, and division flags. "Rubble" is quoted at 1s. per ton; thoroughbands at 1s. 6d. per ton; kitchen jambs, kitchen jamb lintels, and room jamb lintels are from 5d. to 7d. per linl. foot; ridge stones, 3½d.; 1s. per ton charged for delivery to rail.
409	Old Quarry. Locharbriggs.	Dumfries.	*Permian.*	Fine-grained sandstone; does not rub smooth; bedding not distinct.	Brownish red.	125 9	135 12¾	8¾	17 10	16 5¾	Standard Insurance Offices, Sun ditto, Trinity Shipping ditto, Glasgow; Gartloch Lunatic Asylum for City of Glasgow; Princes-street Railway Station, Edinboro'; Lochend School, Leith; County Buildings and Post-Office, Dumfries. Cube stones, not sized up to 15ft., 8d., rising in price to 80ft. at 3s. per foot. Superficial stones from 6in. thick at 4½d. per foot, up to 10in. thick at 7d. Long stones from 6ft. by 12in. by 8in. at 6d. per lineal foot, up to 10ft. by 12in. by 12in. at 1s. 6d. Pavements from 1s. 6d. to 2s. 8d. per yard. Scuntions, rybats, coursers, skews, jambs, &c., at quarry list prices, free on rails, Locharbriggs. In this quarry, special attention is given to sawn stone. "In over 90 per cent. of cases the stones are perfectly just and polished when they leave the machine." Mullions, monumental stones, and parapet ashlar sawn at the rate of 2½d. per foot super. Analysis:—Silicon oxide, 98·19; iron oxide, ·89; moisture, ·92.

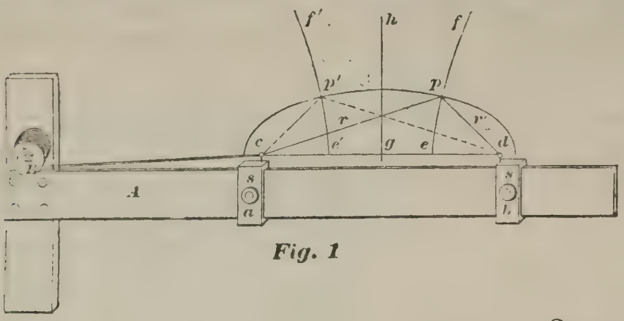

Fig. 1

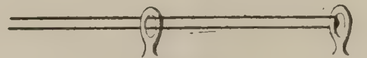

Fig. 2

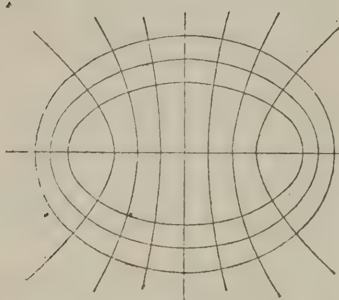

Fig. 3

BOOKS RECEIVED.

The *Engineering Magazine* for August (London: George Tucker, Salisbury-court, Fleet-street) contains, amongst other articles on industrial matters, a first paper by Mr. Dankmar Adler, on "Theatre-Building for American Cities." Mr. Adler is a very successful theatre designer, and, as he tells us, it is his good fortune to have carried out several successful theatres and public halls in America. We may be, therefore, sure that what he tells us, derived from his own personal observation and independent thought, will be to the point. Theatre design and building is not more difficult, as he says, than any other kind of building if one's action is based not merely on recorded precedent, but upon extensive observation. So long as theatres are ventures for pecuniary gain, the buildings will be subordinate to the ideas of projectors, owners, and managers, which are mainly to seat the greatest possible number in the smallest space, and for the smallest outlay. The architect has, of course, to submit to these conditions. Mr. Adler points out the lines of development which should be followed in designing an American theatre, and his views are of value to all theatre architects and proprietors. We shall probably refer to a few of the principal points in another article. ——*Papers and Addresses*, by Lord Brassey, K.C.B., D.C.L.; *On Work and Wages*, edited by G. J. Potter (London: Longmans, Green and Co.)—This collection of addresses and papers on work and wages illustrates various phases of the question. The author says: "An hereditary connection with industry and enterprise suggested the first speech delivered in the House of Commons, and the subsequent publication of a volume on 'Work and Wages.' Through a period extending over a quarter of a century a year has rarely passed without calls for addresses on Labour questions." The first speech on "Trade Unions, and the Cost of Labour" was made in the House of Commons in 1869, since which time various other addresses have been given on "Wages," "Price of Labour," "Trades Unions," "English and Foreign Labour," "Depression of Trade," "Agricultural Holdings," &c., at Trade Union Congresses, Institutions, &c. Others are the reprints of papers in the *Times*, *Nineteenth Century*, &c. The volume will be found of interest to those interested in this important economic and industrial movement, both as giving a review of the history of labour, and as showing the change of public opinion. The introduction by Mr. George Howell, M.P., is interesting in this connection, and the papers and addresses of Lord Brassey are of value as embodying the views of a practical and experienced politician and man of business.

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A memorial reredos of alabaster and marble is about to be placed in the fine 15th-century parish church of St. Just, near the Land's End. The architect is Mr. E. Sedding, of Plymouth.

INSTRUMENT FOR DRAWING HYPERBOLAS AND ELLIPSES.*

YOUR correspondents and others may be interested to read a description of an instrument which I have devised for drawing hyperbolas and ellipses. A, Fig. 1, is a T-square. Mounted on the stock is a clock barrel, B, around which is wound a double line, the two ends of which are fastened to it. The saddles *a* and *b* are adjustable, and may be set at any desired distance apart, being fastened to the blade of the square by the set-screws *s s*. These saddles carry small eyes, *c* and *d*, through which the line passes, both parts passing through *c*. Fig. 2 shows the position of the line when the instrument is not in use, the spring causing the barrel to revolve in the direction of the arrow, keeps it taut. Fig. 2 is very much exaggerated, in order that the reader may see clearly how the line is threaded through the eyes.

Referring to Fig. 1, if we take hold of the line at any point *p*, and pull it, the barrel will revolve in a direction contrary to that indicated by the arrow, and the part of the line *r* will pay out round the eye *c* while the part *r′* will pay out round the eye *d*, and since these two parts come off the barrel together, their lengths increase at the same rate—i.e., the difference between their lengths is constant; therefore the point *p* traces the hyperbola *e p f*. To prevent the pencil from slipping on the line, a turn should be made round it. For accurate work, the line may be of surgeon's silk; for blackboard purposes, a gut line may be employed. The other branch of the hyperbola *e′ p′ f* is described by taking hold of the line at a point, *p′*, at a distance from *c* equal to that which was measured from *d*. The broken lines *c p′ p′ d* show the position of the line when the other branch of the curve is drawn.

A point midway between *c* and *d* will describe a straight line, *g h*, the conjugate axis of the hyperbola. If the barrel be prevented from revolving when the line is extended to any point, and the pencil be allowed to slide on it, it will describe an ellipse according to the well-known method, and the ellipse will intersect the hyperbola perpendicular to it at *p* and *p′*.

If the instrument be reversed, the remaining half of each curve may be described as in Fig. 3, which illustrates confocal ellipses and hyperbolas drawn with this instrument, all the ellipses being normal to all the hyperbolas at the points of intersection.

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The Admiralty have decided to strengthen the defences of Sheerness Harbour and the river Medway by constructing a boom to bar the passage of the river in the event of Britain being engaged in hostilities. The boom will stretch from Port Victoria, at the upper end of Sheerness Harbour, to Stangate Creek, on the opposite bank of the Medway, and several obsolete gunboats, together with an immense quantity of timber, will be utilised in its construction. The shore anchorages for the boom are estimated to cost £6,000, and the Admiralty have accepted the tender of Mr. J. Bligh, of Eastchurch, near Sheerness, for the execution of this portion of the work.

Building Intelligence.

Hythe, Kent.—The Roman Catholic School and Church of the Virgin Mother of Good Council, Hythe, was opened last week. The buildings have been erected from plans by Mr. A. E. Purdie, of Harlesden, carried out by Messrs G. H. Denne and Son, of Deal, at a cost of £2,587. The external walls are faced with red bricks, relieved with moulded red brick stringcourses, &c. The church consists of a nave, 62ft. by 22ft.; chancel, 20ft. 6in. by 18ft.; the Lady chapel, 15ft. by 11ft.; and sacristy, 15ft by 11ft. Sittings are provided for 300 persons, besides the choir gallery at the west end. The high altar and reredos have been designed in keeping with the church, and are enriched with panels painted in oil colour by Mr. J. L. Ryan, of London and Seabrooke. The principals are of pitch-pine stained and varnished. The church is built in the Early English style. Over the chancel roof rises a belfry, which is covered with lead and crocketed. The schools provide for the education of 225 children, and have been built in accordance with the demands of the Education Department, as regards class and cloakrooms, playgrounds, light, ventilation, &c.

Newbury.—The new technical institute was opened on Wednesday afternoon by Mr. Alfred Waterhouse, R.A., F.R.I.B.A., of Yattendon Court, in the presence of a goodly assemblage of townspeople. Mr. Waterhouse delivered an interesting address, in which, having alluded to the historic associations of Newbury, he urged the importance and value of the study and appreciation of nature, and referred to art as a source of pleasure. He urged the desirability of such technical schools as a means of meeting foreign competition, and remarked that there is a great future for artistic pottery and metal-work as village industries. The institute, of which Mr. Walter H. Bell, of the Market-place, Newbury, is the architect, adjoins and partly incorporates the old Literary and Scientific Institution. On the ground floor there are three large classrooms. The museum will be located in the rooms hitherto used for the art classes. The school of art, 42ft. by 28ft., is on the first floor, and is lighted by three large windows. Adjoining are a gallery and the art-master's room, with lavatories and cloakrooms. The caretaker's apartments are situated on the top floor of the institute. The contractor was Mr. Samuel Elliott, of the Albert Steam Joinery Works, Newbury.

Winsford.—The foundation stone of the new Technical Institute, the gift of Mr. Joseph Verdin, was laid last week in the High-street, Over Winsford. The style will be Renaissance, and mullioned and transomed windows are provided throughout the three principal elevations, except those of the art school, which will have wooden frames. The front elevation and the two large gables on each side are to be entirely faced with Mr. J. C. Edwards' Ruabon red stock bricks, and all dressings are being executed in terracotta from the same firm. The roofs are to be covered with deep red Ruabon roofing tiles, with approved ridging at the apex. Internally, the joinery will be of St. John's pine. The building is to be warmed and ventilated by the Blackman Smead Company, of London and Manchester. In the basement floor are arranged the joiners' workshops, with wood store, 24ft. by 20ft.; plumbers' and fitters' workshops, 20ft. by 13ft., with storeroom, coal and coke store. On the ground floor there is a top-lighted gymnasium, 50ft. by 37ft., with separate boys' and girls' dressing-rooms and lavatories; also provided with gallery 37ft. by 9ft. Four class-rooms, each 22ft. 6in. by 21ft., are provided. By Peace and Norquay's folding partitions, the superficial area of these rooms can be thrown into a large room 88ft. by 21ft. for examination purposes and prize distributions. A chemical laboratory, 24ft. by 19ft. 6in., is placed at the end of the boys' corridor. For the teaching of art three large rooms are provided. The work will be executed by Messrs. James Fowles and Sons, Winsford, from the designs and under the supervision of Messrs. Woodhouse and Willoughby, FF.R.I.B.A., of Manchester, chosen in open competition.

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In the House of Lords, on Tuesday night, the London County Council (General Powers) Bill and the London Streets and Buildings Bill were read a third time. Both measures now only await the Royal Assent to become law.

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* By Prof. Frederick R. Honey, in the *American Machinist*.

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ILLUSTRATIONS.

ARCHITECTURAL ASSOCIATION EXCURSION SKETCHES. — BUSINESS PREMISES, OLD BOND STREET, W.— DESIGN FOR A COUNTRY HOUSE.—MAYFIELD CHURCH.—PADDINGTON GREEN CHILDREN'S HOSPITAL.—SCHOOL OF COOKERY, MALVERN. — COTTAGE AT RAINHILL.— OLD FURNITURE FROM THREE COUNTRIES.

Our Illustrations.

ARCHITECTURAL ASSOCIATION SKETCHES.—II.

(See description of the Architectural Association's Excursion in Somersetshire on p. 205.)

BUSINESS PREMISES, OLD BOND STREET, W.

These art showrooms, with residences above, have been built in Old Bond-street, W., from designs by Messrs. Wimperis and Arber.

DESIGN FOR A COUNTRY HOUSE.

This is an illustration of the garden front of a house which was designed for a gentleman whose family had owned Bramhall Hall, and who wanted a house with its elevations based on this fine old mansion. The walls would be for the most part built of brick, with the overhanging walls of studwork, the whole covered with half-timber work. The roofs would be tiled, and the woodwork throughout would be stained dark grey and oiled. The illustration is from a water-colour drawing in this year's Royal Academy, by the architect, Mr. R. A. Briggs, F.R.I.B.A., of 2, Devonshire-square, E.C.

MAYFIELD FREE CHURCH, N.B.

No description of this church, designed by Mr. Hippolyte J. Blanc, A.R.S.A., of Edinburgh, has come to hand.

PADDINGTON GREEN CHILDREN'S HOSPITAL.

This building which we illustrate to-day, now in course of erection, will stand on the site of the former hospital and land adjoining, situated at the corner of Church-street and Paddington Green. The previous building was ill-adapted for its purpose, being nothing more than an ordinary dwelling-house altered to serve as a hospital. The perspective view shows, as well as the part now being erected, and which is shown on the plans, the proposed future extension to Church-street. The basement is given up to the kitchen, scullery, pantry, housekeeper's rooms, and stores. The cooking it is proposed to do with gas. On the ground-floor is the board-room, and also the secretary's and surgeons' rooms. The out-patients' department at the back of the new building has been remodelled. On the first and second floors will be the two large wards, each 56ft. long by 24ft. wide by 15ft. high. The walls will be lined to a height of 5ft. with glazed bricks, and above that with cement. The ward floors are to be of marble "Terazzo." The heating of the large wards will be by means of Shorland's Manchester stoves, two being placed centrally in each ward. The ventilation will be assisted by extract flues next ceiling and inlet flues under every bed, formed of glazed stoneware pipes. On the third-floor will be fourteen nurses' bedrooms (each with a fireplace) and a good nurses' sitting-room. On the fourth floor, reached by an outside staircase, is the isolation ward, with scullery, nurses' room, bath-room, w.c., &c. The elevations will be faced with dark-red Ibstock bricks, and a lighter red for the strings and cornices. The roofs are to be covered with green slates. The contract (just under £11,000) is being carried out by Messrs. Mark Patrick and Sons, of Westminster Bridge-road, and the architects are Messrs. Salter and Adams, 28, Woburn-place, Russell-square, W.C.

SCHOOL OF COOKERY.

The residential school for household and domestic training which we illustrate stands on the Herefordshire side of the Malvern Hills, commanding extensive views of the surrounding country. The building, which is just completed, has been erected by Mrs. Buck and Miss Brander, and is under their management. Mr. David Lewis, of Colwall, has carried out the work under the superintendence of Messrs. Roberts and Simpson, architects, of Leicester.

COTTAGE AT RAINHILL, NEAR LIVERPOOL, FOR MR. FREDK. STAPLETON-BRETHERTON, J.P.

This cottage is now being erected on the estate of Mr. F. Stapleton-Bretherton. It is built of Rainhill stone, quarry faced, with sawn dressings, moulded mullions and heads. The roofs will be covered with blue Velenhelli slates. The builder is Mr. Pilkington, of Rainford, near St. Helen's, and the architect Mr. Beesley, of Warrington.

OLD FURNITURE FROM THREE COUNTRIES.

The Armchair, with high back, comes from the South of France, and its date is about 1580. The stiles and framing are inlaid with marquetry. Its height is 3ft. 10in., and the width is 1ft. 9½in. The introduction of the arch work between the columnar legs under the seat imparts an element of strength which is sometimes wanting from many chairs of like character; while the repetition of this form in a modified degree in the back gives this piece of furniture a pleasing unity of design. The carved ornament, similar to the egg-and-tongue round seat-board, and the foliated pediment with its central mask, are both evidences of the delight the old craftsmen took in adorning their work. It was bought from the sale of the Soulages Collection for £25, and is in the South Kensington Museum, as are the other two examples given on our sheet.—The Cradle, of English workmanship, is perhaps one of the finest specimens of oak cradles in this country. It belonged to Edward Radcliffe, Earl of Derwentwater, whose initials, "E. R.," surmounted by a coronet, and flanked by winged figures, are carved over the footboard. It has been lent to the museum by Mr. R. D. Radcliffe. In this connection we may mention that in the Building News for March 8, 1889, we published a drawing of an oak cradle of the time of William and Mary, and on Dec. 21, 1883, we illustrated the Royal cradle of Henry V.—The Armoire, or Buffet, in carved oak, of Flemish character, is an early piece of cabinet-work, and is in a good state of preservation. It has been lent by Mr. Talbot Bury.

* * *

It is understood that there is no probability of any opposition in the House of Lords to the Bill, which Sir Walter Foster has piloted through the House of Commons, for the purpose of removing a legal doubt which existed as to the powers of local authorities in small areas to borrow money for the erection of workmen's dwellings.

The town council of Cardiff have accepted the tender of Messrs. W. Symonds and Co., of Rectory-road, in that town, at £12,360, for the reconstruction of the public baths in Guildford-crescent, under the direction of Mr. W. Harpur, the borough engineer. The work provides for the taking down of the old building, re-erecting the building, and constructing new baths 60ft. in length by 22ft. in width, with manager's house, offices, and dressing-rooms. The accepted tender was the lowest of a dozen sent in.

The Abbey Manor house at Evesham, the residence of Mr. Edward C. Rudge, D.L., lord of the manor, was destroyed by fire on Sunday. The old mansion was a substantial building of stone, picturesquely situated on the site of the battle of Evesham, and commanding charming views of the river and the vale. Everything but the massive stone walls has been burned down to the ground. The moulded oak beams supporting the ceiling, and some beautiful carving in the library, fed the flames, which raged fiercely all the afternoon.

COMPETITIONS.

Llangefni.—The committee of the Welsh Calvinistic Chapel some four months back invited architects to send in plans in competition for a new chapel, and in response 13 sets of plans were delivered. Those sent in by Mr. R. G. Thomas, architect, Menai Bridge, have been selected, and he has received instructions to prepare the working drawings. The cost will be about £4,000. The style adopted is Italian.

* * *

CHIPS.

A new parish church has just been opened at Kilmuir, North Uist, N.B. Mr. Shairp, of Oban, was the architect, and Mr. Dugald MacTavish the contractor.

The masonry of the tower of St. Andrew's Church, Holborn, is undergoing thorough repair, and renewal where defective, under the direction of Mr. C. J. Shoppee, the surveyor to the Thavie trustees. Messrs. Dove Bros. are the contractors. The parapet, balustrade, and finials are now completed.

A new Primitive Methodist chapel at Burghclere was opened last week. It replaces a smaller one on the same site, and has been built by Mr. Head, of Burghclere.

The Baptist chapel at Barrowden was reopened last week after renovation, including the substitution of pitch-pine benches for closed pews, and the provision of a new floor. The builders were Mr. Dickens, of North Luffenham, and Mr. Coleman, of King's Cliffe.

The Scottish Board of Manufactures have reluctantly come to the conclusion that it will be necessary to discontinue the opening of the National Gallery at Edinburgh on Saturday evenings during the dark months of the year, in consequence of the very serious injury done to the pictures by the fumes from the gas.

Robert Browning's grave in Westminster Abbey is about to be marked by a comparatively large slab of Oriental porphyry, set in a frame of Siena marble. The inscription will consist of only the name and date of birth, with an English rose at the head and a Florentine lily below.

The first portion of the work of restoring the parish church of Bubwith, Yorks, has been commenced, to plans prepared by Mr. C. H. Fowler, architect, of Durham. Mr. T. S. Ullathorne is the contractor.

On Saturday the corner-stone of a new Baptist Sunday-school was laid at Ossett by Alderman Nicholson, of Wakefield. The building will be 61ft. long, by 31ft. in width, and the estimated cost is £500. Messrs. Land and Nettleton, of Ossett, are the contractors for the work.

A new Wesleyan chapel was opened on Friday at Great Kelk, in the Bridlington circuit. Mr. S. Dyer, of Bridlington Quay, was the architect, and Messrs. Bastiman and Gutherlass, of Kilham, the contractors.

At the last meeting of the Hove Commissioners, the salary of Mr. H. H. Scott, who has been surveyor for the past ten years, was increased from £400 to £500 a year.

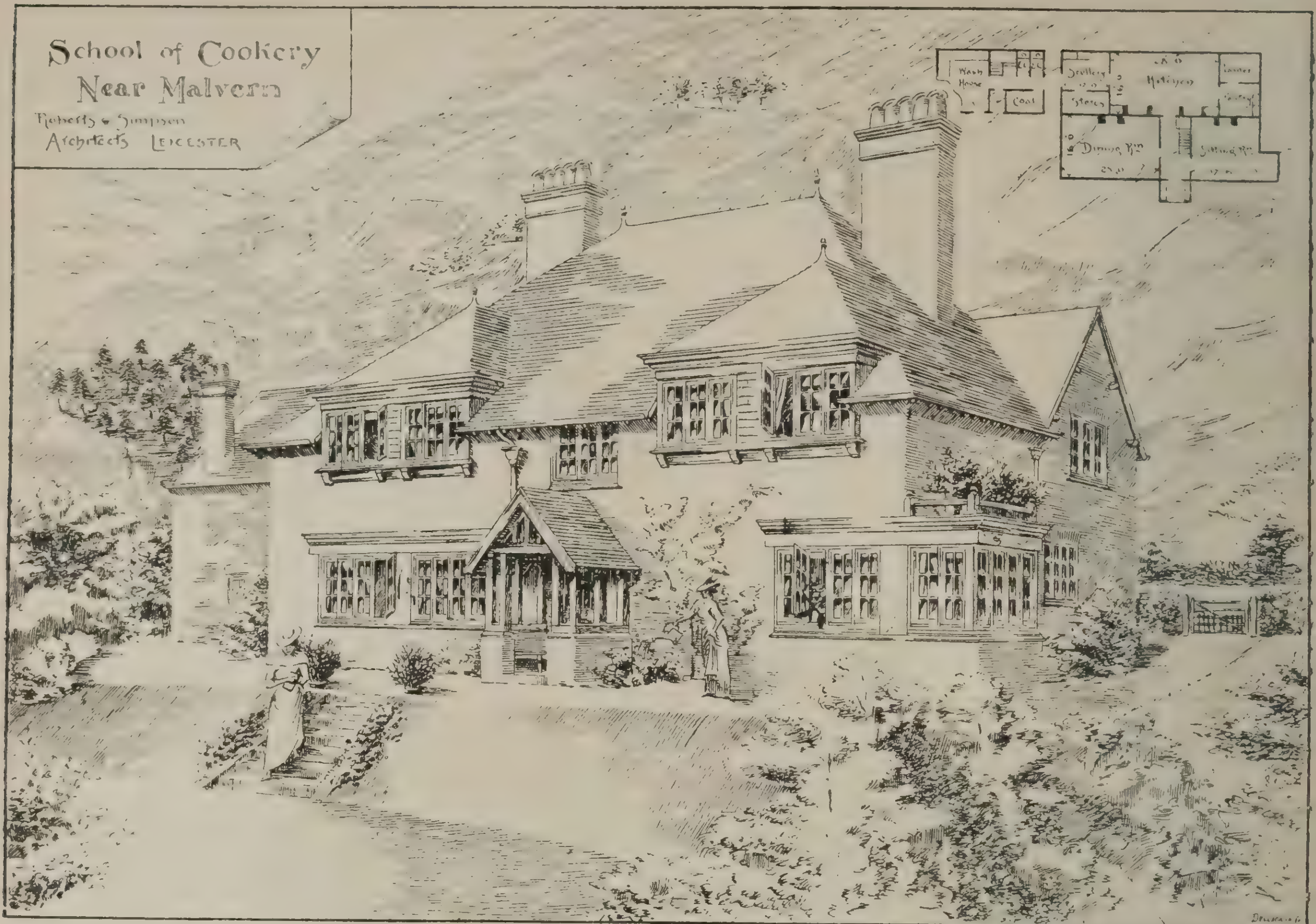
The city council of Coventry received, on Tuesday, a report from a committee recommending that Mr. James Mansergh, M.Inst.C.E., be instructed to prepare detailed plans and estimates for a scheme for dealing with the sewage of the city on a site below Ryton Bridge and the Avon Valley.

A block of board schools, in three departments, is approaching completion at Brent, near Stone, North Kent, and another school for infants is being built on the hill for the same authority, the Stone school board. In both cases Mr. J. T. Watford, of Northfleet, is the architect, and Mr. L. Seager, of Sittingbourne, is the contractor.

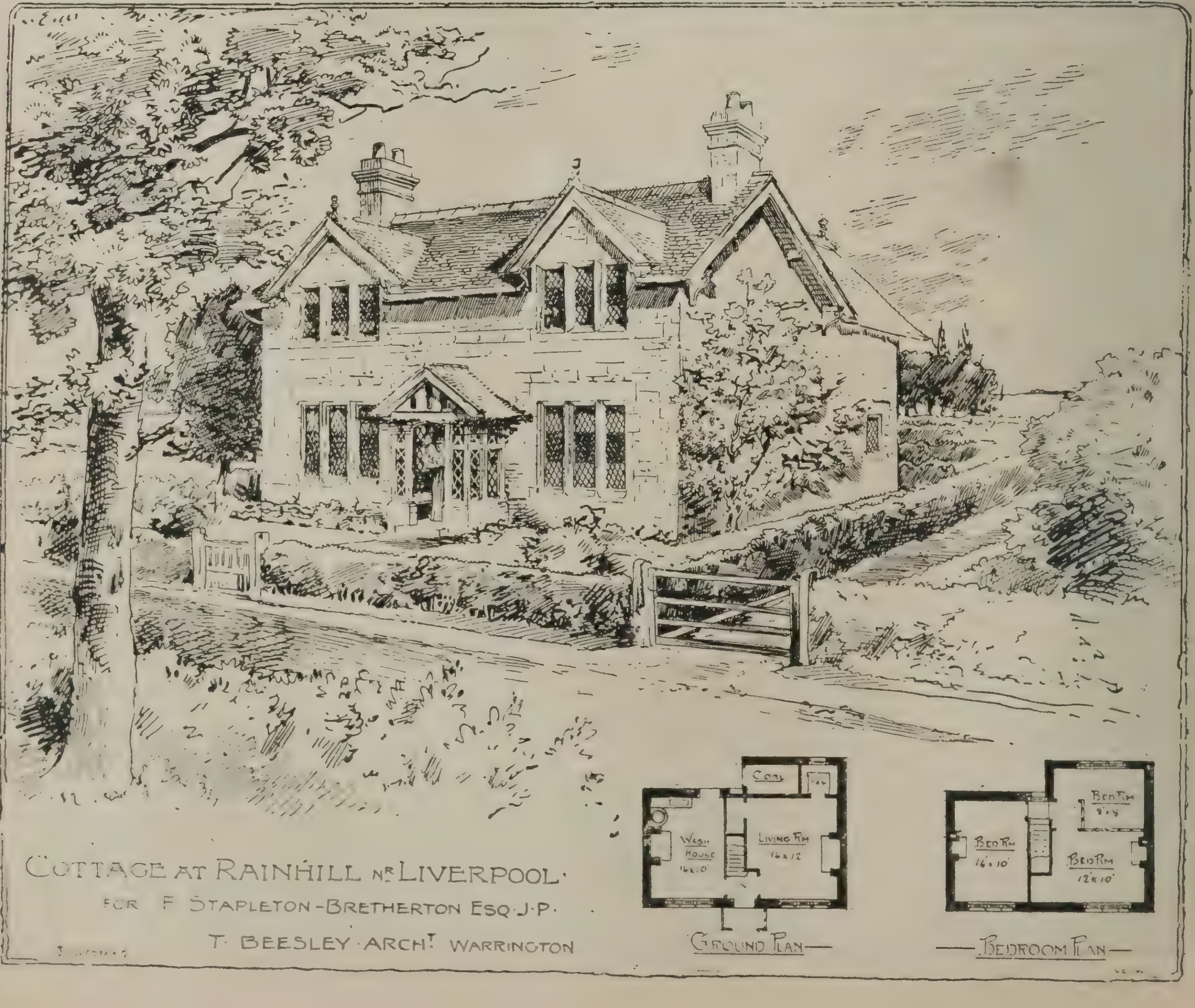
Mr. Frederick M. Simpson, the recently appointed Professor of Architecture at Liverpool University, intends to carry out a vigorous administration at the School of Architecture and Applied Arts in that city. The board of management invite applications for the appointments of instructors in sculpture and modelling, decorative and figure painting, wood carving, wrought ironwork, and brass and copper work.

The town council of Neath, Glam., are about to carry out a new water reservoir. Mr. James Mansergh, C.E., is the consulting engineer, and the work will be undertaken under the direct supervision of the borough surveyor, who will be paid 4 per cent. commission on the contract.

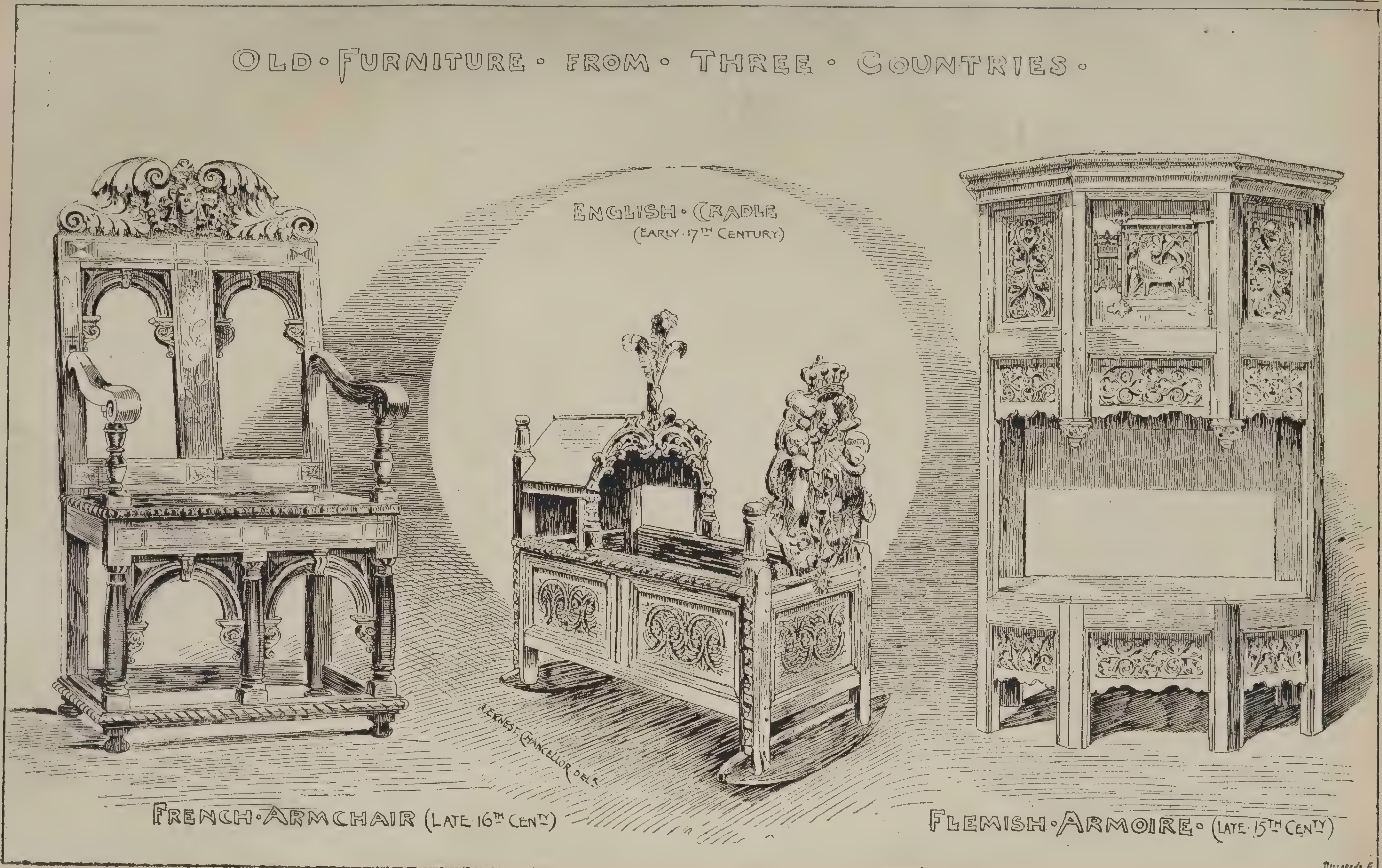
At Stratford Police-court on Saturday, Henry Barker, building material dealer, of Skelton-lane, Leyton, was charged with removing and concealing large quantities of his goods within four months of his bankruptcy, with intent to defraud his creditors. Evidence having been adduced, the prisoner was remanded, bail being refused.



School of Cookery
Near Malvern
Roberts & Simpson
Architects Leicester



Cottage at Rainhill Nr Liverpool.
For F Stapleton-Bretherton Esq. J.P.
T. Beesley Archt Warrington


OLD · FURNITURE · FROM · THREE · COUNTRIES ·
ENGLISH · CRADLE
(EARLY · 17TH CENTURY)
A. ERNEST · CHANCELLOR · DELT.
FRENCH · ARMCHAIR (LATE 16TH CENTY)
FLEMISH · ARMOIRE · (LATE 15TH CENTY)
DELLAGANA Sc.

WAYSIDE NOTES.

ONCE a drinking-fountain always a drinking-fountain, and no repairs needed, seems the motto of some of our local authorities, who accept these memorials, and then appear to leave them to the mercy of the street urchins. There is, for instance, in Fleet-street, the drinking-fountain erected near St. Dunstan's Church by the late Sir James Duke. The water still flows into the stone basin to assuage the thirst of passers-by, but neither the barometer nor the thermometer is in first-class working order. Mercury no longer rises and falls in the thermometer-tube, while the rubbish stuffed through the apertures in the glass front has sadly interfered with the utility of the weather-recorder. In Paris it would certainly be someone's duty to look after little matters like these. In London, from the Shaftesbury-avenue affair of blighted genius down to the merest basin in a by-street, all are neglected, and most are, more or less, a disgrace to London.

English visitors to Antwerp will do well to accept with reserve a suggestion which will be made to them by a romancing verger, to the effect that two figures at the west end of the stalls represent the late Lord Beaconsfield and Mr. Gladstone. The tale has been related to so many that it is beginning to be believed; but it is pulverised this week in a statement which Mr. Harry Hems, the well-known Devonshire sculptor, has made in the *Belgian News*. Mr. Hems dismisses the whole as "simply a crafty verger's story," and adds: "I remember the stalls in question being cleverly carved by Deboeck or Vanwint about a quarter of a century ago. The figure on the extreme west of the north side is that of a shaven and tonsured monk, with a cope over his habit, and bearing an episcopal staff. He stands in an attitude of deep devotion, and has an ascetic, worn face. It is this they dub Lord Beaconsfield. Immediately opposite—*i.e.*, on the extreme west, on the south side—is a group. The shrine containing the Blessed Virgin and Holy Child receives the adoration of some passing wayfarers. The figures are on a sort of post, on which are hung the crutches and staves of those poor, afflicted folk who have received supposed benefit through their pilgrimage there. The Virgin's seat is supported by a bracket, and this latter takes the shape of a horned and bat-like winged head. This is declared to represent Mr. Gladstone." The more devoted admirers of the late Prime Minister will certainly consider the whole to be "a Tory plot" when it is added that the ordinary worshippers at the cathedral regard this figure as suggesting the Evil One.

The Hartlepool School Board are desirous of obtaining, by competition, designs and estimates for a two-storied upper standard school for 500 mixed pupils, to be built on a site known as Galley's field, facing "The Moor," at Hartlepool. They offer no premiums, and of course do not bind themselves to accept any plan. What is more, they furnish no levels and no particulars for the guidance of the competitors beyond the brief information afforded by their advertisement. There are to be 250 boys and 250 girls. The boys' department is to be supplied with laboratory and demonstration room, and the girls' school is to be furnished with cookery and laundry arrangements. An outline of the site is furnished, and inquirers for more information are told by circular that the advertisement contains all the particulars in the official keeping. The doubts thus engendered in the minds of some would-be competitors as to the bona fides of the affair do not, we must confess, seem entirely unreasonable; and although this may be the holiday season, enough energy ought to be forthcoming, even among the possibly worn-out, over-worked officials of the Hartlepool School Board, to enable that body of advanced educationalists to furnish mere precise instructions as to their intended schools, for which the equally over-worked ratepayers will have to supply the funds. If some architect is not already destined to have the job, or perhaps some select few practitioners with friends at court have not been furnished with more exact notions concerning the mind of the promoters, it is not easy to understand why such reservation should be observed. No professional referee is mentioned either, so that it requires but little imagination to picture the results of such a happy-go-lucky contest with every conceivable kind of plan sent in. The renewed energy of the Board after the holidays will doubtless be severely taxed in making a fair and advantageous choice of a plan under such conditions, and architects may well think twice before responding to the Board's invitation.

The summer exhibition at the York Corporation Galleries is a distinct success. With the collections in the Burton and Feversham Galleries, which are permanent features of interest in the exhibition building, upwards of a thousand works are on view. The hanging committee are to be congratulated on their taste, both in respect to hanging and selection, the whole show, taken collectively, being a representative one, comprising subjects ranging from Mr. Calderon's Academy picture of last year, "Elizabeth Woodville parting with her younger son, the Duke of York," to the tiny stippled pen drawings of Oxford by M. Claude de Neuville. Among other works by Royal Academicians is the "Flight into Egypt," by Mr. F. Goodall, while Mr. Solomon's "Dinner-party," the charming landscapes by Mr. David Murray, and the architectural drawings by Messrs. Demaine and Brierley should prove attractive exhibits.

I had hoped that with your publication of Mr. J. M. Brydon's selected design for the Pump-Room Extension at Bath, and of Major Davis's design "O," which was favoured by so many Bath chaps—I beg pardon, I intended to say citizens—that I had heard the last of this wrangle. According to the *Western Daily Press*, however, there is every prospect of a lively time at the Bath Guildhall to-day (Friday), when a Local Government Board inspector will hold an inquiry into the application of the town council for power to borrow £30,000, the cost of the Pump Room extension. As that journal remarks, "No subject in local annals for many a year has been the cause of such personal acrimony and heated debate in the proceedings of the corporation as this proposal, and it is said that the question will be fought to the bitter end, and that before the inspector there will be resolute opposition to the plans recommended for adoption; but as the main consideration will be the likelihood of the success of the extension from a financial point of view, it is not contemplated that the design for the building will weigh much with the representative of the authorities at Whitehall, if there is shown a good prospect of the venture not resulting in a burden on the rates." The inhabitants of Bath are anxiously waiting for a commencement of actual operations on the site in the Abbey churchyard, which for long has been a desolate waste, but there seems little probability of a start being effected before the next Bath season begins.

By the demolition of some old houses in Catherine-street, Strand, and in Drury-lane, the old churchyard which Charles Dickens described in "Bleak House," and which is approached by a narrow passage leading from Russell-court, has been brought to view. The churchyard on the left-hand side of Drury-lane, higher up, has frequently been talked of as "Joe's Churchyard," but the miserable burial-ground which received the remains of poor "Nemo" is that on which the sunlight is now allowed to shine through the clearing-away of the rookeries which previously hemmed it in on east and west. At the end of the Russell-court passage the gate with its iron bars, through which Joe pointed out to Lady Dedlock the grave of his benefactor, still hangs on its rusty hinges, although the graveyard itself has been asphalted over and turned into a playground. Some thousands of Dickens's admirers, including a large number of Americans, have visited the spot during the past few weeks.

The annual excursion of the Sussex Archæological Society was held on Thursday in last week, when, under the leadership of Mr. R. Garraway Rice, F.S.A., the members visited the church, Park House, and North Chapel (the latter a 17th-century half-timbered house) at Horsham, Shipley Church, Knepp Castle, and West Grinstead Church.

Messrs. Fambrini and Daniels, Architectural Concrete Works, Lincoln, are supplying their red concrete masonry in heads, sills, mullions, and bonded jambs, &c., for several blocks of cottages in Bedford-road, Guildford. The block now in hand is being built by Messrs. Swayne and Son, contractors, Guildford. The architects are Messrs. Peak and Lunn, also of that town.

OBITUARY.

Mr. Joseth Boult, a well-known Liverpool architect and surveyor, died at his residence, 6, Kelvin-grove, Prince's Park, on Thursday, the 9th inst., in the 77th year of his age. For many years Mr. Boult enjoyed a high reputation in local circles as an architect and art connoisseur, and was a prominent member of the Liverpool Architectural Society. He was surveyor to the Liverpool Exchange Company, and upon his resignation of that office, twelve months ago, the company, to mark their appreciation of his long connection, retained him as consulting surveyor. Mr. Boult, who was a bachelor, had been in failing health for some months past, but continued to transact business up to a very recent period.

Mr. Thomas Sturdy, a young architect of much promise, at Middlesbrough, died on Friday, after a short and severe attack of inflammation of the lungs. His father, an architect and surveyor in Middlesbrough for about 30 years, died from pneumonia a year ago.

CHIPS.

The Kingsbury School Board have recently instructed Messrs T. W. F. Newton and Cheatle, 121, Colmore-row, Birmingham, to prepare plans for remodelling and enlarging their Hurley Schools. This will be practically rebuilding, as a portion of the old school has recently been condemned by the Education Department. The new accommodation will provide for 250 scholars. The design is a free rendering of the Georgian style, and will be carried out in local bricks and tiles.

On Saturday, the town clerk of Leeds received notice from the Leeds Tramways Company of the discontinuance of their action to recover £61,000, being the difference between the value of the tramways on the basis of structural value and of rental value. The abandonment of the action follows on the recent judgment in the House of Lords.

Good progress is being made with the new municipal buildings for Oxford. Mr. H. T. Hare, whose design was selected in competition last year, is the architect, and Messrs. Parnell and Sons, of Rugby, are the builders.

New National schools are now in course of erection at Newcastle, Staffs, from the designs of Messrs. Chapman and Snape, architects, of that town. Special consideration has been given to the ventilation, which will be carried out on the Boyle system, the latest patented improved form of self-acting air-pump ventilators being adopted for the extraction of the vitiated air, and their improved air-inlets for the admission of fresh air.

The foundation-stones of a Wesleyan chapel were laid at Skellingthorpe on Monday week. It will be a Gothic structure of red brick, with white brick and Ancaster stone dressings. It will consist of a chapel 50ft. by 27ft., separated by a movable partition from a school 30ft. by 20ft., and a vestry 13ft. by 11ft. The chapel will have an open timber roof, and the seats will be of pitch-pine. The cost will be about £750. The architect is Mr. J. T. Drury, Lincoln, and the contract is let to Mr. J. W. Harrison, builder, Lincoln.

A Celtic cross in granite, executed by Messrs. S. M'Glasher and Sou, Edinburgh, has been erected by subscription in Warriston Cemetery, as a memorial to the late Thomas Henderson, of Edinburgh.

The Bishop of Winchester, on Saturday, laid the foundation-stone of the new church of St. Mary, Worcester-park, Cuddington. This will be the first church erected in the parish of Cuddington since the ancient church was destroyed by Henry VIII. about 1540.

The Aberdeen Harbour Board considered on Monday the report presented by Mr. Henry H. Wake, C.E., as to the improvement of Regent Bridge, the widening of the quays, and the provision of additional shed accommodation. The construction was recommended by the engineer of a steel swing bridge, which, with machinery, quays, and approaches, was estimated to cost £13,411. The cost of widening Trinity Quay, Regent Quay, and Victoria Quay, and erecting sheds was estimated at £32,580. A committee recommended that the Commissioners should authorise the construction of a steel swing bridge, and the widening of Regent Quay eastward of the bridge, and the construction of two sheds on the quay when widened alongside Victoria Dock. After a long discussion a decision on the subjects was postponed for a month.

The Turkish Department of Public Works has ordered the immediate repair of the old aqueducts of Solomon in Jerusalem. These aqueducts will bring the water to the city from the fountains of Arroul. A tunnel is to be built 3,750 mètres long, and is to cost £80,000. The aqueduct was still in working order in the time of Christ.

Engineering Notes.

Cardiff.—The work of rearranging and extending the lines and station platforms in connection with the Great Western Railway at Cardiff is now in progress, but will not be finished in less than 18 months. The principal alteration will be the construction of an island platform for the down line traffic, while another platform nearer the Penarth-road will be built for the Taff Vale Railway traffic. Mr. Strachan, of Cardiff, is now engaged in putting in the foundations for the new structures, and the contract for the new station, tenders for which have already been sent in, will be let shortly. A double line of rails will be carried from the Penarth curve to the curve leading to the Queen-street station. This will involve the construction of a new bridge alongside the existing one in Bute-road, but at a greater elevation than that structure, and further bridges over the Penarth-road and the Glamorganshire Canal, besides the formation of fresh embankments between those points. Further provision will be made at the same time for the Barry Railway passenger traffic, and a new station will be built at Clarence-road, Bute Docks, to replace the present temporary structure. The total cost of the works projected will exceed £100,000, of which about £40,000 will be spent in foundations and buildings. The scheme has been prepared by Mr. J. C. Inglis, engineer-in-chief to the Great Western Railway Company, Paddington, and the resident engineer is Mr. W. A. Cashman, while Mr. Roberts, Newport, is the divisional engineer.

Standeyge Hills Tunnel.—The new double-line railway tunnel made through the Standeyge Hills in the Pennine Chain, between Marsden and Diggle, by the London and North-Western Railway Company, and the works connected therewith at each of those places, have been inspected by Major Yorke, Government Inspector of Railways, and were opened last week. The old pair of single-line tunnels will now be closed for three months for repairs, and then all four lines will be constantly used. It was four years ago—namely, on the 5th of August, 1890—that the first sod of the new tunnel was cut. The tunnel is three miles and 70 yards long. The maximum number of men employed on the works has been 1,800. The work of boring the tunnel was of an arduous character, the geological formation being millstone grit and Yoredale shale, with coal in a few seams too thin almost throughout to be worth separating, and 120 tons of gelignite were used in blasting operations. The millstone grit removed was crushed and used for ballast for the permanent way. The walling of the tunnel is throughout of bricks, those next the soil being made in neighbouring places, but the facing is of brindled bricks from Staffordshire. No fewer than 25,000,000 bricks were used. The tunnel has been constructed from the plans and under the direction of Mr. F. Stevenson, chief engineer to the company.

The Inverness and Aviemore Line.—At a meeting of the directors of the Highland Railway at Inverness, on Friday, the offer of Messrs. Charles Brand and Son, Glasgow, was accepted for the construction of the last section of the new direct line to Aviemore, extending from the ticket platform at Inverness to Culdoich, in Strathnairn, a distance of over seven miles. The contract price is £104,900. Under the original contract, recently renounced by Messrs. Mackay and Mackay, the price was £118,000. A considerable portion of the work has, however, been executed, a sum of over £31,000 having been expended. The works still remaining to be executed consist of the completion of the stone viaduct over the River Findhorn, over 575yds. long, and rising to a height of from 58ft. to 129ft.; the completion and construction of over thirty bridges and culverts; and excavations, &c., to the extent of over 440,000yds. The directors are anxious to have the line completed at the earliest possible date, and with this object Messrs. Brand and Son, who constructed the Sutherland Railway, and some sections of the Highland Railway, are expected to put on a large number of men on the works, and push them forward with all expedition.

The New West India Dock.—This vast shipping basin, which for many years has practically been lying idle, its depth and entrance capacity being quite insufficient for modern requirements, was reopened yesterday (Thursday), after extensive improvements carried out at a cost of £200,000. Mr. H. F. Donaldson, M.Inst.C.E., was the engineer, and Mr. Robert Carr, the consulting engineer. The improvement consists of a new entrance lock opening from the river into the Blackwall basin, together with two new open cuts passing between concrete walls from that basin into the import and export docks respectively. The entrance lock, which is 60ft. wide, is 480ft. in length, and has a uniform depth of 30ft. over the sills. The dock gates will be opened and closed by direct-acting rams. The bulk of the work has been intrusted to Messrs. Lucas and Aird, in whose contract everything has been included except the gates, the machinery necessary for pumping and hydraulic purposes, and the lengthening of the railway bridges over the two cuts. Messrs. Armstrong and Co., Limited, of Elswick, have supplied the whole of the hydraulic machinery; the pumping machinery has come from the works of Messrs. Easton and Anderson, of Erith; and the bridges on the railway of the Joint Committee have been lengthened from 45ft. to 60ft. by Messrs. W. Arroll and Co., of London and Glasgow, without any interruption of the traffic. In conjunction with the new entrance, a quay extension, 20ft. wide, providing six berths, has been made on the north side of the import dock. This work was intrusted to Mr. John Price, of Westminster, and cranes are being supplied thereon by Messrs. Tennant, Walker, and Co., of Leeds. A considerable sum has recently been spent in the neighbourhood of the Blackwall basin and the Junction Dock in meeting the requirements of the hardwood trade. Overhead travellers worked by electricity have there been erected for manipulating timber in large logs. The London County Council are rebuilding the Isle of Dogs bridges, and the means of public access to the dock will thus be much improved.

The Wrexham and Ellesmere Railway.—This railway will be opened in January next. At present there is a gap of 1¼ mile between the Wrexham section of the work and the Ellesmere section; but Messrs. Davies Brothers, the contractors, expect to get a temporary line through within the next six weeks. At Lightwood Green, about nine miles from Wrexham, the line has to be carried over the Liverpool pipe line from the Vyrnwy Lake, and here treacherous ground was met with, necessitating extensive piling in order to obtain a satisfactory foundation for the bridge. The bridge to carry the line over the River Dee is expected to be finished in about six weeks, and the whole of the other bridges, with the exception of one road bridge and four accommodation bridges, are either completed or well in hand.

CHIPS.

A large choir vestry is being added to St. Bartholomew's Church, Armley. The design is by Messrs. Walker and Athron, of 18, Park-lane, Leeds, the architects of the church, and the builder is Mr. Wilson, of Headingley.

Mr. D. W. Stevenson, R.S.A., has been commissioned to execute a bust in marble of Bailie Mearns, to be placed in the Art Gallery, Aberdeen. The bust forms part of a presentation recently made to Bailie Mearns by his fellow-citizens.

A Freeman memorial mission room is about to be built at Brookport, Southowram, from plans by Messrs. Jackson and Fox, of Halifax.

The Northern Co-operative Company are about to erect new shop and stores at the corner of Rosemount-place and Short Loanings, Aberdeen. The contracts for the erection of the buildings were accepted on Friday, the total outlay amounting to £7,352.

"Andromeda," by William Etty, R A., has been presented to the Corporation Art Gallery at Manchester, and is the seventh work by that great colourist of the last generation in the collection.

A Bill for the Licensing and Registration of Surveyors is again this session under consideration by the Parliament of Victoria. It is drafted on the lines of the Bill rejected last session by the South Australian Legislature.

At the Church Congress, which will be held this year at Exeter, assembling on October 9th, Professor W. B. Richmond, A.R.A., will read a paper on "Church Architecture and Decoration."

A large clock was formally started at Long Clawson Church, near Melton Mowbray, on Aug. 9. It shows time on two large dials, chimes the Cambridge quarters, and strikes the hours. It has been carried out generally to the designs of Lord Grimthorpe by Messrs. John Smith and Sons, Midland Clock Works, Derby.

Correspondence.

ROCHDALE TECHNICAL SCHOOL AND LIBRARY.

To the Editor of the Building News.

Sir,—During the last few days I have received a number of applications from architects in different parts of the country, who, having seen a paragraph in your paper stating that the Rochdale corporation are about to erect a technical school and library, are desirous of submitting designs therefor.

As we have both a technical school and library already in existence in this borough, I shall feel obliged if you will cause some explanation to be published in your paper, and thus prevent further confusion.—I am, &c.,

Zach. Mellor, Town Clerk.

Town Clerk's Office, Rochdale, Aug. 10.

[The mistake is apparently in the name of the town. It is certainly not Rochdale.—Ed. "B. N."]

ARCHITECTURAL EXCURSION ILLUSTRATIONS.

Sir,—Upon examining the illustrations, and perusing the reading, *to the best of my recollection*, what is now called Stourhead was 35 years ago (when I was in Wiltshire for some months) called Stourton Hall, and originally belonged to Lord Stourton, the bankers or brewers (Hoare) gaining possession by purchase, or otherwise, of the property.

During my residence, or just before, in Mere, during some alterations to Stourton Hall, a wall in the basement sounded hollow, when a hole was knocked through, and the explorers found a small vault, or crypt, containing a coffin, an urn, a chair and table, together with many other relics. This vault was believed to be the burial place of one of the Lord Stourtons, who was hanged at Salisbury for murder, the silken halter being still, I believe, in Salisbury Cathedral.

The county of Wiltshire is full of interest to archæologists. At Mere you will find what is called Castle Hill. During some excavations the foundations of a large castle were found there, no account of which has ever been published. In the outskirts of Mere there is, or was, a building used as a barn which contained a very handsome carved stone chimneypiece. The oak rood screen in Mere Church is very fine. The old hostelries contain some interesting relics.

I have no doubt some of your contributors could afford your readers some interesting architectural and legendary news of Mere and other old "stage-coach" towns that are now almost deserted.

Apologising for trespassing on your valuable time,—I am, &c., Geo. T. Howell.

TOMBSTONES.

Sir,—Can anything be done, through the architectural or art journals, to improve taste in the designing of tombstones? Our cemeteries, though often laid out with some attention to beauty in the arrangement of walks, flower-beds, and shrub plantations, are rendered unsightly by the multiplication of objects of the monumental mason's want of taste. Of course, the public have the remedy—viz., to apply to a good architect for a design to be carried out by a mason. But few do so, and most think themselves competent to choose from the various specimens in the monumental mason's yard, as they choose a funeral card, or mourning at the milliner's.

One or two Celtic crosses I have seen, at rare intervals, which were just delightful to look at. I am sure there are many who would be pleased to see a journal like the Building News taking this matter up.—I am, &c. E. E. Minton.

Spring Bank, Bury, Aug. 13.

THE LATE EDWARD CLARK.

Sir,—We beg to say that the late Mr. Edward Clark was neither the author of the designs for the cemetery chapel and lodge at Ripon, nor the Ilford Local Board Offices, as you stated in a recent issue of the Building News when referring to the sudden death of our Mr. Clark's father, the late Mr. Edward Clark.

We were the authors of both of these successful designs in open competition, and no doubt the error arose through our having had the same address formerly; but we have recently moved to 28, John-street, Bedford-row, and are now also carrying on our Mr. Clark's late father's practice at 47, Strand.

We may mention that the late Mr. Edward Clark was for more than thirty years Quantity Surveyor to the Trinity House, and took out the quantities for all the lighthouses and other buildings erected by the Trinity House during that period, the more important works being Eddystone, Bull Point, Heligoland, Caldy, Portland, Anvill Point, Bardsey, Lowestoft, Spurn Head, Withernsea, and Gibraltar lighthouses.

He carried out the rebuilding of, and alterations to, many of the theatres and music-halls in London, among others being the Foresters, the Royal, the South London Palace, the Olympic, the Sun, the Raglan, Covent Garden Theatre, Britannia Theatre, the Alhambra, the Cambridge, the Trocadero, the Metropolitan, the Standard, and the Bedford. He also rebuilt the Teatro Principal, Lima, South America; Woolwich Theatre, and the Hall by the Sea, Margate. He was hon. architect to St. John's Hospital for Diseases of the Skin, Leicester-square, and to the Royal Society for the Prevention of Cruelty to Animals. He designed the Surrey Masonic Hall at Camberwell, and reconstructed the New Club, Covent-garden, and also many hotels and other works in London and the provinces.—We are, &c.,

Clark and Hutchinson.

47, Strand, W.C., Aug. 9.

VENTILATION OF SEWERS.

Sir,—May I be permitted to explain the apparent discrepancy in my report on sewer ventilation, to which "Sanitary Surveyor" calls attention in your issue of August 10? Your correspondent states rightly that I condemn the creation of draughts throughout the length of the sewers by means of inlets and outlets at different elevations, and yet I advise my sanitary authority to apply to the Local Government Board for powers to frame a by-law enabling them to erect small shafts at every house. A reference, however, to my report will show that my intention is that the sanitary authority shall then be in a position to erect these "safety-valve" shafts in such positions as they may deem advisable—for instance, at the head of each branch sewer, with perhaps an occasional one in the length of any unusually long run of sewer; but it is far from my wish that every house should actually possess one of these shafts. I quite agree that, where possible, all such shafts should be attached to trees and to public buildings, rather than to dwelling-houses; but unless the sanitary authority have the power to erect a shaft at any and every house within their jurisdiction, they must at times be unable to choose the best points at which to relieve pressure.

In reply to Mr. Ford, I would say that, in my opinion, the investigations of Mr. Parry Laws prove nothing. Had he examined, say, 1,000 samples of sewer air as it emanates from a shaft or surface grating in a neighbourhood where typhoid fever or diphtheria is prevalent, I would have been more than content if he had met with the germs of these diseases in half a dozen of the specimens; but to say that because no pathogenic organisms were found in some two or three samples of sewer-air, taken at a time probably when no zymotic disease was prevalent in that immediate neighbourhood, therefore, these germs do not ever exist in sewer-air, and to set such evidence against the overwhelming experience of the medical profession as to the connection between sewer emanations and outbreaks of diphtheria or of typhoid fever, is, to my mind, not merely unscientific, but absurd, and I fear it will help us but little towards the solution of this most serious problem to theorise about "alkaloidal substances present in minute quantities" in sewer-air, the very existence of which has not yet been demonstrated. The facts of the case are so plain that theories such as these can only tend to obscure the main issue. We have to deal with certain diseases, notably typoid fever and diphtheria, which we know are each due to a specific organism, and we may take it that these organisms do not originate *de novo*, nor can they be "developed" out of the ordinary putrefaction or other bacteria. We know that these organisms are found in large numbers in the discharges from the patients, and we also know that such discharges are frequently poured into the drains and sewers without previous disinfection. We know, again, that these organisms can live and thrive in sewage for several months, and we have the experience of many outbreaks of disease to prove that emanations from sewers will at such times communicate the disease. The only link, therefore, that can be said to be weak is the actual demonstration of these organisms in the sewer-air, and I contend that this deficiency is the result of an insufficient number of investigations, and partly also because inopportune times have been chosen for the collection of the samples, for I should be sorry indeed to suppose that the presence of pathogenic organisms in sewer-air is at all a frequent occurrence in healthy districts. Perhaps Mr. Ford is unaware of the fact that Dr. Fisher, of New York, has recently demonstrated the presence of diphtheria organisms in sewer-air in that city during an outbreak of that disease, and we therefore have this positive evidence to put against the negative evidence of Mr. Parry Laws. Moreover, once this point is conclusively proved and accepted, there will, I imagine, be very little difference of opinion as to the inadvisability of admitting sewer emanations into our already much defiled atmosphere.

Further, Mr. Ford considers that because it is found that sewer-air contains an excess of "carbonic acid" (CO_2), therefore it is essential to purify this sewer-air—for what purposes I know not—by forcing pure air at various points into the sewer and receiving in exchange fouled air at the outputs. Let us be content to leave the sewer-air in the sewers, where it will harm no one, save, perhaps, the rats; but lest the sudden accession of storm water may force a weak trap, we will provide, at distant intervals, safety-valve shafts of small calibre, which will suffice at once to relieve any pressure that may tend to form on such occasions. Where the dual system is in force, and the storm water does not gain access to the sewers, I consider that no ventilation whatever of the sewer is either necessary or advisable, and the past experience of Bristol, where the sewers, although tide-locked for several hours daily, are yet absolutely unventilated, proves, I think, that my contention is sound.—I am, &c.,

Francis W. Clark, M.B., D.P.H., M.O.H.

Lowestoft, Aug. 13.

Sir,—Referring to Mr. Ford's letter in the Building News of 10th inst., would it not be an advantage to have in all sewers, instead of the disinfectants introduced at some cost by sanitary authorities, "more of that highly poisonous chemical substance, possibly of an alkaloidal nature," so vaguely hinted at in Mr. Ford's quotation? It would be just the thing to prevent the multiplication of pathogenic organisms, instead of introducing these organisms into fresh air, as our good sanitary Samaritans appear to do for the purpose of enabling them to multiply *ad libitum*.

Much of the erroneous practice of medical officers and surveyors is due to their limited aquaintance with the biology of the subject.

If we go back to the period before 1875, the date of the Public Health Act, we find, on comparing it with the present time, a considerable diminution now of deaths from enteric fever, which has been claimed by sanitary engineers as due to the works they have devised for the removal of sewage, forgetting how much is due to better medical treatment, better nursing, and more cleanliness in the habits and houses of the people. When these are taken into account, I am afraid there will not be much left for the sanitary engineer to boast of.

At the annual meeting of the British Medical Association held at Bournemouth a year or two ago, Dr. J. Lauder Brunton, in his address, stated "that some diseases have been more frequent, and others rarer. Thus typhoid is almost certaily more common, because the increase of our sewage system has given greater facilities for its spread."

Sir Charles Cameron, a few days ago in his address to the British Medical Association at Bristol, states: "The general improvement in the sanitary condition of all our great towns has reduced the zymotic death-rate to nearly one-half of what it was at no distant date. But in some towns typhoid fever has not declined, and in a few it has increased." Further on he says: "I have no doubt that localised epidemics of this disease are frequently caused by infected water and milk, but I believe that the greater number of cases arises from the *Materies morbi* of the disease being absorbed from the air." He also refers to Bristol, in which typhoid cases are comparatively few, as the only large town in which the sewers remain unventilated.

If we take Leicester, an exceptionally clean town with well-ventilated sewers, we have Dr. Priestly, the able officer of health, stating in his report of last May that "the number of typhoid cases at Leicester notified during 1893 is almost double what it has ever been before since the Local Notification Act came into force. The deaths, too, are more than in any previous year during the same period—viz., 1879 to 1893, although there had been a gradual decrease since 1853, which went on *pari passu* with improved sanitation. Careful investigation has failed to connect any of the cases with a polluted milk-supply, and in only a very few instances has contaminated well-water been used at infected houses. The town water supply was proved by analysis up to its usual quality."

Unfortunately, I can add something from my own recent experience, in the case of a young lady relative who was with me about three weeks ago in High Holborn, London. In crossing the street we passed over a foul-smelling sewer grating. My relative had that morning heard some news that depressed her very much, though it afterwards proved unfounded. She is now lying ill in the country with typhoid fever.

Eight years ago the smell from a foul sewer grating in the Strand, perceived after coming out of a theatre in which an affecting piece had been played, caused the death of my daughter from typhoid. Every effort was made, with the assistance of the sanitary inspector, to see if any other cause could be assigned for her catching the fever, but none could be found other than road sewer ventilators.

The subject is much too long and technical to exhaust in a correspondence of this kind. I can only add that my experience leads me to the conclusion that to send the evaporation from nearly 100 million gallons of sewage daily into the atmosphere of London, and similarly in other towns, is criminal, and should be prohibited by Act of Parliament.—I am, &c., J. T. Hurst.

ASSISTANT SURVEYORS, WAR OFFICE.

Sir, — Owing to unavoidable circumstances I was unable to reply to "Balbus" last week, but certain statements of his require correction; and, as the issues raised by the subject are of greater importance to architects than at first sight would appear, I trust that you will insert my letter in this, the leading journal of our profession. I will, however, refrain from tormenting your readers with any grievances of public servants, which are but the outcome of one of the most singular systems ever invented by the ingenuity of man.

How does he make out that "an ornamental head to the department is a necessity"? Have the English or Irish Offices of Works ornamental heads? When the Royal Engineers attempted to enter the former in 1870, the First Commissioner of Works replied "that the only persons who are properly qualified for the performance of the duties connected with the Office of Works (also applicable to the Army Works Department) are those who have been regularly educated in the business of architects and surveyors, and that the profession of an engineer is entirely different from that of an architect." Further, "in the case of officers of Engineers, if they performed their duty in an unsatisfactory manner they would retain their military position intact, and it would be quite impossible to make any arrangements consistently with economy to relieve them of their employment under this office." The Irish Office of Works also checked a similar effort at intrusion. The R. E.'s controlled the Admiralty Works Department since 1834, but "because it was found their presence was not only useless, but a hindrance, disadvantageous to public service and to themselves, they were withdrawn in 1849." There is not only one ornamental head in an R.E. sub-district, but half a dozen, for the commanding Royal Engineer and his division officers are excrescences, who paralyse the work with correspondence, and with their extraordinary notions of technical affairs, and who, when their labourers resent interference, quash all matters with a decisive military despotism.

The allusion of "Balbus" to Tom Pinches in the civil world is not happy. Architects and civil engineers, after serving a pupilage of from three to five years, become assistants to large practitioners for lengthy periods before presuming to commence practice on their own account; but their employer has held the same position before them, and is quite capable of performing all the duties of his helpers. This is not so with Royal Engineers. They are *not* qualified architects and civil engineers, but an indolent public give them the benefit of the doubt for buildings which they do not, and are not possibly able to, satisfactorily design. Hence the *necessity for Registration*, for then such credit would not be misplaced, and architects would receive their due. R.E. officers, when they come face to face with architectural work, evade the difficulty by getting *civilians* to do it for them, at the same time appropriating the honour to themselves. Were the Architects' Registration Bill to become law, pretence of such qualifications would be illegal, and prohibited. The truth is, the whole establishment has been arranged for the express exaltation of the Royal Engineers, while architects and others concealed therein go to the wall.

So much for the civil side. What about the military view? Why should Royal Engineers be in the Army Works Department at all? And what good does it do them, beyond the fine salaries they draw, varying from £200 to £1,200 per annum? The so-styled "Royal Engineer Establishment" was originally civil under the Board of Ordnance, into which military engineers obtained entrance after the battle of Waterloo, on the supposition that such employment in times of peace would increase their efficiency for war. The technical work of the department, however, from that time down to this, has been executed by civilians, under such titles as surveyors, draughtsman, clerks and foremen of works, though since 1862 military clerks and foremen of works have been introduced, whose rank is only departmental. Meanwhile the regiment is fully officered, so that the Royal Engineers occupied on barrack construction are in reality *superfluous officers*. There are 938 R.E. officers to 6,638 N.C. officers and men, or, in other words, one officer to every seven men! What a contrast to Germany, with its one engineer officer to every 23 men! In no other country are military engineers permitted to rest in practically civil offices outside their proper sphere of duties; and, not only Germany, but France, Austria-Hungary, and other States have purged their barrack departments of the obstruction, and created distinct establishments for the designing and erection of army buildings, leaving fortifications to engineers only. Lord Wolseley, before the Commission on Civil Establishments in 1887, expressed his disapproval of the present system, and many other eminent men of war hold the same opinion. As for the reiterated statement that soldiers are better qualified for planning military edifices than civilians, this idea is quite upset by the undeniable assertion that there is not a barrack in the kingdom that has not been actually designed by a civilian, the necessary explanation being afforded by the simple fact that Royal Engineers are not qualified architects. And Mr. Freeman-Mitford, M.P., during the discussion on the Army Estimates in Parliament on 6th July last, said that "when they called on a Royal Engineer to become an architect, they asked him to do something which was outside his own profession," and that "the Engineers should be left to the performance of their proper military functions," while even Mr. Campbell-Bannerman, M.P., declared that "he was accustomed occasionally to have his little kick at the Royal Engineers."

The same cry comes from India, where a committee is at present sitting for the reorganisation of the Military Works Department in that country, which an Indian technical paper characterises as a "most useless and expensive department, mainly organised to shelter Royal Engineers." And the *Broad Arrow* of the 11th inst. states:—"In regard to the excessive expenditure occasioned in the Indian Military Works Department, the Lieutenant-Governor of Bengal has recommended a return to the old system of intrusting the execution of all military works to the civil department. If his recommendation is followed, the Government of India will be in a position to dispense with the services of a large number of Royal Engineer officers." If this applies to India, with its pioneering work, why not at home, where the same evils, manifold multiplied, exist? Then, and not till then, will our profession cease to be degraded, and a Government body of architectural servants receive justice. Such change would benefit the State, and prevent justifiable growls to your estimable journal.

Finally, I venture to advise "Balbus" to continue "building the wall" of his early Latin grammar days; but let it be with modern materials, and on a foundation of firmer arguments.—I am, &c., One Who Is In It.

Intercommunication.

QUESTIONS.

[11197.]—**Water in Cellar.**—Would one of your readers inform me the best way to keep the water out of my cellar, which is situated as follows? Excavated in sand to the gravel, which is about level with the river six hundred yards distant; the walls of house are of cement concrete, gauged 3 and 1, to about 3ft. above floor-line, and the cellar floors are of similar cement concrete, finished smooth in nearly neat cement. After heavy rains, the water in the river rises, and in a very short time I find from two to six inches of water in my cellar. If any kind reader will inform me of any way of preventing this, I should esteem it a favour.—E. Miles.

[11198.]—**Nene Valley Churches.**—Will some reader kindly give a list of the Nene Valley Churches, &c., to study Early English work, and how to visit same for holidays, for R.I.B.A. exam.? Ought student to know all the Greek temples, whether in existence or passed away? Any other information would greatly oblige.—Student.

[11199.]—**Reservoirs and Dams.**—Has warm or hot water any effect upon the embankments or puddling beyond cold water? If so, what are the best precautions to be taken to prevent leakage or deterioration of work?—Doubtful.

[11200.]—**Hollow Walls.**—I have always been given to understand that hollow walls are preferable to solid ones, both as regards warmth and sound; but I have built some houses, the division walls of which are built with a 1in. cavity, without bond, and a 4½in. brick on each side of same, instead of being solid in the usual way, and the proprietor complains of the transmission of sound from one house to another. The following excerpt has been taken from the Building News of November 5th, 1880, p. 522:—"As sound passes most quickly through homogeneous substances, a hollow space or wall with a cavity in it is much more sound-proof than one of solid material of the same density." I should be glad of expressions of opinions on this matter.—Perplexed.

REPLIES.

[11191.]—**Architectural Tourist.**—Hampshire contains many places of archæological resort besides Winchester, which is replete with architectural interest. The cathedral, of every style from Norman to Perpendicular, the college and castle, and numerous churches will afford "Tourist" a few days' work. St. Cross, East Meon, Porchester Castle, Soberton, Droxford, Basingstoke, Romsey, Netley, Christchurch, Beaulieu, are other places where important ecclesiastical buildings and ruins are to be found. Winchester, Bishopstoke, and Southampton are good centres for working from. The Isle of Wight is not a very attractive field for the architect or ecclesiologist, and with the exception of Carisbrook, Newport, and Yarmouth, few remains are to be seen.—G. H. G.

[11193.]—**Chancel Screens.**—One recently-built church (All Saints', Dulwich) has a very handsome stone screen which fills up the chancel arch. The head is traceried of a Geometrical type, and the architect is Mr. G. H. Fellowes-Prynne, who has also erected a similar screen in his new church of St. Peter's, Staines. This form of constructional rood-screen has undoubted beauty, and lends a charm to the sanctuary and choir. These two instances are unique.—G. H. G.

[11193.]—**Chancel Screens.**—At Staines, a score of miles from London, "Inquirer" may see Mr. Geo. H. Fellowes-Prynne's latest new church, dedicated so recently as last month. In this particularly handsome building, the chancel screen is carried right up to the full height of the chancel arch. Four lofty and slight columns rise from a dwarf screen, and the ornamental parts are kept above the springing of the arch itself. Thus the screen in no wise blocks the triplet of chancel windows at the east end; all is in stone.—Harry Hems.

[11194.]—**Testing Drains.**—"House," in his question, does not state whether the local sanitary authority has served any demand or notice upon him, and, if so, under what Act and what section? The Public Health (London) Act, 1891, imposes a duty on "every sanitary authority to cause to be made from time to time inspection of their district, with a view to ascertain what nuisances exist calling for abatement under the powers of this Act, and to enforce the provisions of this Act for the purpose of abating the same." Section 2 defines under nuisances (general): "Any . . . drain in such a state as to be a nuisance, or injurious or dangerous to health." Under section 10: "The sanitary authority shall have a right to enter from time to time any premises for the purpose of examining as to the existence thereon of any nuisance." The local sanitary authorities are given power under section 16 to make by-laws for certain specific purposes; but there is no mention of drain under this section. It will, therefore, be seen that under the above Public Health Act (as well as under the Local Management Act, 18 and 19 Vic. cap. 120), the sanitary authorities have power to inspect drains. Whether, however, "inspection" would entitle the authority to test a drain by, for instance, what is known as the "water test" is a very debatable point. It might fairly be contended that if a drain fulfils its ordinary requirements or function by the efficient transmission to the public sewer of such matter and liquid as are ordinarily discharged into it, it is all that any sanitary authority could demand, and that if no nuisance arises therefrom, the requirements that every drain shall be perfectly watertight when completely filled throughout its whole length (a condition which does not arise in the ordinary use of a drain) is one that cannot be enforced, and is not contemplated by, and certainly not expressed in, the Act above quoted. Although certain sanitary authorities may have made by-laws of their own, requiring such, it is questionable whether such by-laws are not *ultra vires*. The fact which "House" states, that "there appears to be a difference of practice in London (I assume he means among the different sanitary authorities) goes to show that many of the assumed powers are, to say the least, very questionable. Owners frequently carry out the request of local sanitary authorities rather than have any altercation or conflict with such a body, but this does not legalise their demand. Should "House" contest the power of the local authority, I should be pleased to hear of his success.—W. Herbert Daw.

[11196.]—**Joints for Stoneware Pipes.**—Stanford's jointed pipes have a good reputation, and are largely used. Other inventors have introduced improved joints for stoneware pipes, and I may mention particularly Doulton's self-adjusting joints, which require no cement or skilled labour, and allow of any settlement. See also article on "Tests of Cement Sewer Joints" in last week's issue.—G. H. G.

CHIPS.

At Predmost, in the province of Moravia, Herr Mascha, a local *savant*, has within the past few days found, side by side with mammoth bones, the entire skeletons of a family of six human beings.

The town council of Ipswich at their last meeting decided to purchase fifty acres of the central portion of Christchurch Park for £16,000, to be maintained as an open space. The property, which adjoins the town, recently came into the market, and a year since the ratepayers refused to ratify a bargain made by the council to buy the entire property of 75 acres, with the Elizabethan mansion thereon, for £42,000, deeming the price too high. The outer fringe is being cut up and sold as building plots.

In the case of Samuel Tozer and Ernest Tozer, of Torquay, builders, the discharge from bankruptcy has been suspended for two years, ending July 12, 1896.

The new reredos at Manchester Cathedral, erected from designs by Mr. Basil Champneys, architects to the Dean and Chapter, has been unveiled. It is constructed of cedar, decorated in gold and colour; the subjects of the panels are scenes in the Saviour's life. Mr. George Frampton, A.R.A., carved out the sculpture, Mr. R. Bridgeman, of Lichfield, the woodwork, and Mr. T. R. Spence, of London, the decoration.

The west window of Coleshill Church, Warwickshire, has been filled with stained glass as a memorial; the work was executed by Mr. T. W. Camm, of Smethwick.

The Hanwell Park Estate is now rapidly developing, several quaint little houses, costing from £1,200 to £1,400 per pair, have been built, and others are being started. The architects are Messrs. T. W. F. Newton and Cheadle, 121, Colmore-row, Birmingham, and the roads have been made by Messrs. Killingback and Co., of Camden Town. Mr. David Edwards, builder, of Barnt Green, has carried out the first set of houses.

A new gallery has been opened at the Palace of Versailles, in which are grouped all the latest acquisitions, including a silver statue, by Bosio, of Henry IV. as a child; the bronze bust of Louis XII., dated 1505, and two pictures by Carrey; a sketch by David of the Empress Josephine, his study of Marat after death, a portrait of Napoleon I., by Gerardi; and a sketch by Carpeaux, depicting Napoleon III. in his coffin.

The well-known half-timber 16th-century mansion at West Bromwich, known as the Oak House, which was in the market for sale, has been purchased by the present mayor of that borough, who has presented it as a free gift to the town. It will probably be utilised as a museum and picture gallery. We illustrated the house from Mr. W. Talbot Brown's measured sketches, perspective and details, in our issue of October 12, 1877.

The new esplanade at West Cowes, I.W., is now completed. It extends from the town westward, in the direction of Gurnard, for a distance of over 400yds., and consists of a roadway 24ft. wide, with broad pavements on either side. The retaining wall is of cement concrete, faced with concrete blocks, with piers at intervals. The work has been carried out jointly by the West Cowes Local Board and the Ward Estate, at a cost of over £2,300, from the plans of Mr. N. F. Dennis, A.M.I.C.E., engineer to the board.

A half-length portrait of Mr. H. H. Fowler is being painted from special sittings by Mr. A. S. Cope, for the Incorporated Law Society, in the hall of which it is intended to be hung in commemoration of the fact that the Secretary for India is the first solicitor to attain so distinguished a position. It represents the right hon. gentleman seated at the table in his private room at the India Office.

The town council of Inverness have under consideration a report prepared by Mr. James Fraser, C.E., on the works necessary to augment the water supply. He recommends that the pipes from Loch Ashie to the town be doubled, and that a new supply be laid on from Loch Duntelchaig, the total estimated cost being £31,000.

Legal.

SKY-SIGNS AGAIN.

THE activity of the London County Council in its crusade against sky-signs is, doubtless, well intended. But its advisers seem inclined to go beyond the mere statutory law in their desire to put down what they consider obtrusive names erected over shop-fronts. The most recent case is that of Harrod's Stores, Limited, and the company was summoned for unlawfully retaining a sky-sign over one of their shops which had been put up without a license, and had not been removed according to notice. The thing complained of consisted of a scroll name-board, 6ft. high in the middle and 4ft. at either end, extending for 21ft. over the parapet of a shop, which was built out in a forecourt 30ft. in advance of the main building. It was contended on behalf of the London County Council that as this erection was more than 3ft. in height above the parapet of the shop, it must be a board requiring to be licensed by the Council. The defence was that the structure did not amount to a sky-sign at all, and did not come within the Councils' General Powers Act of 1893, and so could not be interfered with.

Mr. Sheil, the magistrate, held that the whole case turned upon the definition of a sky-sign given in Section 17 of the Act, and which contained the words "visible against the sky." This was the governing phrase in that definition. He had himself seen the scroll name-board, and as a matter of fact it was not "visible against the sky." In his opinion to call it a "sky-sign" was simply absurd. Indeed, its position was such that as it covered the front of a sky-light upon the roof of the shop, its removal would not even be an æsthetic advantage. So he dismissed the summons, with five guineas costs, to be paid by the London County Council, and in reply to their counsel's request that he would state a case, answered that he should be happy to do so if he could, in order that the matter might be argued; but that he should have to find as a fact, and so state it, that the scroll-board was not "visible against the sky." He was afraid that ended the whole matter. The prosecution still said that the magistrate's decision would be reviewed, although we do not see how it is to be done. In the mean time it looks as if the money of the ratepayers had been wasted in another needless and fussy interference with the liberty of shopkeepers in putting up names over their own shop-fronts.

FRED. WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

J. J.—This is a matter for arrangement with the adjoining owners. I don't think there is any legal liability, as they can build to any height they like if neither air nor light, to which you have a prescriptive right, is interfered with.

J.—SURVEYOR'S CHARGES.—You should summon him for the scale charge as sent in, and which seems to be reasonable. Under the circumstances, I think they would be allowed by the judge, especially upon the agent's admission as to the charge per day, if reckoned in that manner.

WALL.—OWNERSHIP.—If B. decides to restore the wall to its original condition, I do not think A. can receive any damages, because he has suffered none, nor can he recover the legal costs he has been put to. I should say the wall belongs to A., and that it is not a party-wall.

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The foundation-stone of a new chapel, now being added to the Wolverhampton Orphan Asylum, was laid on Friday, with Masonic ceremony, by Earl Dartmouth. The chapel will seat 400 children.

Sir John Forrest, one of the foremost statesmen in the Government of Western Australia, in a recent address to his Bunbury constituents, observed that the Ministry now in power had constructed 400 miles of Government railways, raising the total mileage to 1,200, and the cost of constructing the recent lines has been under £3,000 per mile.

Mr. Justice Kekewich recently decided that the consent of the Charity Commissioners was not necessary for the sale of a piece of land at St. John's Wood, by the Clergy Orphan Corporation, to the Manchester, Sheffield, and Lincolnshire Railway Company. The ground of the judgment was that any charitable society wholly maintained by voluntary contributions was excluded from the operation of the Charitable Trusts Act. The Commissioners appealed, and on Friday the Court of Appeal confirmed the decision of the Court below.

LEGAL INTELLIGENCE.

LOCAL BOARD'S DISCRETION AS TO FRONTAGE LINES.—THOROLD V. THE NORTH ORMESBY LOCAL BOARD.—In this action, in which judgment was given on Friday in the Queen's Bench Division by Mr. Justice Mathew and Mr. Justice Kennedy, an interesting point was raised with reference to the principle upon which Section 3 of the Public Health Act, 1888, as to the power of local boards as to the erection of buildings beyond the front main wall of houses on each side, is to be construed. In the Public Health Act, 1888 (51 and 52 Vict., c. 52), section 3, it is provided that it shall not be lawful in any urban district without the written consent of the urban authority to erect or bring forward any house or building in any street or any part of it beyond the front main wall of the house or building on either side thereof in the same street. The Local Board District of Ormesby has a population of about 9,000, and comprises in its area two places—the village of Ormesby, which is mainly rural, having a population of about 150, and the modern town of North Ormesby, with a population of over 8,000. Part of the main road leading from Middlesbrough and North Ormesby to the village of Ormesby is named Westbourne-grove, and forms one of the streets of North Ormesby. In November, 1893, Thorold built a dwelling-house on the west side of Westbourne-grove, setting back the house 26ft. from Westbourne-grove, and afterwards submitted to the local board plans of four small cottages intended to be erected by him in the same grove, from which they were set back 10ft. only. The distance between Thorold's residence and the cottages to be erected is about 90ft. The local board were of opinion that the "building line" in that part of Westbourne-grove was fixed by Thorold's house, the front wall of which was 26ft. from Westbourne-grove, and then they rejected the plans as being in contravention of the Act of 1888. This was an application on behalf of Thorold for a *mandamus* to the board to approve the plans. After a long argument, the Court came to the conclusion that the board were not justified under the enactment in refusing their approval of the plans. Mr. Justice Mathew, in giving judgment, said: When it is proposed virtually to take away a man's land we are bound to look carefully into the circumstances. Where there is no continuous line of building of any kind the enactment can hardly apply. Where land is laid out for building purposes it may be different. But we have to deal with the case as it stands. It appears to me that there is no evidence of the existence on the site of the original building of any line of frontage. Mr. Justice Kennedy concurred. Rule absolute for a *mandamus* to the board to approve the plans.

CLAIM FOR ARCHITECT'S FEES. — WILLIAMS V. RAE.—In this action tried at Liverpool Assizes on Friday by Mr. Justice Bruce and a jury, Lewis Osborne Williams, architect, of Liverpool, sued W. Wilson Rae, estate agent, of Lord-street, Liverpool, for £130 for work done in preparing plans for two semi-detached villas at Liscard. Plaintiff said he was commissioned by the defendant to prepare plans for two houses in Seabank-road and Manor-road, Liscard, the total cost to be £1,200. Plaintiff acted in the negotiations for the purchase of the land at 4s. 6d. a yard, and drew plans. Defendant wanted various alterations effected, and they were made by the plaintiff. The lowest tender was £2,100, and upon this sum plaintiff claimed 2½ per cent. for preparing the plans and ¼ per cent. for procuring the tenders, also £53 for services rendered by a quantity surveyor. The defendant asserted that his limit was £1,200, and he was never apprised that the alterations in the plans would mean greater cost. Defendant added that the plans were no use to him, as he could not build up to them, and he denied the statement that he had been making use of the plans. The plaintiff said it was ridiculous to think he was to go on rendering extra services and receive no extra remuneration. Defendant's counsel suggested that, assuming the defendant ought to pay anything, £25 was sufficient. The jury failed to agree, and were discharged.

IN RE PETER SMITH.—Peter Smith, builder and contractor, of Hope-road, Sale, a bankrupt, was examined by the Official Receiver in the Manchester Bankruptcy Court on Monday. He had been in business as a contractor, he said, since 1874. Until now he had never been insolvent nor had to make any arrangements with his creditors. The statement of affairs showed £1,263 unsecured liabilities and assets which should realise £717. At least £700 of those assets were represented by equities. If the equities were worth nothing his deficiency would be nearly £1,300. The cause of his difficulties was inability to realise on houses that he had built. Those houses were not "jerry" built. He bought a house in Higher Broughton for £40 and raised £1,000 on it on mortgage. The debtor explained that the property belonged to a trust; he spent £120 on the house and let it on a lease for seven years at £95 a year. The examination was adjourned.

PARTY WALLS AT DENMARK HILL.—The case of Sloman *v.* Mulholland, on Wednesday, came before Mr. Justice Romer in the Vacation Court, it being a motion to restrain the defendant from trespassing on the plaintiff's ground by the erection of a wall, which the defendant had been running up by the side of the plaintiff's premises until the threat of the action. Counsel for the plaintiff said that his client was the owner of certain premises at Denmark Hill, under a long lease. The wall in question was a wall to support a theatre which is being built by the side of the plaintiff's premises. The property had all been laid out in building plots, and the plaintiff took his premises on the understanding that the adjoining land would be laid out in the same way. His (the learned counsel's) contention was that the defendant, with full notice of the plaintiff's rights, and after taking certain preliminary steps to answer those rights, had trespassed upon them by erecting a wall partly on his own land and partly on the plaintiff's. The defendant said that it was absolutely essential that his theatre should be supported by the wall, and he had served the plaintiff with a party-wall notice under the Metropolitan Buildings Act. Mr. Justice Romer: Does he admit that it is on your land? Plaintiff's counsel replied that he thought the defendant did. What he (defendant) said was that he had proceeded under the Metropolitan Buildings Act. Mr. Justice Romer: Was there a wall there before? The learned counsel replied in the affirmative. Mr. Justice Romer: I think there is a very nice question to be tried, and I won't do it. The learned counsel said that there were two questions to be tried, and one was as to blocking out the plaintiff's lights. That was a very nice question to be tried. Mr. Justice Romer: Well, they can be tried together. I won't do it. Do you think I am going to try that now on motion? The learned counsel stated that the trespass was not disputed. Mr. Justice Romer: I am not so sure of that. I am not going to decide whether the defendant is entitled to do what he has done under the Metropolitan Buildings Act on a motion. The learned counsel replied that all he wanted was that the matter should stand *in statu quo* till the trial. After some further discussion it was arranged that the motion should stand till the trial.

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On Thursday afternoon in last week the Marquis of Salisbury, as Chancellor of Oxford University, unveiled a statue of Thomas Sydenham, which has been placed in the University Museum by the Warden and Fellows of All Souls, which was Sydenham's college. The statue is in Caen stone, the artist being Mr. Hope Pinker, and the design is partly moulded from a portrait of Sydenham by Mrs. Mary Beale in the Royal College of Physicians, and partly from the portrait by Sir Peter Lely at Oxford.

The Marquis of Dufferin and Ava, Lord Warden of the Cinque Ports, has headed a movement which has for its object the preservation of the historic buildings of the ancient Cinque Port of Rye. These include the Ypres Castle, built by William de Ypres, Earl of Kent, upwards of 700 years ago, and purchased by the corporation in 1495; and the Land Gate, erected in 1360. To enable the committee to carry out their project £700 is required.

About six thousand joiners struck work in Pesth on Monday because their demand for an increase in wages was refused by their employers. Those men whose masters have agreed to raise the wages in accordance with the demands of the workmen remain at work. They have promised to contribute 10 per cent. of their weekly earnings to the strike fund; but this will in all probability not long be necessary, as the employers are one by one giving in to the men's requirements.

At a special meeting of the proprietors of the Theatre Royal, Newcastle-on-Tyne, the plans of alterations to the theatre prepared by Mr. Walter Emden, M.S.A., of London, and Mr. W. L. Newcombe, of Newcastle, were explained by those architects, and were generally approved. The alterations will be commenced next May, and will take five months to complete. They comprise the demolition of the interior of the theatre, and its entire rebuilding on the lines of the best London theatres. Only the four walls of the building will remain untouched.

The monthly return of the Board of Trade states that, on the whole, the building trades remain almost stationary, though in certain districts there is a good demand for men. The plumbing and painting branches show a decline. The percentage of unemployed members in unions making returns is 3·6, compared with 3·5 at the end of June. The furnishing and woodworking trades are still quiet; the percentage of unemployed in unions making returns remaining at 4·4. Trade disputes again show a considerable decrease upon the figures of the preceding month, 66 having been observed as compared with 85 in June and 55 in July, 1893. The number of persons involved in the disputes also is not large, no dispute of great importance having occurred to swell the total. Of the new disputes 16 took place in the building trades.

WATER SUPPLY AND SANITARY MATTERS.

Heywood.—The first sod was cut on Monday at the site for the new sewage purification works at Botany, for the borough of Heywood. Messrs. Townsend, Watson, and Yates, are the contractors for the work, which will cost £26,000. The land has cost another £3,200. It covers nearly sixty acres. In addition to putting sewage works upon it, the town council are about to erect on one portion an infectious diseases hospital, the contract for which has already been let to Mr. D. Diggle, a local builder and contractor. The system of treatment of the sewage will be by precipitation by chemicals in tanks, after which the effluent will be treated in sand and polarite filters. There will be six tanks 90ft. by 30ft., and a similar number of filters of 60ft. by 30ft. A water-wheel, 10ft. high, will give the motive power for the chemical machinery.

Melton Mowbray Sewerage.—A Local Government inquiry was held on Wednesday at the Town Hall, Melton Mowbray, before Colonel J. Ord Hasted, R.E., of the Local Government Board, for permission to borrow £4,050 for improvements at the sewage works. Mr. Edmund Jeeves, the surveyor to the local board, explained the scheme, stating that after investigating numerous systems of sewage disposal, the board had decided to adopt the International system of ferozone and polarite, as being the most economical and efficient process. The sewage is at present treated by the lime process, which has given rise to serious complaints of pollution and the destruction of fish life. The board have now determined to abandon the old system of tanks, and to construct others upon the continuous upward-flow self-cleansing principle, as embodied in the Candy tank, which has been also adopted by H.M. Government. In addition to the polarite filters, the works will be provided with three clarifiers to economise chemicals and save labour. There was no opposition, and it is intended to carry out the work forthwith.

CHIPS.

A receiving order has been made in the case of William Henry Waterman, of King's Arms-yard, Moorgate-street, E.C., architect.

Mr. Arthur Loader, architect, has been re-elected chairman of the sanitary committee of the Brighton town council.

At a meeting in Belfast on Friday, the Lord Mayor presiding, it was resolved to hold an Industrial Exhibition there in the early months of 1895. The Exhibition will be arranged in the quadrangle of Linenhall Buildings, which will shortly afterwards be removed.

On Saturday, while John Arnot, a mason, was engaged on a building in course of erection at Bruntsfield-place, Edinburgh, he was struck on the head by the jib of a crane, and was killed almost instantaneously.

A wing is about to be added to the Heatherdene Convalescent Home at Harrogate, from plans by Mr. J. Eltringham.

A cottage hospital is in course of erection at Porth, Glam. The builders were Messrs. Charles Jenkins and Son, of Porth, whose tender was accepted at £2,775.

Probate duty has been paid on £113,035 17s. 3d. as the value of the personal estate of Mr. Philip Debell Tuckett, of Child's Hill House, Hampstead, and of the firm of P. D. Tuckett and Co., Basinghall-street, auctioneer and surveyor, who died on the 24th July last, aged sixty years.

The partnership heretofore subsisting between C. B. Young and A. G. Spencer, architects and surveyors, Coleman-street, E.C., under the style of Young and Spencer, has been dissolved.

The dissolution is announced of the partnership heretofore subsisting between A. R. Stenning and W. J. Jennings, architects and surveyors, Canterbury, practising under the style of Stenning and Jennings.

The new buildings which have been erected for technical instruction by the Oxford corporation, at a cost of about £5,000, were opened on Tuesday by the mayor.

The new workhouse infirmary, Guisborough, which is being erected from the plans of Mr. Thomas Stokes, architect, Thirsk, is now nearing completion. It is being warmed and ventilated throughout by means of Shorland's patent Manchester stoves, patent exhaust roof ventilators, and improved inlet panels, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The work of laying the pipes for carrying the electric cables for the installation which is about to be effected by the corporation of Newport, Mon., was commenced on Monday on a section in Dock-street, Newport. Messrs. Fowler, of Leeds, are the contractors.

Our Office Table.

Four fresh pictures, representing as many schools, have been hung this week at the National Gallery. No. 1409 is a "Marriage of Saint Catherine" by Andreas Cordelle Agii, a Venetian painter who died in 1528, and was previously unrepresented in the collection; the picture, which is signed by the artist and dated 1504, measures 34in. wide by 25½in. high, and is hung on the third screen in No. VII. room. The colouring is very rich, and the treatment of the subject is simple, only four figures being introduced. The Virgin, who is attired in red and green, with a curious white head-dress panelled in black lines, is holding the Infant Christ, who is nude, save for a coral bracelet and a silver-mounted coral suspended on his neck by a string. He is placing the mystic ring on the finger of St. Catherine, who wears an embroiderd green bodice and scarlet dress, and is kneeling. On the other side of the Madonna stands St. Joseph, a bearded and comparatively youthful figure. Rays of light spring from the head of Jesus, while those of the other figures are encircled by nimbi. In the same room on the east wall is an "Adoration by the Shepherds," by Sebastiano Luciani, usually known as Sebastiano del Piombo, 1485-1547. It has been lent by Earl Northbrook, and is therefore not numbered; it measures 42in. by 38in. high, and contains the Madonna and Child, St. Joseph, and Three Shepherds. The French school, very slenderly represented till recently, has been further strengthened by a work entitled "Tasting" by Le Nain, a seventeenth century artist, of whose work this is the first example. It is numbered 1425, and is hung on the north wall of room XIV. It measures 12in. wide by 10½in. high, and shows in the centre an elderly woman dressed in black, but with white head-dress, seated, having beside her a stone jar of liquor. On the right a youth, gaily arrayed in a scarlet coat, green pantaloons, and bluish leggings, is sampling the wine from a long glass; while ranged in a row a young woman and three children, all with long, unkempt locks, rubicund faces, and coarse aprons, await their turn. The effect is Dutch, rather than French, in subject and treatment. On the south-west pier of the Dome is hung the fourth new work, a rendering of "Tobias, the Angel, and the Fish" (Tobit vi. 1-4), by Adam Elsheimer, 1578-1621. It is executed on copper, as was usual with this artist, and is only 9in. wide by 6½in. high, and is bright in colouring and harmonious in its combination of landscape and figures. The youth Tobias, clad in blue and red, is carrying by a string the immense fish which has leaped to him from the Tigris. Behind him, with hovering wings curiously protruding through his blue tunic, is a very substantial angel, who is evidently counselling the lad to extract the heart, gall, and liver from the fish as a perfect cure for the blindness of Tobias. The greater part of the picture is occupied by a wooded landscape, and beyond the trees and below a cloud-flecked blue sky are a lake, some mountains, and towers, intended to recall the city of Ecbatana. There is only one other work by Elsheimer in the national collection.

The reply by Mr. Poynter, R.A., the new Director of the National Gallery, to the complaints made last week by Sir J. D. Linton and Mr. Orrock, as to the condition of some of the British works of the close of the last century, is a recapitulation of the statement made in May, 1893, by Mr. Shaw Lefevre, on the authority of Sir Frederic Burton. That statement was to the effect that the English pictures in the gallery do not show increased deterioration; that the evil effects of the use of asphaltum by Sir Joshua Reynolds and other painters of that period could not be averted by additional moisture in the atmosphere; that the temperature of the rooms in winter is not allowed to exceed 56° or 58° Fahr.; and that in the rooms containing the panel pictures by old masters shallow water tanks are used, "with other precautions," though the late Dr. Percy pronounced the hygrometrical condition of the air to be normal. On the other hand, Mr. C. E. Johnson, the well-known landscape painter, asserts as the result of frequent examinations of these pictures painted with bitumen, that during the late directorship the deterioration went on, and is going on now in an increased ratio from some cause or other. He remarks that it "would have been more satisfactory if Mr. Poynter, instead of quoting the authority of his predecessor, had given promise of increased care and watchfulness over works which are the most supreme efforts of genius which our country has produced or the world has even seen."

The Library Committee of the City Corporation, in their Report on the recent Loan Art Collection at the Guildhall, state that during the three months the pictures were on view, in all, 300,366 persons passed the turnstiles, being an average of 3,580 per day. The exhibition was opened to the public on six alternate Sundays, when the total attendance was 17,530, showing an average of 2,921 per Sunday. On each occasion the greatest order prevailed, no single instance of damage or disturbance having occurred. Of the descriptive and historical catalogue prepared by Mr. A. G. Temple, F.S.A., the Art Director, 38,569 copies were sold at the price of sixpence each, realising the gross sum of £964—a sum which not only defrayed the entire cost of the catalogue, but left a balance at the committee's disposal which would enable them to dispense with the greater part of the amount of £450 granted by the Corporation to defray the expenses of the exhibition. The committee conclude by referring to "the excellent, experienced, and skilful manner in which Mr. Temple, the Director and Secretary of the Art Gallery, has discharged his duties, and the marvellous success which has attended his exertions by the organisation of the three art loan collections in Guildhall." The total net cost of the exhibition was £443 only.

An American report states that the *Sun*, of New York, proposes to erect a building 32 stories high on a frontage of 75ft., and a structure is being planned "to rise 2,640ft. (?)—a full half-mile above the ground, and thereby reach more than double the height of any structure ever designed." Surely this must be another Yankee tale. Of course, with the passenger elevator such heights are possible, if foundations and materials can be found to bear the weight.

The Arts and Crafts Exhibition, held during the week at Oxford, under the auspices of the Rural Industries Society, has been organised on behalf of the actual producers and designers without the intervention of any middle-man. Miss Sturge is to be congratulated on her success in training the children of Connemara to make baskets, in arranging for the supply of material, and organising a just method of sale. There was a large consignment of Irish goods, including bog-oak carvings, knitted and netted work, done mostly by widows and orphans, and homespun cloth made in the cabins of Donegal. Iffley and Hitchin both sent contributions of needlework and embroidery. Leeds and Macclesfield sent their contingent, and there was excellent work from Windermere. Corstorphine, in Midlothian sent a collection of salvers, sconces, and trays. There were specimens of wood-carving from the Art Wood-carving School at Kensington, from the Social Guild at Nottingham, and from the Ascot class, as well as Bonnyglen, Inver, Leatherhead, and Mayfield. A skilled potter from Castle Hedingham, Essex, who was working on the spot, excited great interest. Pillow lace, of which a very large assortment had been sent from Princes Risborough and Blackrock, Dublin, was also being made at the exhibition. The work from Leighton Buzzard included embossed and printed leather goods.

There is given in *Indian Engineering* an elevation of the new Law College, Madras, from the designs of Mr. Irwin, C.I.E., consulting architect to the Government of Madras, and the designer of the Vice-Regal Lodge at Simla. The architect for the Law College, owing to its proximity to the new Law Courts, has been obliged to make his work harmonise with the Courts. The elevation presents an imposing building, with lofty arched centre, flanked by towers containing staircases, and surmounted by circular cupolas in the Indian style. The wings are of two stories of arched apertures inclosed by piers, and are terminated at each end by a tower with cupola. The details and general architectural features are in accord with the style prevalent in this part of India rather Gothicised.

An interesting note on the structure of steel has been sent by M. F. Osmond to the Paris Academy of Sciences. He found that with a moderately hard steel, containing ·35 per cent. of manganese and ·45 per cent. of carbon, the structure varied gradually in samples heated to 825° C., and quenched in water at 15° C., after cooled to different temperatures between 720° and 640° C. With hard steel, containing as much as 1·24 per cent. of carbon, the variation is more rapid, and the temperature of maximum hardening was found to be close to that of no hardening at all. The structure, it is stated, in steels of moderate hardness, indicates the maximum heating, the temperature at hardening, and the rate of cooling. An interesting note, but not of much practical value to the smith and tool-maker.

Prizes varying in value from £120 to £40 are to be awarded by a special commission appointed by the Prefect of the Seine for methods of sterilising river water so as to render it potable, and that in sufficient quantity to supply a school, a barrack, or a town at a moderate cost per gallon. The particulars of the methods suggested should be sent to the Préfecture de la Seine, Paris, before Sept. 15.

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CHIPS.

On Wednesday night, in the House of Commons, the order for the second reading of the Plumbers' Registration Bill was read and discharged, the Bill being withdrawn owing to the pressure on the time of the House.

At the meeting of the Sheffield City Council on Wednesday week, a memorial against the use of granite sets came up for consideration, and was referred to the highway committee, with instructions to report as early as possible. A good deal was said in favour of granite sets, and several councillors hinted that the agitation against their use was very much overdone.

A cottage hospital is about to be built at Bridgend, from plans by Messrs. Lambert and Rees.

A new band-stand, presented to the Recreation Ground at Sevenoaks by a local resident, was handed over to the local board on Thursday in last week. It has been constructed by Messrs. McFarlane and Co.

A tower which is being added to Tyndale Chapel, White Ladies-road, Bristol, is rapidly approaching completion. Messrs. Henry Crisp and Oatley, Clare-street, Bristol are the architects, and Mr. E. Walters, of the same city, is the contractor. A new Caen stone pulpit has been erected in the chapel by Messrs. R. Wilkins and Son, of Surrey-street, Bristol.

The town council of Widnes decided, on Tuesday, to purchase the portion of Moss Brook estate lying to the north of the Cheshire Lines Railway for £5,000, and containing about 49 acres, for the purpose of a public cemetery. It is estimated that to prepare 15 acres for present requirements, build three chapels and a house, will cost £6,000, making the total cost of the cemetery £11,000.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Bath.—For paving with wood the east side of Queen-square, for the city council:—
Welch, J. T. (accepted) 9s. 7½d. per yard super.

Bilston, Staffs.—For the erection of two semi-detached houses, Dover-street, for Messrs. Greenfield and Colley. Mr. J. Mason, Victoria Chambers, Bilston-street, Wolverhampton, architect:—

Burton, C. E., Heath Town, Wolverhampton (accepted)...	£922	0	0

Bramley, Leeds.—For union infirmary extension. Mr. C. Fredk. Wilkinson, Park-square, Leeds, architect. Quantities by Mr. Thos. Priestley, Belle Vue-road, Leeds:—

Bricklayer and mason:—			
Rhodes, P., Leeds	£4,424	0	0
Carpenter and joiner:—			
Mason, W., and Sons, Leeds	1,775	0	0
Slater:—			
Atkinson, J., and Son, Leeds	269	0	0
Smith and ironfounder:—			
Bagshaw, J., and Sons, Bramley...	238	0	0
Plumber and glazier:—			
Price, G., Armley	1,179	11	0
Plasterer:—			
Laycock, J., & Sons, Stanningley	370	0	0
Painter:—			
Coates, J., Armley	121	0	0
Heating and ventilation:—			
Ashwell and Nesbitt	1,350	0	0

Cam.—For new classrooms, Upper Cam Meeting House, near Dursley. Mr. J. Fletcher Trew, M.S.A., Gloucester, architect:—

Allard	£498	12	0
Parker	358	10	0
Bloodworth and Son	350	0	0
Poulton	322	6	0
Sellick, Bros. (accepted)	299	12	0

Canning Town.—For the erection of mission church and parish room, for the vicar and churchwardens of St. Luke's, Victoria Docks, E. Messrs. Wigg, Oliver, and Hudson, 7, Bedford-row, W.C., and 80, Leman-street, E., architects. Quantities by Mr. F. G. W. Buss:—

Sparks, J., and Son	£1,985	0	0
Maddison, W. J.	1,919	0	0
Gladding, W.	1,766	0	0
Noakes, J.	1,752	0	0
Webb, J.	1,675	0	0
Horlock, J. G.	1,589	0	0

Cardiff.—For the reconstruction of the baths in Guildford-crescent, for the town council. Mr. W. Harmer, borough surveyor:—

Thomas, W., and Co.	£14,550	1	2
Shepton, S., and Son, Cardiff	14,526	11	7
Gibbon, H.	14,504	16	4
Jones Bros.	13,550	0	0
Latty and Co.	13,450	0	0
Gibson, J.	13,367	12	6
Turner, E., and Son	13,288	0	0
Thomas, J.	12,965	0	0
Davies, H.	12,641	4	4
Davies, D.	12,641	0	0
Allen, J., Cardiff	12,411	0	0
Symonds, W., and Co., Rectory-road, Cardiff (accepted)	12,359	19	3

Chelsea.—For the erection of a new hotel, Hans-place, Chelsea, London. Messrs. Read and Macdonald, Oxford-street, W., architects. Quantities by Mr. W. H. Elsmore, Barnes, London:—

Stephens, Bastow, and Co., Ltd., Bristol (accepted)	£38,250	0	0

Dartford.—For iron fencing to the airing grounds of the Gore Farm Hospital, Dartford, for the Metropolitan Asylums Board. Messrs. A. and C. Harston, 15, Leadenhall-street, architects:—

Bayliss, Jones, and Bayliss, Cannon-street (accepted)	£808	11	6

Dursley.—For new girls' classroom, National Schools, Dursley. Mr. J. Fletcher Trew, M.S.A., Gloucester, architect:—

Hafman	£170	0	0
Bloodworth and Son	125	0	0
Sellick (accepted)	110	0	0
Bradley	105	0	0

East Compton, Dorset.—For building new coach-house, alterations to stables, &c., for Col. R. Williams. Mr. A. L. T. Tilley, 16, Cornhill, Dorchester, architect:—

Slade, C. E., Dorchester (accepted)	£477	10	0

Eastleigh, Hants.—For laying about 17,658 yards run of 12in. by 6in. Swanage stone kerbing, and the same length of Staffordshire channel blocks, for the Eastleigh local board. Mr. Galbraith, surveyor:—

Reeks, F., Lymington	5s.	1d.	per yard for both.
Lowman and Sons	4	8	,, ,, ,,
Ashhilt Limestone Concrete Company	4	8	,, ,, ,,
Saunders and Co., Bournemouth	4	4	,, ,, ,,
Osmond, F., Southampton	4	1½	,, ,, ,,
Crook and Batten, Southampton	3	10½	,, ,, ,,
Free and Sons (accepted)	3	4½	,, ,, ,,

[Surveyor's estimate, 4s. 3d. per yard run.]

Ewell.—For painting, repairs, and water supply to the Spring Hotel, Ewell, Surrey, for Messrs. Nalder and Collyer's Brewery Company, Ltd. Mr. Robt. M. Chart, F.S.I., &c., Union Bank Chambers, Croydon and Mitcham, Surrey, architect and Surveyor:—

Goulder, E., Croydon	£112	15	0
Hole, J., Sutton (accepted)	92	0	0

Fay Gate, Sussex.—For alterations and additions to Beaumont, Fay Gate, Sussex, for Mr. J. Moore. Mr. T. Potter, 49, London-road, Sevenoaks, architect. Quantities by architect:—

		Time.
Wiltshire and Son, Sevenoaks	£3,374	6 months
Rowland Bros., Horsham	3,100	6 ,,
Longley, J., and Co., Crawley	2,897	4 ,,
Peters, P., Horsham (accepted)	2,873	4 ,,
Ockenden, T., and Co., Crawley	2,871	9 ,,

(Architect's estimate, £2,888.)

Fulham.—For certain alterations and additions to the Fulham Union Workhouse, Fulham Palace-road, W., for the guardians of the Fulham Union. Mr. A. Saxon Snell, F.R.I.B.A., 22, Southampton Buildings, Chancery-lane, W.C., architect. Quantities by architect:—

Dupont, F., Colchester	£7,259	0	0
Foster and Dicksee, Chelsea	5,878	0	0
Newman, J. H., Bloomsbury	5,690	0	0
Wall, H., and Co., Kentish Town	5,497	0	0
Lovatt, H., King's Cross	5,306	0	0
Nightingale, B. E., Albert Embankment (accepted)	5,095	0	0

Gloucester.—For laying new sewers and forming new roads at Tuffley. Mr. J. Fletcher Trew, M.S.A., Gloucester, architect:—

Loomey	£785	10	0
Rice	723	10	0
Leat	685	0	0
Freeman and Jones (accepted)	680	0	0
Hyam	460	0	0

Gloucester.—For enlarging the City Printing Works, for Mr. J. Jennings. Mr. J. Fletcher Trew, M.S.A., Gloucester, architect:—

Cullis	£598	0	0
Allard	553	0	0
Freeman and Jones (accepted)	526	10	0

Heating apparatus for above:—
Crispin and Sons (accepted).

Heywood, Lancs.—For the erection of an infectious diseases hospital pavilion, for the town council:—
Diggle, D. (accepted).

Heywood.—For supply of new 10in. water main, to be laid from Peel-street to Wham-bar, for the town council:—
Staveley Iron Co., Ltd. (accepted).

Homerton.—For fitting up hot water supply and warming apparatus to three new blocks at the Eastern Hospital, The Grove, Homerton, for the Metropolitan Asylums Board. Messrs. A. and C. Harston, 14, Leadenhall-street, architects:—

Kite, C., and Co.	£1,400	0	0
Fraser, J., and Sons	1,243	0	0
Strode and Co.	1,133	0	0
May, J. and F.	1,125	0	0
Potter and Sons	1,113	0	0
Christie, J. and C.	1,111	0	0
Sugg and Co.	1,081	0	0
Benham and Son	1,080	0	0
Vaughan and Brown	1,050	0	0
Murdock and Cameron	995	0	0
Ellis, J. C. and J. S.	995	0	0
Clarke and Sons, 43, Moorgate-street (accepted)	970	0	0

Horley.—For repairs at the Prince Albert Inn, Horley Surrey, for Messrs. Nalder and Collyer's Brewery Company, Ltd. Mr. R. M. Chart, F.S.I., &c., Union Bank Chambers, Croydon and Mitcham, architect and surveyor:—

Laker, Horley	£112	10	0
Wilkinson (Redhill)	107	0	0
Crouch, A., Worthing (accepted)	87	7	0

Inverness, N.B.—For the construction of the last section of the direct Inverness and Aviemore Railway, from Inverness ticket-platform to Culdoich in Strathnairn, a distance of seven miles, for the Highland Railway Company:—

Brand, Chas., and Co., Glasgow (Accepted.)	£104,900	0	0

Isle of Thanet.—For renovating and painting the workhouse, for the Minster board of guardians:—

Paramor and Sons, Margate	£290	0	0
Austen, Birchington (accepted)	206	3	4
Jarman and Sons, Ramsgate	200	11	6

Islington.—For the erection of the Northern Polytechnic Institute, Islington. Mr. Charles Bell, F.R.I.B.A, architect. Quantities by Mr. C. G. Roberts:—

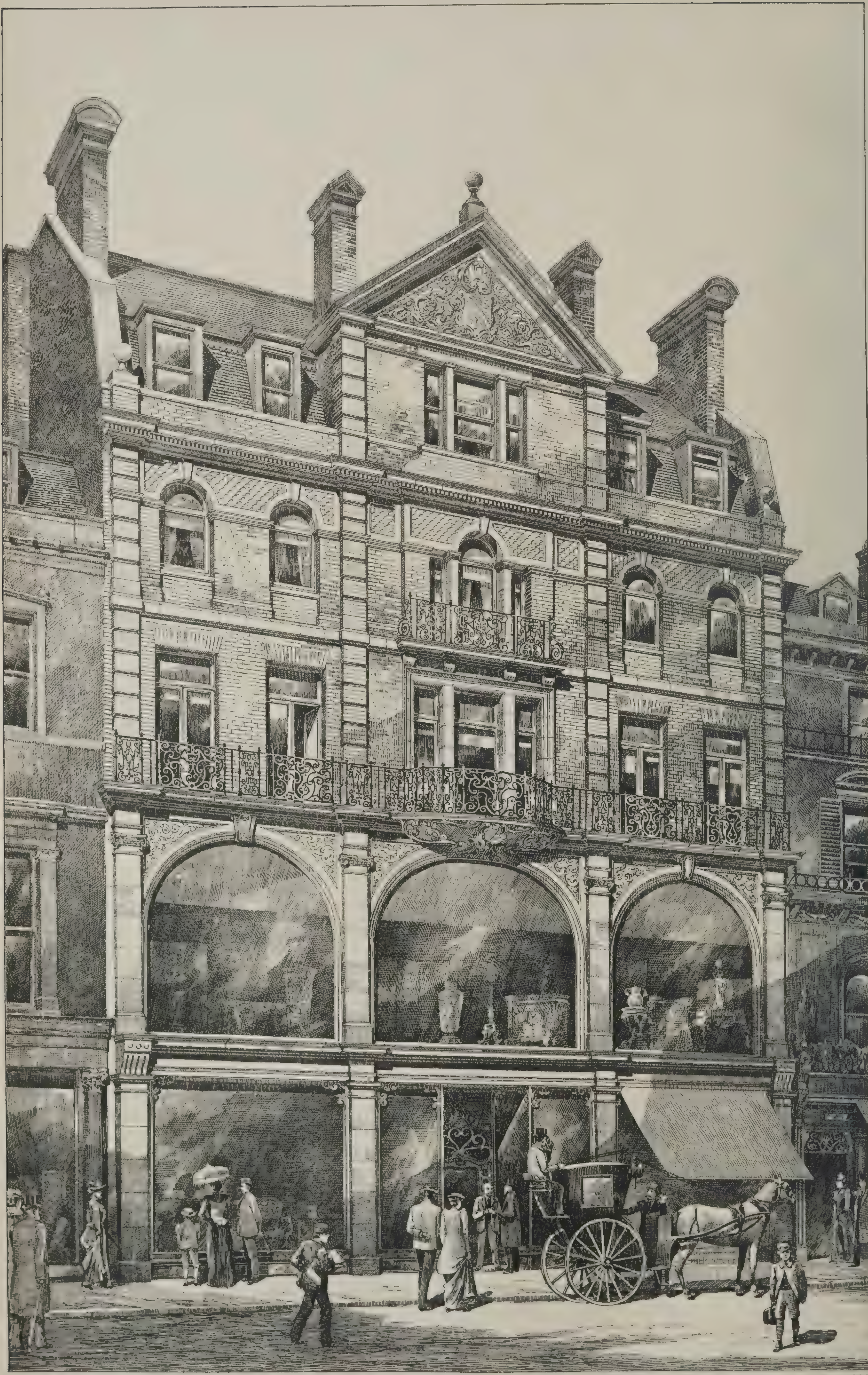
	A.	B.	C.	D.
Woodward and Co.	£9,399	£18,425	£6,808	£34,612
Dove Bros.	8,885	17,845	6,425	33,155
Castle, W. and H.	8,580	17,537	6,240	32,357
Lown and Sons	8,512	17,406	6,264	32,182
Dearing and Son	8,320	17,000	6,050	31,370
Wall, C.	8,300	17,000	5,900	31,200
Mattock Bros.	8,177	16,921	6,033	31,131
Lawrance and Sons	8,193	16,710	5,977	30,880
Williams, G. S., & Son	7,800	16,743	6,100	30,643
Grover, J., and Sons	8,039	16,379	5,784	30,202
Williams, H. J.	8,127	16,180	5,980	30,287
Goodman, W.	8,000	16,410	5,823	30,233
Macfarlane Bros.*	7,593	16,191	5,938	29,722

* Accepted.

A, Section 1; B, Section 2; C, Section 3; D, Total.

King's Cross.—For block of artisans' dwellings and shop at King's Cross-road, for Mr. J. C. Wall. Mr. H. H. Tasker, architect:—

Turner	£2,697	0	0
Lidstone and Son	2,247	0	0
Lawrence and Son	2,154	0	0
Hunt, J.	2,099	0	0
Dearing and Son	2,068	0	0
Shurmur, W.	1,990	0	0



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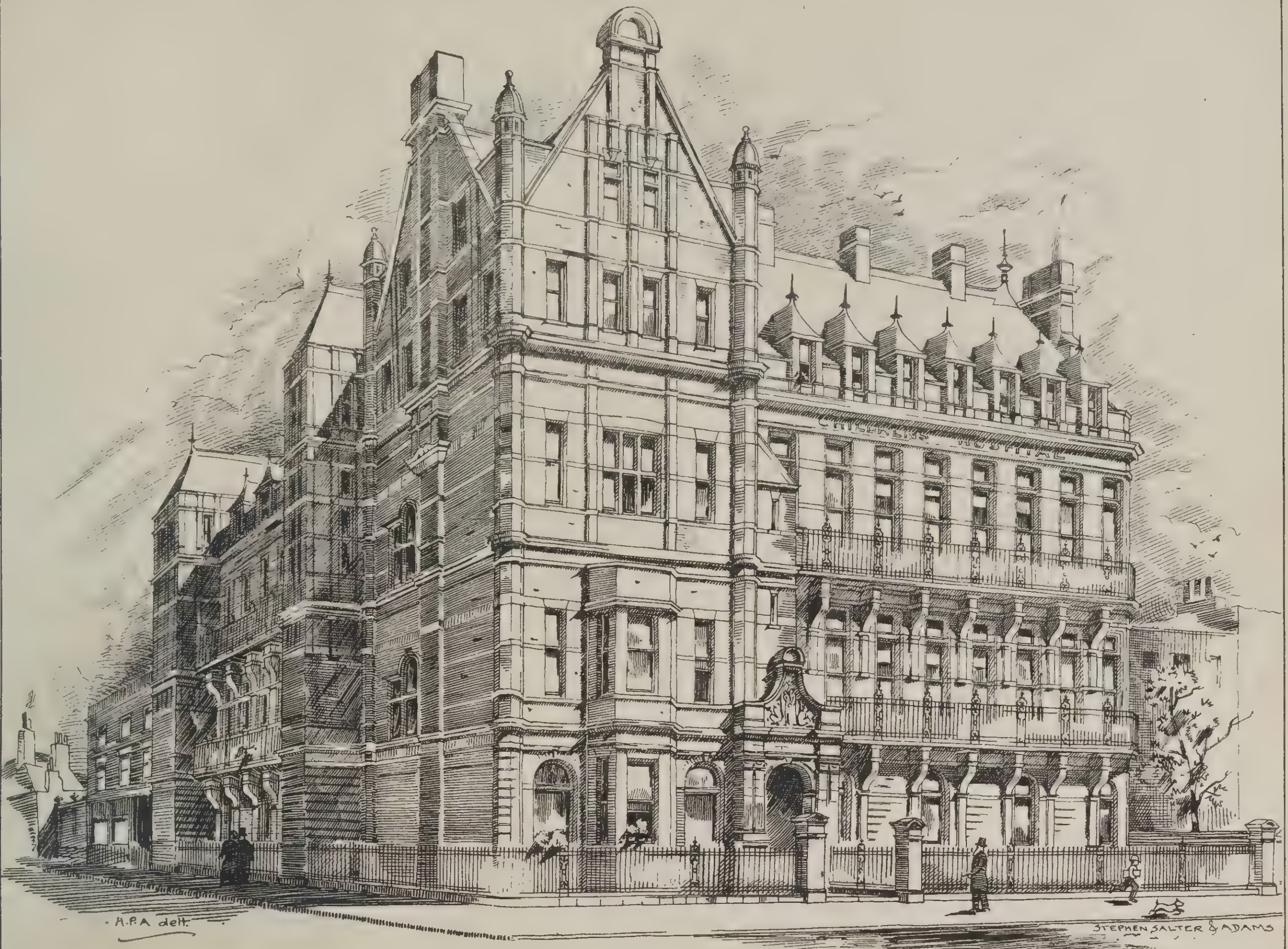
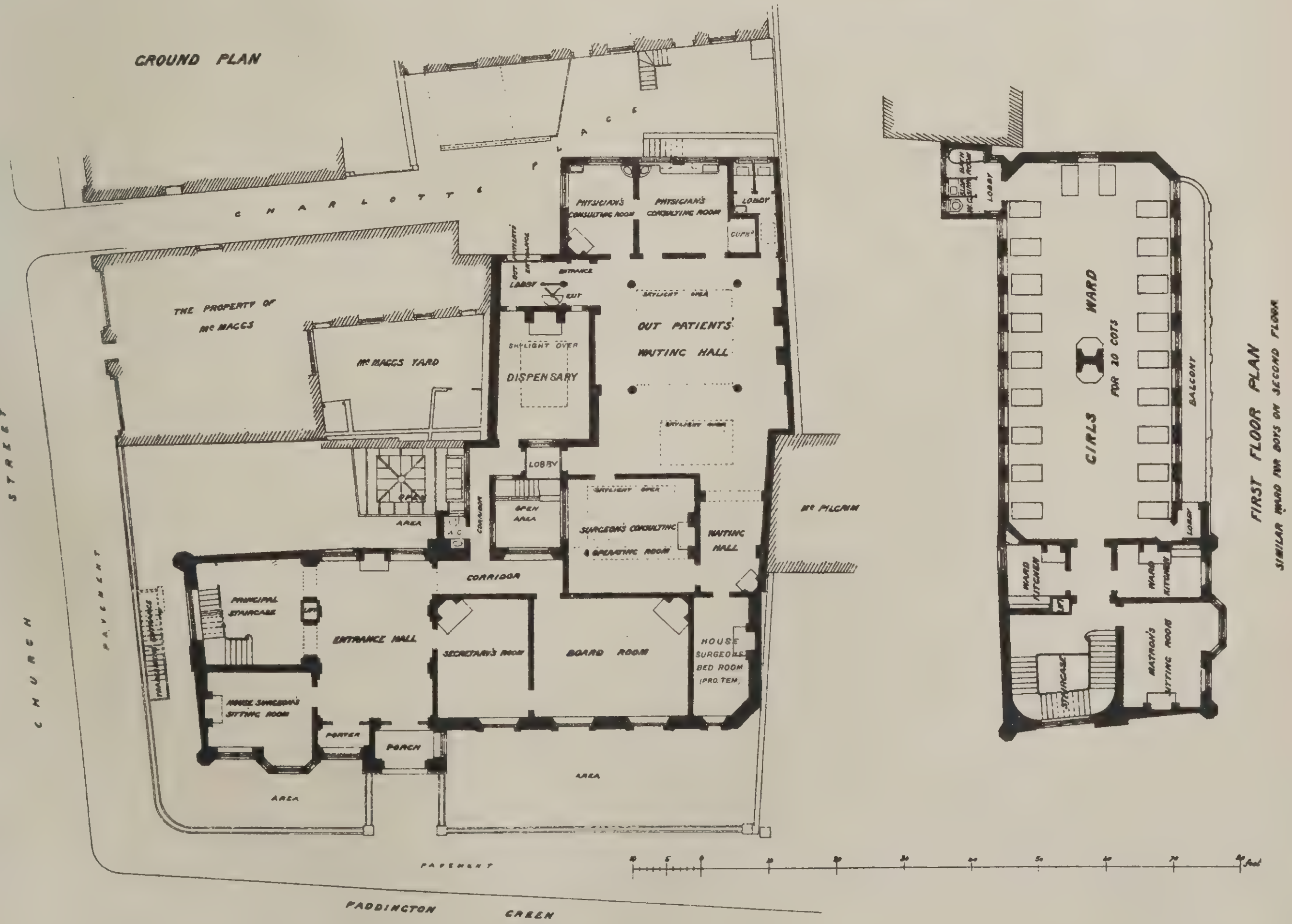
BUSINESS · PREMISES - OLD · BOND · ST · W · MESSRS WIMPERIS & ARBER · ARCHTS

THE BUILDING NEWS, AUG. 17, 1894.





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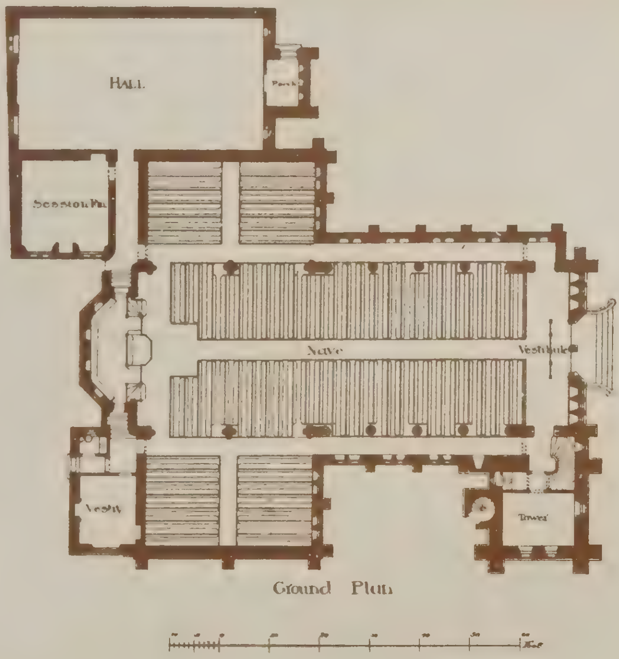
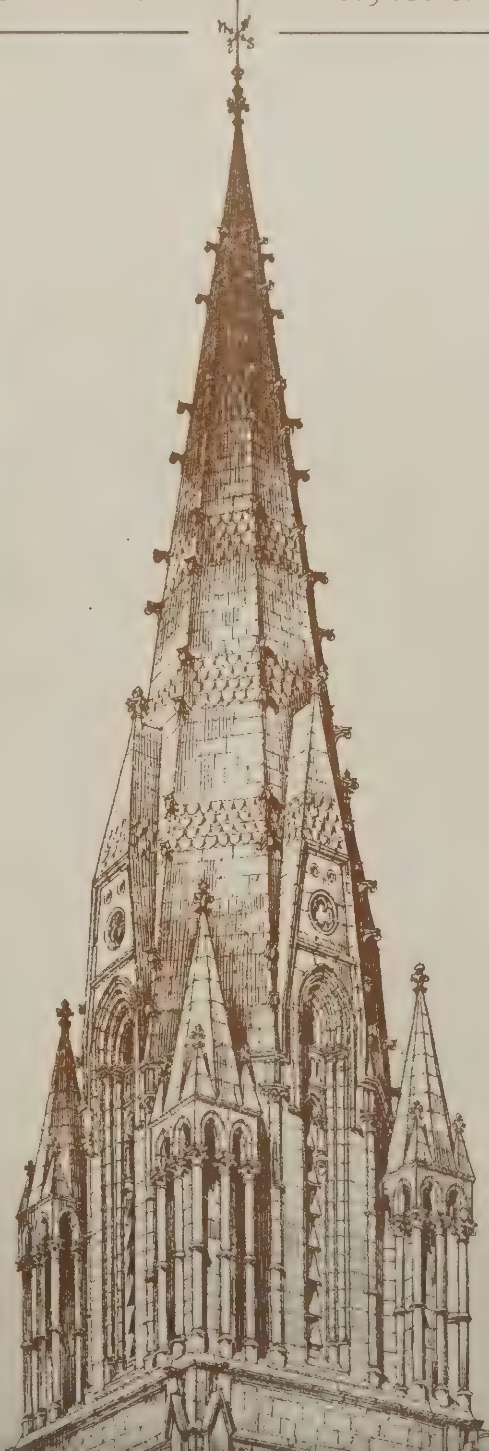
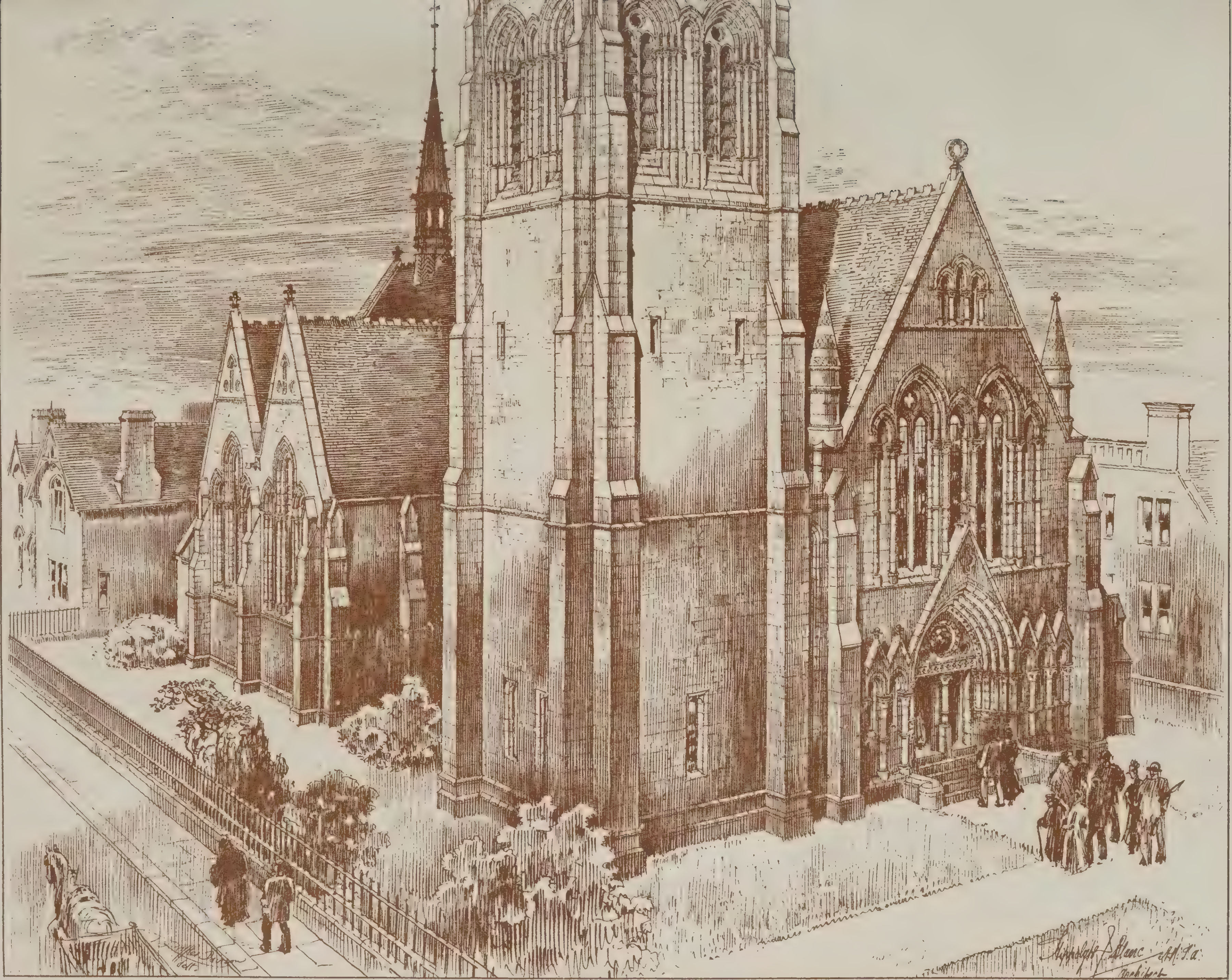
PADDINGTON · GREEN · CHILDREN'S · HOSPITAL · MESSRS STEPHEN SALTER & ADAMS ARCHTS



Ground Plan





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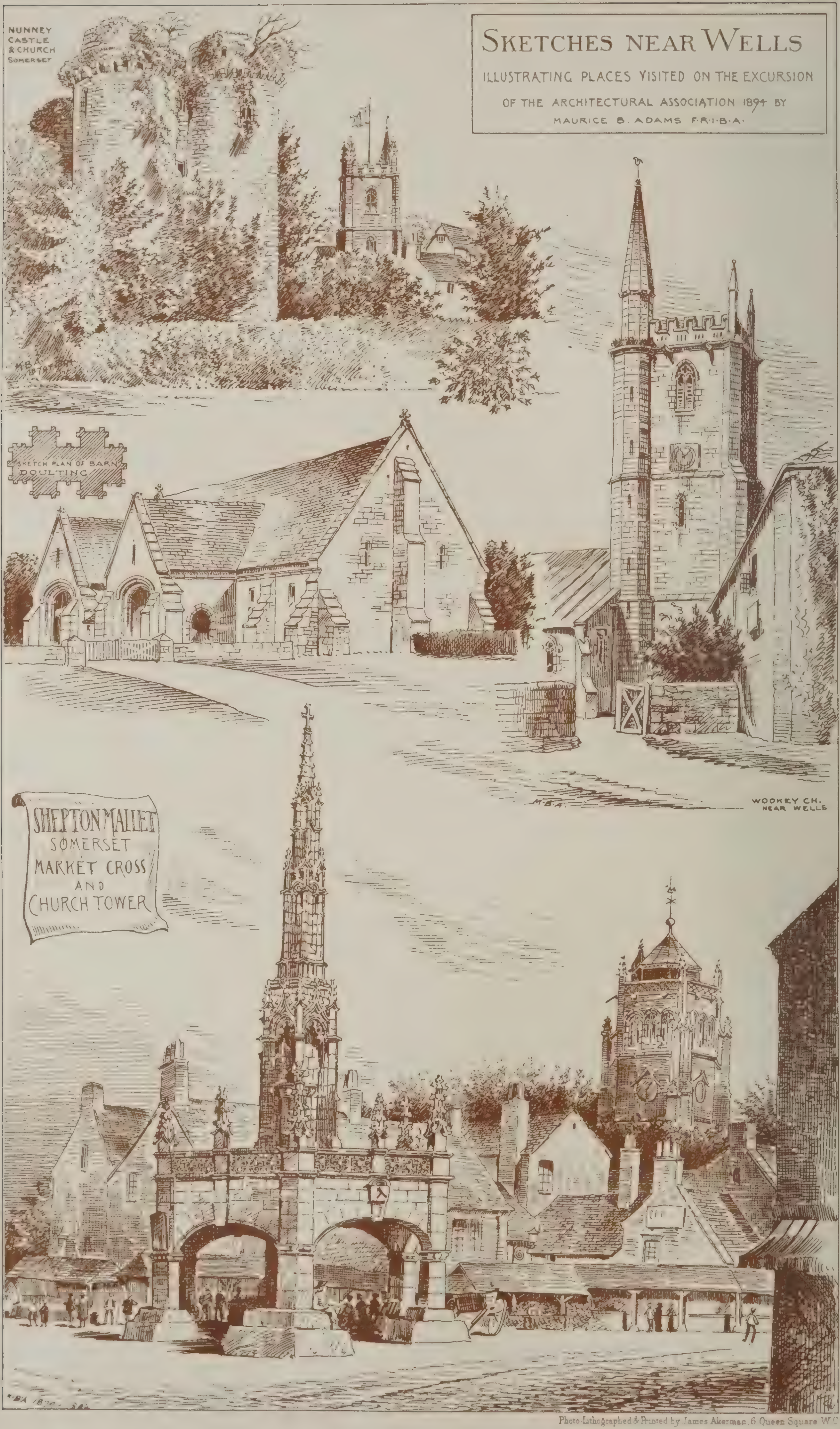
MAYFIELD · FREE · CHURCH · N · B · HIPPOLYTE · J · BLANC · A.R.S.A · ARCHT.

SKETCHES NEAR WELLS

ILLUSTRATING PLACES VISITED ON THE EXCURSION OF THE ARCHITECTURAL ASSOCIATION 1894 BY MAURICE B. ADAMS F.R.I.B.A.


NUNNEY CASTLE & CHURCH SOMERSET
M.B.A.
SKETCH PLAN OF BARN DOULTING
M.B.A.
WOOKEY CH. NEAR WELLS
SHEPTON MALLET SOMERSET MARKET CROSS AND CHURCH TOWER

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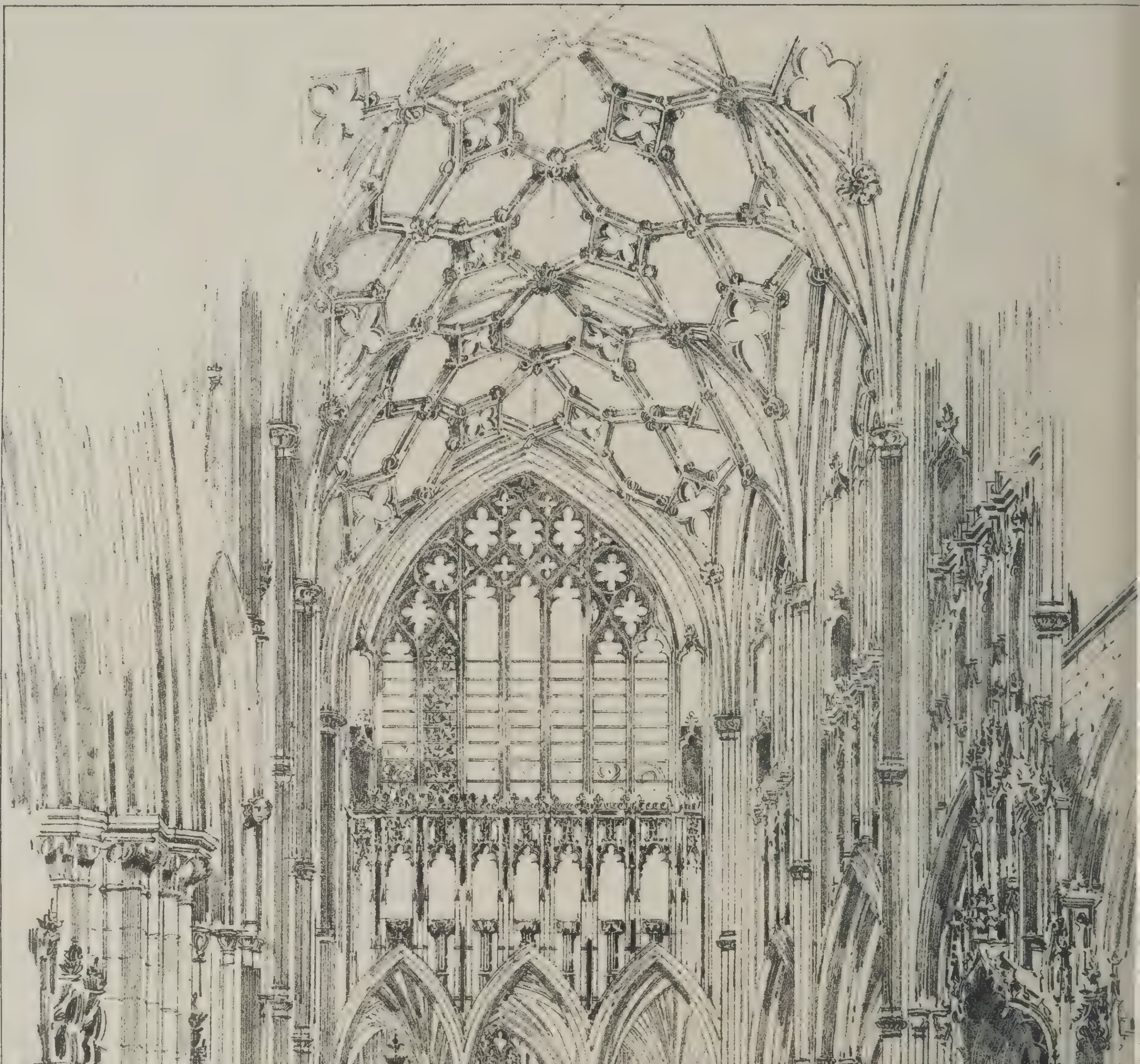
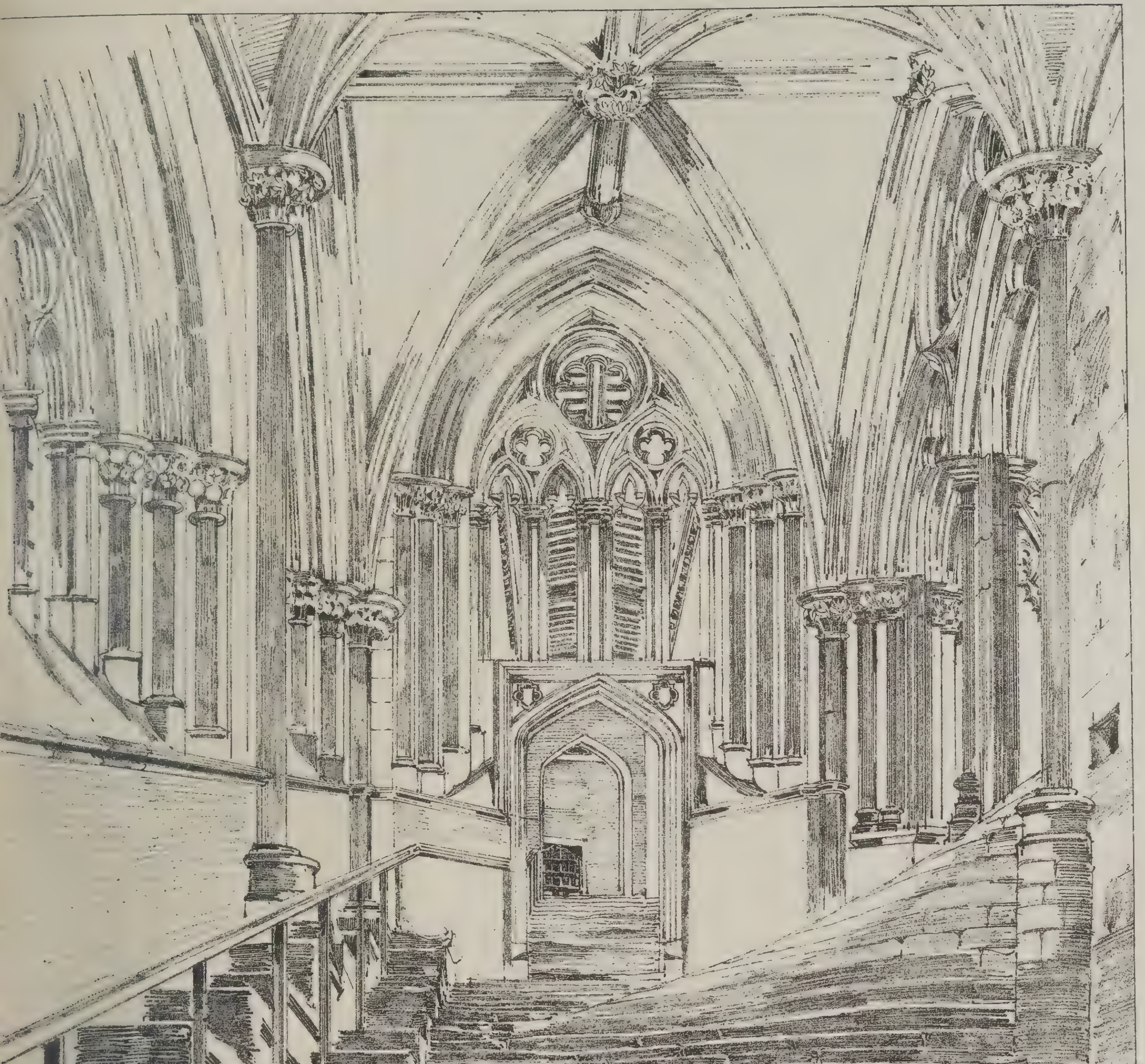


THE·CHOIR: WELLS·

"PHOTO-TINT" by J



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STAIRCASE TO CHAPTER HOUSE WELLS

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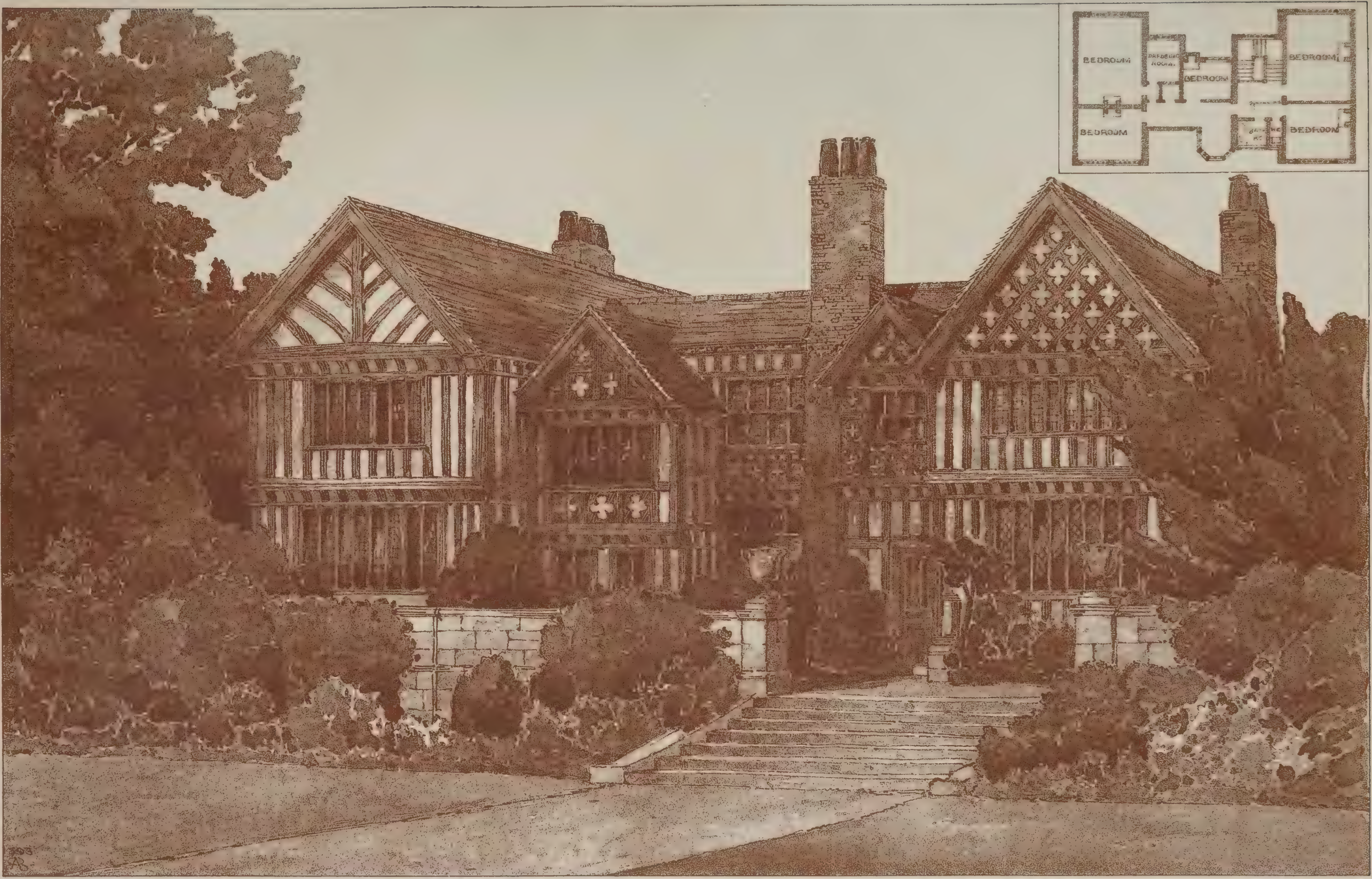

"PHOTO-TINT," by James Akerman, 6, Queen Square London W.C.

DESIGN · FOR · A · COUNTRY · HOUSE; R·A·BRIGGS·ARCH^T

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2068.

FRIDAY, AUGUST 24, 1894.

SOME NOTES FROM THE BRITISH ASSOCIATION.

THERE are very few subjects with which the architect has not, or is not liable to have, some concern. But it is not often that an address on biology has a direct bearing on matters of construction. It is so, however, with Professor Bayley Balfour's paper, which opened the proceedings of the Biological Section in the recent meeting at Oxford, and which mainly dealt with the planting and management of forests.

The world, Professor Balfour tells us, is using timber faster than it grows it. And much of it is being used in novel ways. The carpenter and the joiner and the cabinet-maker are no longer the only workmen, on a large scale, to whom it is an indispensable material. Wood-pulp is in great demand for foreign industries, and wood-silk is being manufactured in England. Whether these uses of wood require the same kinds and the same qualities which are preferred for building, the Professor does not say: but it would seem likely that much which would be valueless to the builder may be turned to account in these novel trades. Yet, however this may be, there seems no doubt that timber is likely to get scarcer and scarcer. In it, as well as in coal, the world is rapidly making away with the accumulations of ages; and it is to be feared that ours will hereafter be remembered as the spendthrift century. Future times will think to how little artistic purpose we turned our profusion of splendid pitch-pine, while they are never likely to find it either so excellent or so cheap. *We* look back with envy to the Middle Ages, when every cottage was built with oak; and our successors may, in like manner, envy us, who could at least get plenty of fir.

In Norway, raw timber is every year becoming dearer and scarcer. The Swedes are actually importing wood from America, when large scantlings and great lengths are required. In both Sweden and Norway the primeval forests are being rapidly exhausted. At Riga, the supply of oak has come to an end; and there is a proposal in some of the Baltic countries to put an export duty on all timber. The Canadian forests, too, are beginning to show signs of exhaustion under the enormous drain upon them, both from Europe and from the United States. And in the States themselves, a Government report stated, in 1892, that the approaching end of the timber supply is coming plainly into view. From these facts, Dr. Balfour drew the very natural inference that more forests ought to be planted, and that it should be a national duty, both in Britain and elsewhere, to see that the supply, as far as possible, is equal to the demand.

To insure this will take a long time. Experience makes us rather sceptical about its being done at all in anything like an adequate way. Nations, even more than individuals, have a tendency to live from hand to mouth; and the planting of forests is not a thing that will satisfy this tendency. It takes more faith and more patience than most communities are possessed of: first, to lay out large sums in planting, and then to pay the yearly charges for culture and management, in the hope of being repaid with interest at the end of a hundred years or so. And in the course of three generations there is no saying what changes of public policy may occur. At the present moment, farming in England does not pay, and it may be thought that forestry would pay better. But in fifty years time the case may be quite different. Corn will not be exported as cheaply from America then as now. We may once again have to look to our own soil for most of our food supplies; and then, all forests, except those planted on land which is fit for nothing else, will probably be cut down and sold for what they will bring.

At first sight it seems wonderful that the biggest forests on the globe—those which run nearly across the northern part of South America on each side of the Amazon, and cover an area of more than a million square miles—should yield us nothing. They contain magnificent trees, many of them first-rate in quality. They adjoin the largest river in the world—why do we never see their produce here? Why, again—for this is stranger still—do the people who live on the very edge of these forests actually send to North America for nearly all the wood they use? Such a carrying of coals to Newcastle is almost unparalleled elsewhere; and the explanation of it, when once it has been given, is not likely to be forgotten. The most useful forests are those which are each composed of one single kind of timber tree, or, in any case, of a very few kinds, all more or less saleable. Such are the forests of Canada, and those of the Baltic countries, which are made up of a few species of fir, and in which each species consequently occurs in countless numbers. But with the tropical forests it is quite otherwise. Nature, in those torrid climates, breaks out into endless variety. In Brazil, especially, it is a rare thing to see two trees of the same species together. Even the canoes on the Amazon, Dr. Wallace tells us, are, in most cases, constructed of several different kinds of wood, from the impossibility of getting, without vast labour, enough of one sort even to build a boat with. Many of the trees are soft and spongy, and would be worthless to the carpenter. Many others are so hard that no ordinary tools would work them. And though there remain a large number that would be extremely valuable, these are so widely scattered it would never pay to collect them. They are dotted down here and there in the interior of the forest, and a separate road would have to be cut through it to bring every separate tree out when felled. The great Brazilian forest, therefore, is likely to remain as useless in the future as it has been in the past, until some means shall be discovered of turning all, or nearly all, its components to commercial account.

The sum of the whole matter is, that timber is likely to get dearer and worse. Both its dearness and its badness will lessen the demand for it, so that the supply will not be exhausted so soon as statisticians anticipate. In the mean time, the architects of to-day, and their immediate successors, will have to think how to manage with less woodwork, and what to use in place of it. Artificial substitutes are sure to offer themselves. We shall get improved fibrous plaster, perhaps, in place of boards—fireproof and non-decaying. We shall get improved concrete, tougher, firmer, and more sightly—strengthened, probably, for ordinary work, not by rolled joists, as it usually has been hitherto, but rather by wires or threads of metal mixed up in its substance. Inventors are already looking in these directions, and when they can produce a material cheap enough and trustworthy enough, in many of its uses wood will be superseded. The result will be to employ more English labour, since we shall practically manufacture our timber here, instead of importing it from abroad.

Professor Kennedy took up a widely-different subject for his address to the Mechanical Science Section. He enlarged on the need for more thorough training as regards the engineering profession. Much that he said would apply, almost word for word, to the architectural one. "training," he said, jars on man in the present congested state of all sions. But the more competition there the more the training becomes a vital necessity, and the more hopeless is the case of those who are without it. The particular sort of training which Dr. Kennedy advocated on this occasion is critical training. It is just as necessary for us as for the engineers, and yet it hardly ever seems to have been set about in a methodical way. Every architect urgently wants it for his own use; every assessor in a competition wants it with tenfold urgency, for the benefit of others; and yet how few men have enough of it! For the criticism intended is not the mere power of writing and "cutting-up" one design, or of saying that another would be better if the author had taken more pains. It is the power of seeing what are the actual necessities, practical and artistic, of each separate case, and of showing how and why one design fulfils them better and another worse. We each need this power every time we make a plan, or an elevation, or a detail. There are endless ways of planning almost every building. It does not take much invention to strike out half-a-dozen different schemes, say, for a house. But when we have struck them out, there comes the vital point, which is to be selected, and why? To criticise other people's work seems easy and amusing; to criticise one's own work, especially when recently done, is difficult and often depressing, yet it is a thing that must be accomplished. And, seeing that the difference between a wise and an unwise judgment of one's own conceptions means the difference between success and failure in the works we build from them, no training would be too troublesome which would help us to judge aright. Self-criticism, of course, is a thing which every man who is not quite useless contrives to manage in a greater or less degree. But how to make it easy and accurate, how to teach it as other arts are taught, is a question which deserves earnest thought from everyone who is concerned in training the architects of the next generation.

THE HOLIDAYS.

THERE are several ways of spending one's holidays. If it means simply relaxation from the ordinary routine of professional work, then no doubt the best and most profitable holiday for mind and body is that of employing both in the contemplation and pursuit of the exact opposite of that which has been taxing them. The practical architect, according to this definition, would find it better to get right away from his business and surroundings—to forget all about buildings, drawings, and contracts; to go into the country, to the seaside, or to explore the Lakes or the Alps. The surveyor steeped in calculations, quantities, and valuations would find relaxation in those scenes and pursuits which gave play to his bodily recreation and imagination. He would forget all about cubings, squarings, fee-simples, and leaseholds and their value, and the draughtsman would for the nonce take to his bicycling or his boating. But there is another way of looking at the year's vacation. Many, and especially the younger members of the profession and the student, regard it as a holiday of recreation or of opportunity, and make the best of the time allotted to them in pursuing their favourite study of sketching and archæological research. They take a Continental tour to Belgium, or Holland, France or Italy, with the object of doing some sketching. They take to this mode of recreation because it affords a relaxation of those fibres of the mind and body which have been on the strain. The practical architect engaged in everyday business would find such a pursuit as much [illegible] as going simply for bodily rest, [illegible] more so. The Architectural Associa- [illegible] indulge in this kind of holiday, and [illegible]se of the members who care for work bring home a sketch-book full of pleasant reminiscences, or photographs of buildings visited. Few of the districts visited by the Association possess more architectural interest than that of Somersetshire. Wells itself is a mine of interest to the lover of architecture and archæology, to say nothing of the visits paid to such places as Croscombe, Chewton Mendip, Mells, Shepton Mallet, Evercreech, Longleat, Glastonbury. The towers of the Somersetshire churches are in themselves unique for the beauty of their proportions, the stateliness of their architecture, and the charm of their details. We have given illustrations of several of these remarkable structures. Compare those of St. Cuthbert's, Wells, Evercreech, and Axbridge, with their majestic belfry stages and their wealth of angle turrets. For simple grandeur of outline we know no western church-tower that surpasses the majesty of St. Cuthbert's, while for subtle stone-cutting and grouping the corner turrets of Evercreech tower are unequalled. The student will do well to note the way in which the old mason united the corner piers of his belfry story with the turret above the parapet; how he carried up his fine angle-set pinnacles, and made them cluster round the main body of the turret, thus insuring a graceful profile to the whole. We have nothing of the sort elsewhere in England in the shape of splitting up the angle buttresses and leading the eye straight to the summit, unless it is the "clusters" of St. Mary's at Oxford. For a study of pinnacle-clustering the Somersetshire churches present the student with the best English models. The intervening pinnacles between the belfry windows at all these churches, including Mells, is another feature to note. Tower development in England cannot be studied more profitably than in Norfolk or Somersetshire, for in each county we see distinct influences at work, giving shape and importance to this feature of church building. Again, for rich screens, pulpits, and roofs, both these counties present typical examples of Perpendicular and even Jacobean work.

Besides churches and domestic buildings, the young architect desiring to extend the knowledge of his profession can very well study building stones with a view to acquaint himself with many of those local peculiarities in building which are of such value, both practically and in understanding style. Visits to quarries and to buildings in which certain stones have been used afford one profitable way of spending a holiday. Cornwall, Somersetshire, Derbyshire, Northamptonshire, and Yorkshire are districts sufficiently distinctive and instructive in this way. Handbooks give but a very imperfect account of the geological formation of a given neighbourhood, as they are generally compilations. The architectural student wants to know something beyond the specification of strata, and even his Lyell or his Geikie may fail him in those practical questions of durability, porosity, colour and cost, and easy working, which are elements of the most practical value. It matters little to know that the Purbeck beds and Portland stone belong to the upper strata of the Jurassic series, or that this series contains four distinct formations of Oolitic limestones, of which the Bath oolite is one, or to know even the structure of certain stones; but it is a great deal more important to know that one has seen a given stone in a durable condition in a certain ancient building.

The use of building materials, and the modes in which they are converted in different districts, can only be obtained by personal visits to localities. For instance, various methods adopted in brick and stone wall-building may be usefully noted. So also as to the combined use of brick and stone which one finds in the West and Eastern counties. Jambs and window openings or reveals are seen set in brickwork in many parts, with stone as a filling-in of the walls—a mode of building which seems to admit of a wider application. Many different ways of forming arches, of covering roofs, are to be seen in the Western and Midland Counties, and even with regard to partitions and timber-framing, diversities in practice are to be met with. All these characteristic features of building are worth attention, and the wider the arcchitect's acquaintance with constructive methods and local uses, the better able is he to keep pace with and to design buildings in those localities.

RECENT ARCHITECTURE IN LONDON.

CONTEMPORARY STYLES.

WE are passing through a crisis of change and reconstruction. Demolition and rebuilding are in the air. In City thoroughfares which we have known from boyhood old features and landmarks of a past age are rapidly disappearing, and new buildings of greater height and architectural pretensions are taking their place. And it is extremely hard to keep pace with the progress that has been made in many localities which have been given up to the Metropolitan ædiles. Whether the pending changes in the Metropolitan Building Acts have made any difference to owners and promoters of new buildings we cannot positively say, though there has been probably no previous period when so much rebuilding has been accomplished in London. In no other city of the United Kingdom it may be safe to assert, can the observer of architectural development find the materials for writing a history of contemporary styles, for it is the only place where luxury and commerce, industrial and educational schemes can be found in combination, thus giving rise to varied problems of construction. The English Metropolis is also the gathering place of all nations, and, therefore, the various styles of the world have had here their fair opportunities for either development or decay. Dr. Billings, in a clever paper read before one of the sections of the British Association at Oxford, has suggested the question whether race may not be an element in determining the death rates of civilised countries, and he shows us that very remarkable differences of rate are observable in New York owing to nationality. May we not apply the same argument of hygienics in determining the rapid development of some styles, and the decline of others? We all know that the nationality of a style has had a great deal to do with its growth; that when we transplanted Greek and Italian to these shores, those exotic arts of the sunny shores of the Mediterranean and the blue skies of the Adriatic did not long survive the cloudy atmosphere of our large towns. On the other hand, we know that Gothic and the Renaissances of France, Germany, and the Netherlands have taken root, and have outlived their less hardy predecessors. We have proof of this in the particular phases of architecture seen in London.

It would be difficult to say which of these several varieties of European architecture have taken the firmest root. What we may generally designate as Flemish appears to have contested very strongly with our vernacular styles, such as our English Renaissance of the 17th century. Late Gothic and French Renaissance have also reasserted themselves in our public buildings and streets, and it would not be easy to say which of these styles has won general acceptance for secular and business purposes. The choice seems to lie between English and foreign Renaissance, and, on the whole, we may say the Italian element is less strong in it than it was a few years ago. Architects have discovered by a kind of natural selection those elements of style which have more affinity for this climate, and which can be converted most easily into our natural building materials. A process of elimination has rejected many features like flat roofs, useless balustrades and pediments, and other ornamental adjuncts which are unsuited to a Northern climate and smoky town atmospheres. Hence, we have a marked reappearance of Late Gothic and Early Renaissance forms, the latter with distinct Gothic admixture, noticed in many of our newly-erected buildings, in which mullioned windows and gables and pilasters are blended, and as we find in many of the old English houses and halls of the 16th century, when Italian features were being introduced into Gothic buildings. A more distinctive designation for this style would be "Italianised Gothic," generally called Early Renaissance, of which we have several recent examples in the City and West End thoroughfares. One valuable point is its adaptability to modern building requirements. The window apertures can be made large and square-headed without the weakening effect of large glass openings. The mullioned window in its later 16th-century form is as well adapted for business premises as any other form, and indeed better, for it can be extended to the whole width of a front, if need be. A good instance of a building for business purposes in the City, designed on this principle, is the Metropolitan Life Assurance Offices, Moorgate-street, by Messrs. Aston Webb and E. Ingress Bell, where the main windows on both fronts are mullioned, and occupy the largest portion of the wall; the main piers are reduced to mullions, and each window is also divided into two lights by a mullion. The style, notably the corner, is essentially Gothic, rather Spanish in character, with details of a mixed or Italian type. It is of stone, with Cornish granite basement. The public offices and board-rooms are lighted wholly by the mullion and aperture system. No Classical or Italian method could give up so much wall-space to light openings. The Roman, Florentine, and Venetian styles of the Cinque Cento period have all been tried in London; but in these phases of the Italian Renaissance the windows have been mainly round-arched, and scarcely suitable to commercial or business purposes. One of the latest of the buildings in the City is Mr. Belcher's Institute of Chartered Accountants, Moorgate-street, which we lately illustrated (Jan. 26th and May 4th last). It is a clever adaptation of the Italian. Preserving dignity and regularity in the main horizontal lines, a rusticated treatment of the basement piers, with a columnar order in the upper or second story, it has yet a pleasing variety in the rich detail, almost Greek in refinement and restraint, and in the well-sculptured frieze between the first and second-floor windows. In the points of interest a certain richness is focussed. The lower offices are well lighted by wide windows between rusticated shafts of the Tuscan order. Florentine severity, Roman strength, and Venetian richness are blended in an agreeable gradation from the base upwards.

What is to be said of the street upon street of new buildings? They belong to various types of so-called Renaissance, a poor, thin, emasculated sort of design, in which pilasters, broken gables, and other ornamental features are found, and of which we have specimens in Oxford-street, the Strand, Arundel and Surrey-streets. Some of these exemplify what we have before termed the "pier and bay" style; that is, a succession of brick piers with bay-windows carried up between, but of no particular character, either Gothic or Italian. The whole front looks thin and superficial; the pilasters are skin-deep, and the bays are flattened or recessed. The large flat surfaces of brick are divided or covered over by strips of pilasters, full of unrestful notches, and painfully lacking solidity. Statutory building rules have, to some extent, created this feature, but not altogether. Hyde Park Mansions is a building of this character. The alternate pier and bay is a mode of building which has advantages; it gives wide windows, and some character can be obtained. We lately illustrated a large corner residential block at the corner of Cavendish-square, of red brick and stone, in which this method has been carried out, and the same may be seen in some red brick buildings in Surrey-street. This style soon becomes monotonous. Terracotta has introduced us to a somewhat florid French and Italian Renaissance in many new buildings. In Surrey and Arundel-streets, Strand, may be noticed a rebuilding of those narrow streets leading to the Embankment. We may particularly notice the new blocks of red brick and terracotta chambers and offices in Arundel-street, "Effingham House" and "Granville House," and W. H. Smith and Sons' new premises, good examples of terracotta work, though undoubtedly too pretentious for narrow streets. Norfolk Hotel, in Surrey-street, is a design in a rich Renaissance style, with a boldly-projecting bay window, which, by the way, comes out beyond the building line of the new adjacent fronts. These examples of brick and terracotta are representative of a good deal of our modern street architecture, a kind of mixed Italian and François Premier style; they are interesting as showing how decisively the more flexible features, like mullioned and bay windows, porches, corbelled bays, and balconies, &c., which were designed for stone buildings, are being reproduced in terracotta. Dutch or Flemish characteristics appear to retain their hold. The style is more easily adopted than the last for small and narrow house fronts, as we see in a narrow front, Swan Chambers, E.C., and in a large gabled house, 141, Fenchurch-street. There is another development of Classic that we cannot overlook. We have referred to what may be called "Italianised Gothic," and we now draw attention to an English version of Roman or Palladian which has been largely used of late, to which we give the name of "Anglicised-Roman" or Italian—a style which generally passes under the name of "Georgian," and which was practised in the 18th century. This style affects red brick as well as stone, and we have had lately several good examples in London and the suburbs. Engaged columns or pilasters, often with rustications, are generally found in one or two stories, with square or round arched window openings. Nearly opposite Newcastle-street in the Strand a large block of shops and offices has been erected in this style, of red brick and stone dressings. There are two orders of engaged columns to the main stories, and the treatment is free and rusticated. Of Late Gothicesque we have evidence that even for secular purposes it has not been played out. In Tottenham Court-road new premises for the blind have been erected, a view of which we gave lately. It is a corner building with a corbelled octagonal turret at the corner, and with mullioned windows and stepped gables. In Drury-lane the new building not yet completed for library and reading-room for St. Mary-le-Strand is a notable addition in a Late Gothic style, though a little heavy in the detail. An extensive demolition of houses is going on between Catherine-street and Drury-lane, in the midst of which the old churchyard described by Dickens in "Bleak House," and known as "Joe's churchyard," access to which is obtained by a passage from Russell-court, may still be seen.

The changes in style of our recent buildings have been brought about by the actual requirements of construction, of light and air, and also of the materials. The requirements of light and air in our street buildings have very materially helped to formulate a style. A gradual lessening of the area of walls and supports has led to a lighter treatment, and have developed the pier and window mode of building. Nor can we dispute the influence of iron in construction in reducing the number of points of support. The struggle just now going on is between the "wall" and the "pier" modes. Once the wall assumed its pre-eminence, and the openings were few and small. Little by little the window has been encroaching on the wall area till we have cases in which the latter is reduced simply to piers, and this process is likely to go on by the substitution of materials like iron and terracotta for brickwork and masonry; but true architecture will never give up the contest in maintaining a due proportion between solid and void, and those traditional forms which distinguish a building from a mere skeleton or framework.

"OLD MASTERS" ON THE CONTINENT.—VIII.

By Charles L. Eastlake

(Keeper and Secretary of the National Gallery).

In a former number of the Building News was described a portion of the fresco painted by Benozzo Gozzoli, on the right-hand wall of the Riccardi Palace Chapel. The present article is accompanied by an illustration of the remaining portion, and contains a brief account of those frescoes which, while forming part of the whole series, are executed on other walls of the room.

It has been mentioned that the Chapel is lighted by a single window, placed at the end of a rectangular recess nearly opposite the entrance. The right-hand wall of this recess is occupied by a group of angels somewhat less than life-size, all having variegated wings. Those on the left of the foreground, draped in robes of pale rose, blue-green, and maize colour, kneel in adoration, while on the right of the picture, and more to the rear, appears a group of standing angels, similarly attired. In the background is a garden, with buildings in the middle distance, and a mountainous landscape beyond. Tall trees rise from this garden towards the upper part of the picture, where a flight of angels is seen in the sky.

The first thing which occurs to one on seeing this fresco is its wonderful preservation. The draperies, though somewhat mannered in parts, are dexterously handled, well lighted, and arranged with great taste. Many of the heads are of a beautiful type, and a few of them are foreshortened with remarkable skill. The flesh tones are fair and delicate, and the facial contours modelled with scarcely any shadow. A quiet dignity distinguishes both the pose and expression of these figures, which are well proportioned and full of saintly grace.

Scarcely less care has been bestowed upon the accessories of the picture—the red and white roses in the garden, the character of the tree foliage, the grass-plots, hedge-rows, and distant buildings, which the painter has drawn with a scrupulous regard for perspective, though his rocks are of a somewhat conventional type.

On the opposite wall, the kneeling angels are grouped on the right-hand of the composition, while the standing ones appear on the left. Here also we find a garden, or rather a shrubbery, inclosed by a latticed railing, with lofty poplars, &c., whose foliage, as in the companion fresco, is reserved for the upper portion of the picture, so that the hilly background may be disclosed, while the deep blue sky above is relieved by white clouds.

The draperies which clothe the heavenly host are handled here with equal skill, and present a chromatic scheme even more attractive than that on the opposite work. Great physical beauty is realised in some of the heads, especially that of one of the angels with crisp fair hair, who kneels on the right of the foreground, clad in a rose-coloured robe effectively painted with pale yellow lights. The foreground is enlivened by a pond with waterfowl on its surface, while goldfinches and other birds are perched on the rocky banks.

At the opposite end of the chapel, and on the right of the entrance, the wall is occupied by a portion of the Procession.* Conspicuous in this group is one of the kings magnificently attired in a green robe richly diapered with a large gold pattern, and trimmed with brown fur. He wears a large crown on his head, and is mounted on a white horse, preceded by three retainers and followed by others. Some of the heads are admirably drawn. The costumes include green tunics with sleeves of blue or plum-coloured brocade, hose of finely-toned crimson and *stivali* of yellow or scarlet leather. Some of the retinue wear picturesque caps, others are bareheaded; but long hair is for the most part worn only by the persons of distinction. In the background is a most elaborate landscape, which may almost be described as a bird's-eye view. It represents a hilly country divided into meadows or plantations, and intersected by hedges, with the distant view of a winding river crossed by a bridge, and a town perched on the summit of a wooded hill.

The fresco on the left wall of the chapel is very interesting. In the foreground is represented one of the Magi—an aged man with a venerable white beard, who rides on a mule. Further to the right, mounted on a black horse, and with his back to the spectator, is a young man clad in a tunic of crimson and gold brocade. Near him a lad, handsomely attired, bestrides a prancing steed of chestnut brown, and still further to the right we come upon a crowded group of retainers, whose heads are presented in endless variety of pose, some in full face, some half turned aside, others in profile—all ingeniously diversified in form, features, and expression.

In the background to the right a road winds round a rocky hill. Along this road we see a calvacade passing—horses, mules, and camels, some heavily laden, some bestridden, and others led by servitors. All these figures, being in the distance, are, of course, represented on a smaller scale. Falcons, feline hunting beasts, with other picturesque animals and objects, enliven the foreground.

Returning to the wall on the right hand of the chapel, we find the group selected for reproduction with this article, and forming, in fact, a portion of the largest fresco, half of which was described and illustrated in a previous number of the Building News.

On the left of the composition is a crowd of mounted Orientals, riding—so to speak—right into the foreground, where the horses are most dexterously foreshortened. Most of the men wear a red *berrette*, the shape of which closely resembles a modern Turkish fez. The foremost rider, having turned the corner, is seen in profile. He is preceded by a negro, who walks on foot, clad in a short green tunic, and hose of different colours (white and green). Behind the horsemen appears a throng of figures, whose heads rise one above another, without any apparent violation of perspective. Indeed, if we suppose the procession to be coming down a hill, this pictorial arrangement is perfectly legitimate. The individuality and character of these faces, and the vitality of expression with which their features are invested, leave little doubt that they were all studied from life. In this respect, as well as in the masterly drawing, ingenious composition, and elaborate details of the whole work, the genius and skill of Benozzo Gozzoli are fully manifest.

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* A portion of the Procession of the Magi, as well as the two Angelic groups (known as "Il Paradiso"), described in this article, will be illustrated in early numbers of the Building News.

"BUILDING NEWS" DESIGNING CLUB.

A VILLAGE CLUB AND COCOA TAVERN.

THE chosen designs for this subject have been waiting to be published longer than we intended, on account of the pressure on our illustration space, and we give them to-day, which is the first opportunity which has been available for their insertion. "Boomerang" is the author of the decidedly best plan. "Ant" we place second, and "Nitor" third. The conditions which we printed for the instruction of competitors were as follows:—

"A Cocoa Tavern and Village Club.—This building is to be built in a street, and set back with a paved forecourt 12ft. deep from the line of frontage and level with the footway, which is to be divided off from the forecourt by posts and chains. The width of the site is 60ft., and out of this a way to the back premises of the new buildings is to be provided, 6ft. wide. The central portion of the main façade may be carried up as a second floor, but the chief part of the building is to be on two floors only. The basement will provide space for a coal store and cellarage, &c. The accommodation is to comprise a coffee tavern for the use of the public as well as by members of the club, so that a public bar must be provided for a few customers, with a small smoking-room adjacent to it. The club entrance must be distinct, and its bar must be private on the other side of the tavern, but worked by the same staff. On the ground floor a club smoking-room, news-room, and writing-room must be provided, of about 500ft. super. each for the two latter, and 400ft. for the former. Upstairs a billiard-room, large enough for two tables, is to be contrived. Over the tavern a small residence for the landlord is to be located, with one sitting-room and three bedrooms at least. The kitchen and offices on the ground floor will be large enough to supply the requirements of the whole undertaking. A lavatory, &c., will be necessary for the club, and a small convenience is to be furnished for the public use in connection with the tavern. The depth of the site is considerable; but it will be laid out as a club garden, and the depth of the buildings must not be greater than is absolutely necessary. A projecting sign of the 'Apple Tree' is suggested. Style to be suitable for a stone district, with green slate roofs. Scale 8ft. to the inch, $\frac{1}{16}$th of an inch to the foot for plans. A view to be furnished."

The somewhat mixed character of the trade to be arranged for in this building, in which chance customers are to be provided with light refreshments as well as the members of the club, domiciled under the same roof, no doubt increased the difficulty of producing a satisfactory and otherwise simple plan. The relative importance of the two entrances seems, too, to have been a point over which several of the competitors have failed entirely, and even "Nitor," who receives the third place, has put the public doorway out of sight round the corner, in the open passage way leading to the yards in the rear of the buildings. "Boomerang" certainly has produced a very pretty and suitable façade to his "Apple Tree" Club and Tavern, recalling some old village buildings which we have seen about England—say, for instance, in Northamptonshire or in Rutland. The house bespeaks fairly well its purpose, and the effect is obtained without any loss to the internal arrangements, and without unnecessary ornamentation. Whatever faults there are in the planning do not come of sacrificing convenience to external appearance. The failings in the plan exist more to the centre of the building, chiefly in respect to the rather dark service-passage between the hall and the public smoking-room, and we do not think the kitchen is improved by the upper part of the landlord's private staircase projecting into it, materially reducing thereby its cubic space of air. The bars are better contrived than in most of the designs; but the service space need not have been broken up by the wall between the two halves. An arched opening would have left the servers more free, and screens after the fashion of those now used in good taverns would have sufficiently divided off the bar customers in the two departments, which, of course, would in any case be separated by the divisional wall extending, as at present, from the front wall to the inner line of counter. The other arrangements speak clearly enough for themselves, and the wrought-iron sign with the gilt apples is eminently adapted to its purpose. "Ant" makes a bar in the middle of his club ground floor, and lights it from an internal area between the staircase and his kitchen. The public bar is so situated with regard to the club bar that, when the door between the two is open, a full view all along the counter is obtained, and none but fixed screens would very well prevent this, and they are objectionable arrangements in a bar, interfering with effective management. The two entrances are sufficiently distinct and obvious. The landlord's sitting-room overlooks the main street, which is an advantage not secured by "Boomerang." Architecturally, we cannot say that "Ant" has been so successful as might be wished. The fenestration adopted is carelessly managed, without much regard to the value of plain faces of walling, and the composition lacks proportion and "go." There is an absence of concentration, the whole front of the little building being too broken up to be effective. "Nitor," the third man, is much better in this respect, and, besides, his drawings are more crisp and spirited; but his plan left us no choice, for we could not ignore its serious shortcomings. The public entrance round the corner, out of view of the passers-by, leads to a cramped and badly contrived bar, with a quadrant counter in the corner, just in the way of anyone wishing to enter the smoking-room beyond the inclosed settle next the fireplace. The club bar is scarcely any better, and, speaking generally, the plans are wasteful in the manner in which the available space is utilised, with dark passages leading from one part to the other. The sign is pretty, like the building, which has a good elevation towards the garden at the rear. "How's This?" is hardly happy in the way in which he has treated the two entrances—indeed, the club doorway looks the less important of the two, while the public would evidently need some specific instructions to insure the right use of the approaches to the building. The plan has many good points, with a convenient administrative department, and capital club-rooms both upstairs as well as down. The elevation is rather commonplace, though in execution no one could call it pretentious or vulgar. "Kelso" has failed to give us an hospitable-looking building, for the group externally bespeaks more the idea of a police-station with a small court-house attached. The service of a coffee-tavern, too, is not provided for adequately by such small counters as those in both his bars, which seem better adapted to the sale of drams than tea and other similar refreshments which require ample room for urns and pots, cups and saucers. The w.c. opening out of the public tavern entrance is an ill-considered contrivance enough to condemn any plan, as "Kelso" must very well know, and with all his advantages of draughtsmanship he ought to do better. His ideas seem so cramped, that ingenious as his plans sometimes are, his provisions would at best be but very restricted when realised in bricks and mortar. "Blackheathen" seems to be fired by a burning desire to make a striking-looking façade at all costs, with a quasi-tower in the middle of its length, finished off in half-timber, and inclosing four bed-chambers for the housekeeper. On plan, however, this ambitious performance grows out of nothing in a natural manner, coming as it does over one-half of the billiard-room. We cannot praise the internal arrangements of the building, which does not do its author justice, unless we over-estimated his capabilities when he first joined the ranks of our Designing Club. "Diomed" deserves a degree of praise for the simple methods which he has adopted in working out the details of his design. His plan also is really better than would appear at first sight, and in execution the building might look well, and prove convenient; but its merit, which we thus amply recognise, does not allow of "Diomed" taking a higher place in the list than that which we have assigned to him. "Cyclist" has overdone his design, making it restless and ineffective. The drawings are poor, too, and so is the plan. "Claire," likewise, fails in the same way, but at least he is not vulgar. The porch looks, however, as if it belonged to an old mansion once upon a time, and had been rebuilt by someone who did not know anything about the art of architecture. "Youngster" needs time to improve, for which there is ample occasion, though he has done well to try. Let him repeat the attempt. "Dessinateur" comes next, and "Vulgar Terror," who ranks last, rightly appraises the design which his motto describes so correctly.

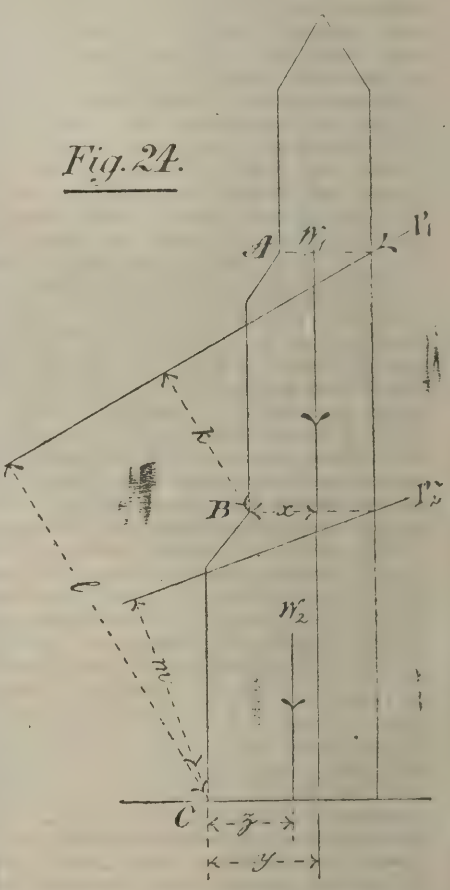
THE THRUSTS ON WALLS AND ARCHES.*—VIII.

By G. A. T. Middleton.

BUTTRESSES.

IN considering the question of buttresses, it is only necessary to depend upon principles already fully enunciated. The thrusts to which they are subjected once determined, the overturning power which they possess is readily measured by taking moments, just as is done in the case of walls, about their outer edges—and, to obviate overturning, this power or tendency must be at least equated or exceeded by the power of the buttress itself, measured by the moment of its weight about the same outer edge, to resist this overturning. Thus, no special difficulties are presented.

Fig. 24.



To take one special case, the ordinary one shown in Fig. 24 should be quite sufficient to explain all that is necessary. P_1 is supposed to be the ascertained thrust from an arched flying-buttress, and P_2 to be that from the principal of an aisle roof. Of course, at the point A there is no overturning tendency. The weight of the pinnacle above this point, which pinnacle may be as ornate as may be desired so long as it be heavy enough to do its work, is only needed as part of the weight of the buttress above B, acting as W_1 collected at its centre of gravity, with the leverage x to counterbalance the thrust P_1 acting with the leverage K. Thus, taking moments about B_1—

$$W_1 \times x \text{ must be greater than } P_1 \times K.$$

Similarly, supposing W_2 to be the weight of the portion of the butresses lying between B and C, and to be located at its centre of gravity, then the moment of overturning about the point C becomes—

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$$P_1 \times l + P_2 \times m,$$

and the moment of stability about the same point is—

$$W_1 \times y + W_2 \times z.$$

Again, the moment of stability must, at least, equal, and should exceed, the moment of overturning, and, as explained in an earlier article of this series, to secure safety the points B and C, around which moments are to be taken, should be fixed at one-third of the thickness of the buttress from its outer edge.

It will readily be seen that, by trial, the problem can equally well be solved diagrammatically, as shown in Fig. 25.

P_1 and W_1 are combined where they meet, and their resultant R_1 found. Then this is combined with W_2, and a fresh resultant R_2 found, which is again combined with P_2, and a third resultant R_3 found. Then R_1 must pass within the joint at B, as against overturning, or within its centre third as for safety, and similarly R_3 must pass within the joint at C as against overturning, and within its centre third for safety.

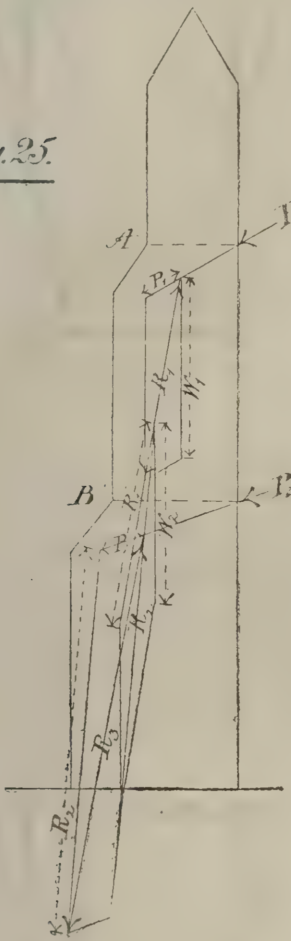
Fig. 25.

THEATRES.—XLI.

By Ernest A. E. Woodrow, A.R.I.B.A.

The foyers, crush-rooms, saloons, and refreshment-rooms play an important part in theatre planning, especially in opera-houses, where there are long intervals between the acts, and where the saloon is much frequented. In this class of theatre the foyer is usually a large and imposing apartment, and not infrequently we find it consists of a suite of rooms. For dramatic theatres, the saloon is generally combined with the refreshment-room and smoking rooms.

The saloon is also used in many theatres for the holding of public meetings in connection with "the profession," social receptions, and similar functions. In this part of the house, when there are any, are placed the art treasures of the theatre—portraits and busts of noted actors and actresses. This combination of reception-saloon and art-gallery, refreshment-room and promenade, must all be borne in mind by the architect.

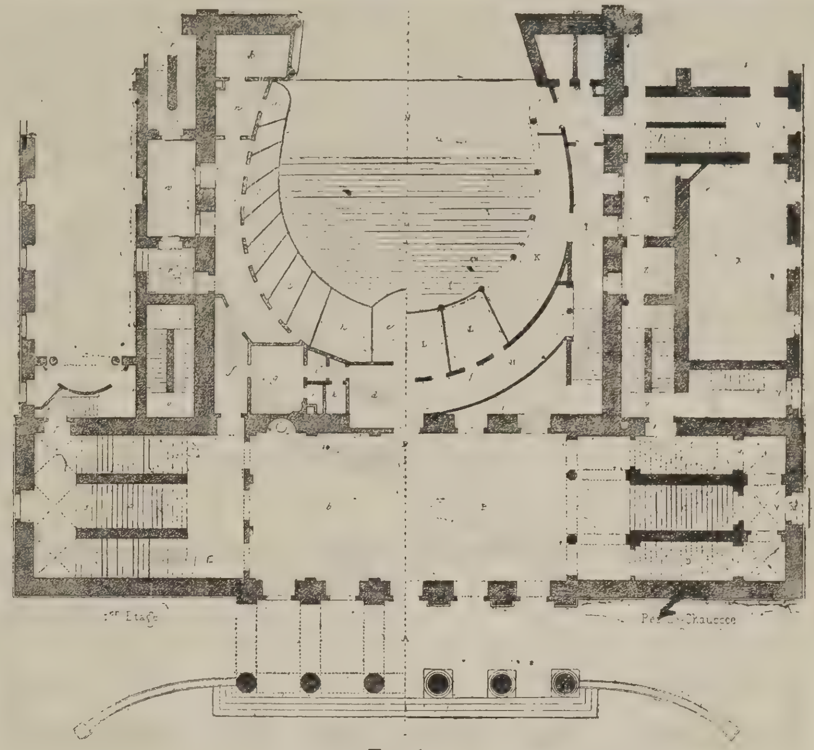

Fig. 1.

The saloon affords an opportunity for some architectural treatment of a dignified and imposing nature. In Continental theatres, both old and new, such treatment is always to be found to a more or less degree. From M. Constant's work I have selected some plans of the older Continental theatres, which have not been illustrated before in these articles, showing the position of the foyers in relation to the auditorium.

In Fig. 1, of the Darmstadt theatre, it will be seen that the foyer is planned in connection with the grand staircase entrance, and partakes also of the nature of a crush room. The same may be said of the Alexandre Theatre, St. Petersburg, as shown in Fig. 2. Figs. 3 and 4, the one of the Marseilles theatre and the other of the Opera Comique, Paris, are planned somewhat on the same lines.

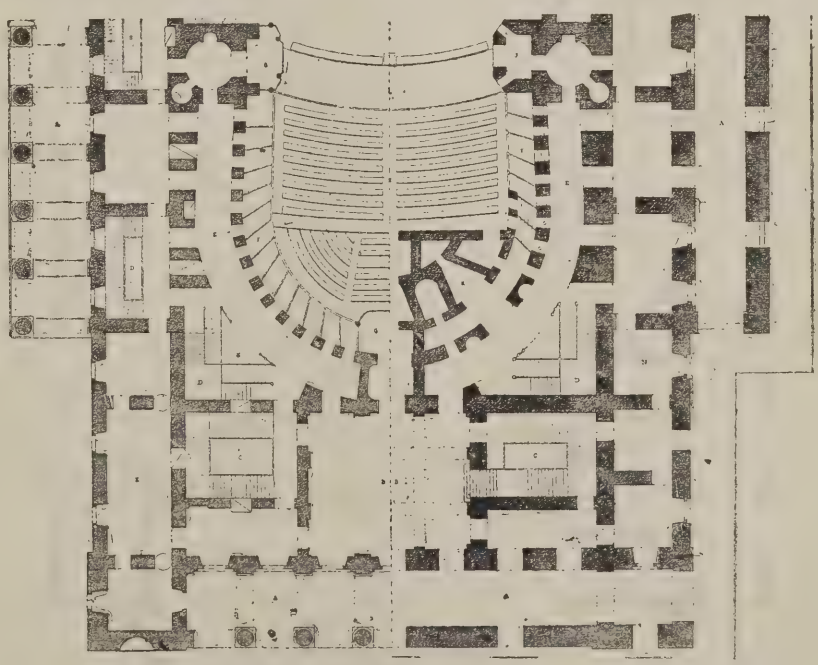
Fig. 2.

In Fig. 5, of the Theatre Royal, Madrid, a building erected between 1818-1850, the foyers are situated at the side, as shown by A in the plan, which is taken from M. Gosset's work on theatres. At the back of this theatre the plan shows a ballroom, entered from the foyers on either side. A favourite position for the saloon is over the main entrance vestibule, as it is placed in our own opera houses of Covent Garden (Fig. 6) and in Drury Lane Theatre (Fig. 7). Here, too, the foyer partakes of the character of a refreshment saloon, and is fitted up with a bar counter.

Fig. 8, of the theatre at Reims, is taken from the work of M. Gosset, the architect to the building which was erected 1866-1873. The foyer here is also situated over the vestibule. As I have used our own Theatre Royal as an example of the situation and planning of the part of theatre we are now considering, an extract from a monograph by the architect to the building may be of interest to my readers.

In Mr. Benjamin Wyatt's description of his design for Drury Lane Theatre, published in 1813, occur what now reads to us a rather curious description of his reasons for planning the front part of the building as he did, with the foyer on

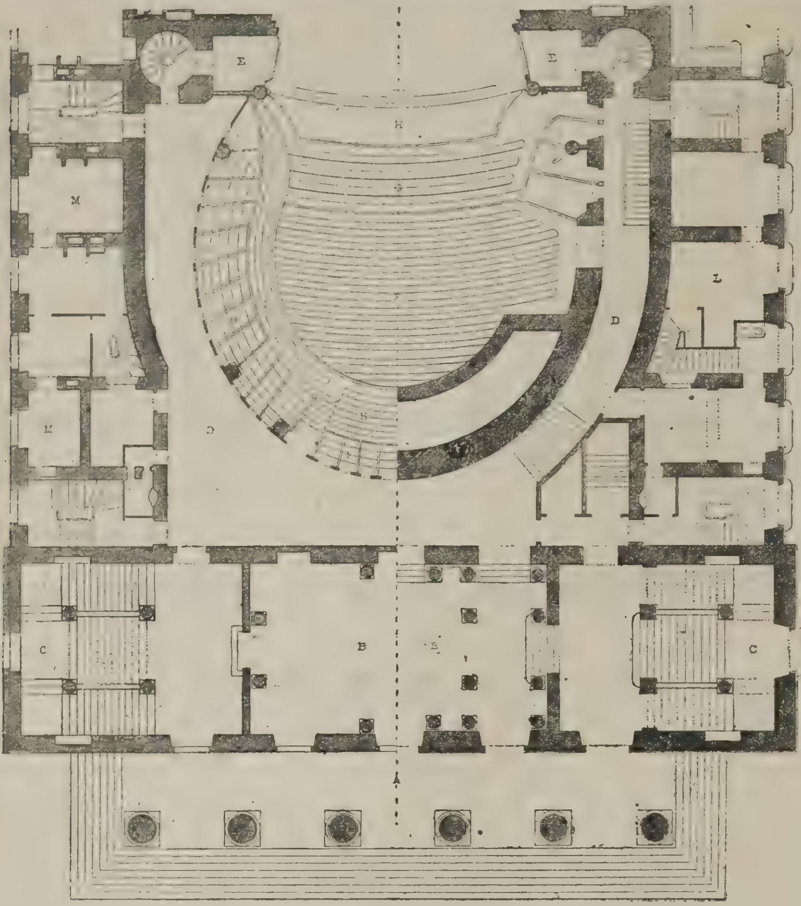

FIG. 3.

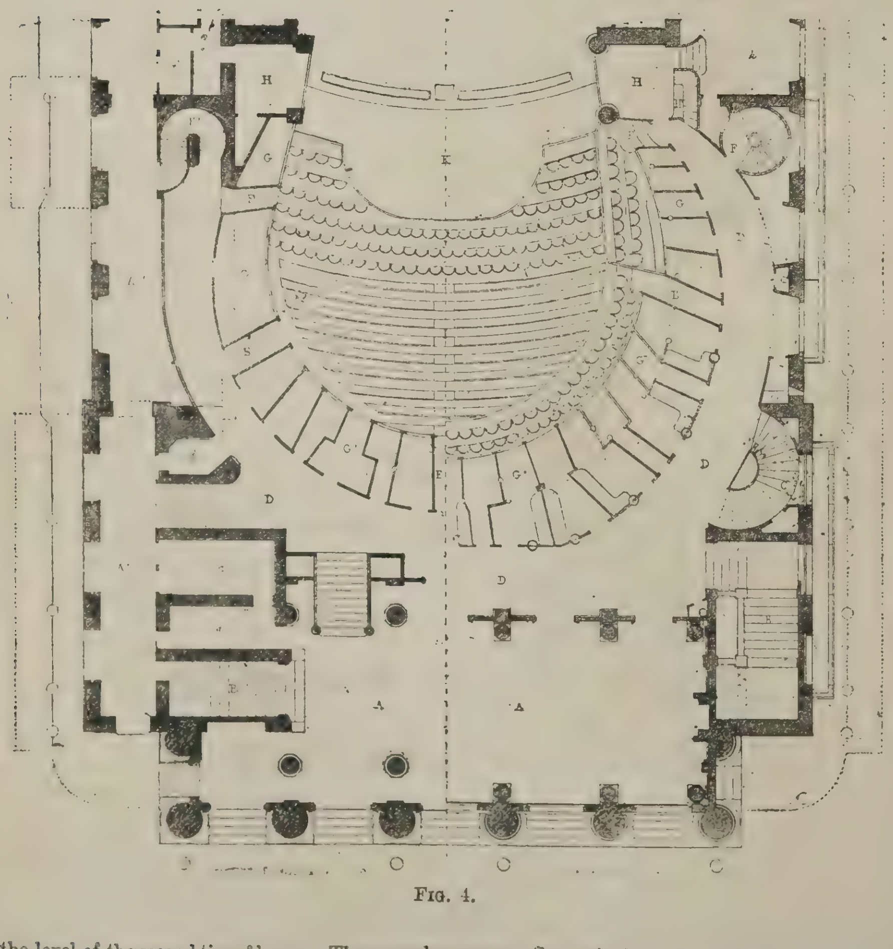

FIG. 4.

the level of the second tier of boxes. The remarks convey to the reader some idea of the change that has come over the conduct and class of theatre-goers who frequent our national theatre.

"When first I undertook the design for Drury Lane Theatre, I did it with an impression that among the principal objects which called for reform in the theatres in London, no one appears to be more important than that of protecting the more rational and respectable class of spectators from those nuisances to which they have long been exposed, by being obliged to pass through lobbies, rooms, and avenues crowded with the most disreputable members of the community, and subject to scenes of the most disgusting indecency.

"The general principle upon which I proposed to remedy this great evil was by arranging one part of the house in such a manner as to afford adequate accommodation for the more rational and respectable spectators without being at all suited to the reception of those classes which it is desirable to exclude from that part of the house; while as an additional security against their intrusion where they were not intended to go, I at the same time provided for them in another situation that sort of accommodation which, by alluring them to those parts of the house intended for their reception, would effectually withdraw them from the division appropriated to the more respectable class of the spectators.

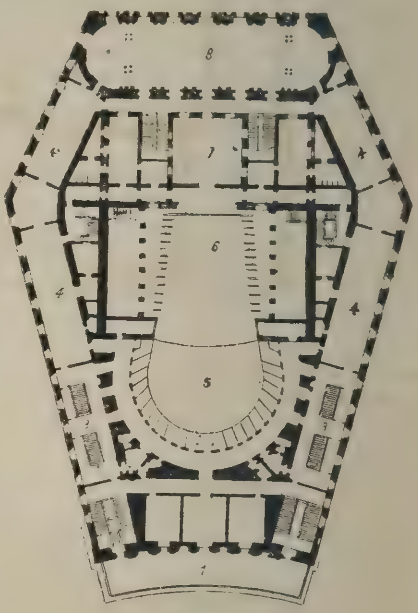

FIG. 5.

"I felt that an avowed exclusion of any particular class of people from either part of the house (except the private boxes) would be utterly impracticable, and therefore that the best plan was to form an arrangement which should virtually amount to an exclusion of those whom it was desirable to exclude, without any declared intention of so doing.

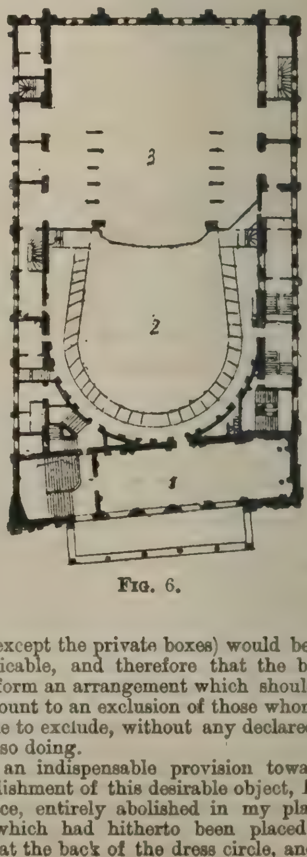

FIG. 6.

"As an indispensable provision towards the accomplishment of this desirable object, I, in the first place, entirely abolished in my plan those boxes which had hitherto been placed immediately at the back of the dress circle, and which

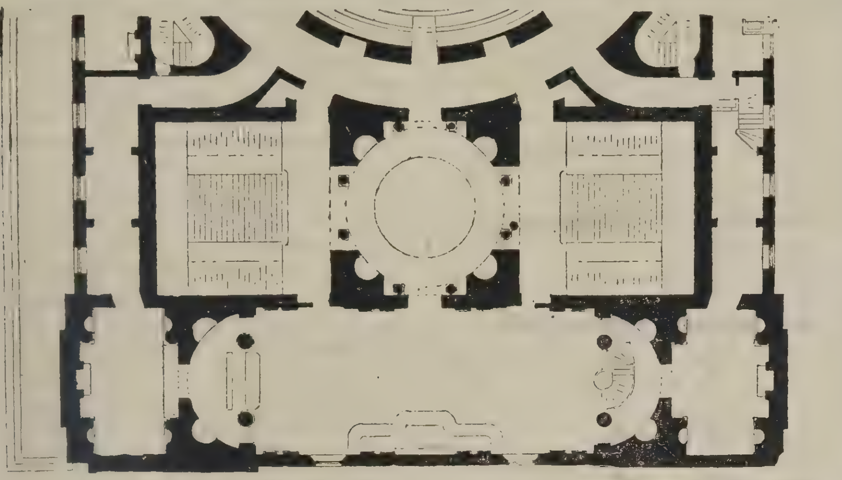

Fig. 7.

are vulgarly called the 'Basket boxes.' It is very well known to everyone who has been in the habit of frequenting the theatres that the women of the town never hire or attempt to appear in what are called the *Dress Boxes*, and that the ladies who do occupy those boxes may be enabled to go to the play with great comfort and security if relieved from the nuisances to which they have hitherto been liable in passing to and from their boxes.

"The *Basket*, therefore, being abolished, and no lobbies, coffee-rooms, or other appendage of that description being placed contiguous to the dress circle, nor within a considerable distance from it, I calculated that the women of the town and all the most disorderly spectators must find that part of the house so ill-adapted to their convenience, that they were totally deserted, and naturally resort to whatever part of the house should furnish the accommodation which they require.

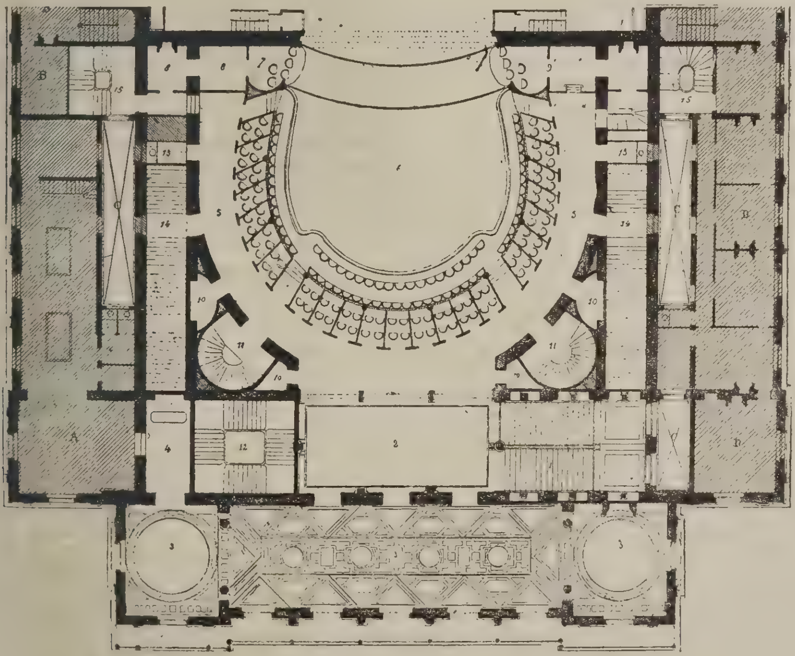

Fig. 8.

"The same considerations to which I have adverted as a reason for refraining from an avowed exclusion of any particular class of the community must, of course, operate against appropriating to the exclusive use of this circle of boxes a separate entrance and staircase. According to my plan, those persons going to the dress boxes, enter the house at the same doors and same staircases to a certain height as those going to any of the boxes above; but having passed the first flight of the staircases they then enter the corridor appertaining to the circle of the dress boxes, and are immediately and completely separated from the rest of the house, and not at all liable to any molestation, there being no lobby, coffee-room, or lounging place of any description to lead to this part of the house any of those persons who would be a nuisance in it.

"According to the above principles I not only provided a ready access to the dress boxes and refrained from placing near to them any lobby or room which might serve as a receptacle for persons who could not have seats in those boxes, but upon the next floor I provided a spacious and handsome suite of rooms for the purpose of attracting all those whom it is desirable to remove from below the stairs and of keeping them entirely out of the way of the more respectable part of the company. I endeavour to make the handsome effect of this floor sufficiently pleasing and attractive to divert the minds of those who were intended to occupy it from any idea of their being excluded from that part of the house which they might otherwise have considered as the best, and at the same time not to give them the exclusive advantage of the handsome effect so produced; but by opening a view of the staircases and other parts from the ground floor to give to all those who should ascend no higher than the dress boxes a *coup d'œil* of the most striking part of the interior.

"It was my full persuasion, in arranging this part of my plan, that if as many persons of all ranks as the house should be capable of containing were to be admitted with free liberty to go to whatever part of the house they might prefer, the whole of that class which I proposed virtually to exclude from the dress-boxes would, of their own accord and in preference, resort to the suite of rooms which I had placed upon the second floor, and that the preference so given by them to that part of the house must infallibly enable the more respectable persons going to the dress boxes to pass in and out of the house without the smallest chance of annoyance, and to sit in their boxes exempt from all those nuisances to which they had in other theatres been very frequently liable from the number of disorderly persons who were led to that part of the house in consequence of the basket boxes and other appurtenances of that floor."

This extract, although somewhat lengthy, gives such quaint reasons for the form of plan adopted, that it must be of interest to the architect of the present day to follow the thoughts that guided the architect of 80 years ago in his design.

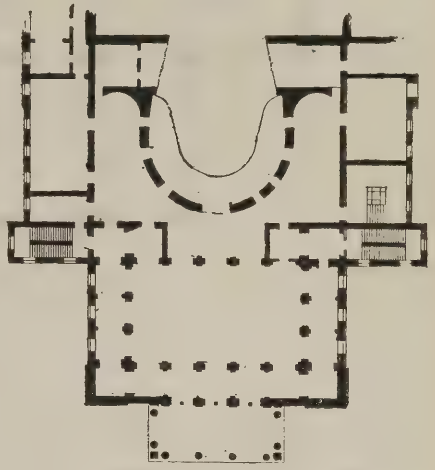

Fig. 9.

Of the more modern Continental theatre, Figs. 9 and 10 give the saloon as designed in the reconstruction of the Schwerin Theatre by Mr. Danich, the architect. Here the saloon is also constructed to act as a concert-room and grand reception hall, and can be used apart from the theatre. The plans show smaller foyers and refreshment-rooms at the sides of the auditorium. Fig. 11 of a part of the new Rotterdam Theatre, by Mr. Verheul, shows the foyer as a suite of three rooms. For this diagram, and those of Schwerin Theatre, I am indebted to Mr. Edwin O. Sachs, who received them from the architects. Had space permitted, I should have included the foyers of the larger Opera Houses, such as Paris and Vienna; but I have produced portions of these plans in other articles of this series. Several other of the smaller Continental theatres should also find a place in this article; but I have one other point to dwell upon before dismissing the subject.

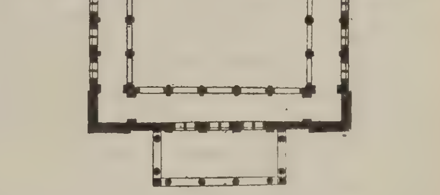

Fig. 10.

Where refreshment-rooms are situated at a higher level than the street, it is necessary to convey by some means the casks, barrels, and boxes to the saloons. In some cases beer cellars are formed as in a public-house, and the beer pumped up; but in others the barrels are brought up the staircases used by the public, with the

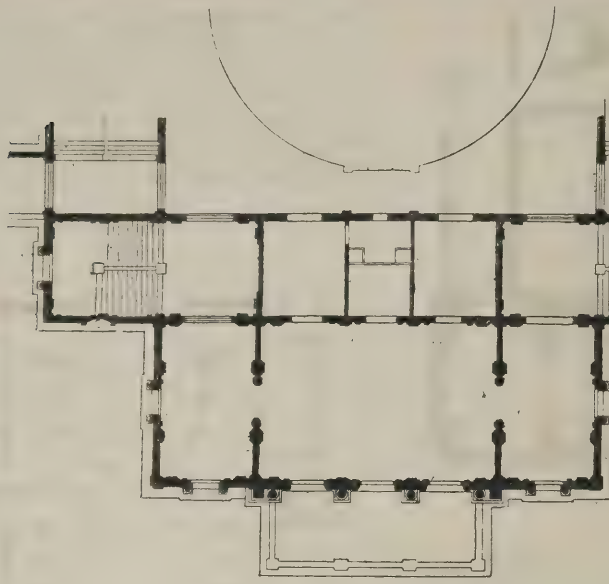

FIG. 11.

consequence that the nosings are chipped off, frequently making the stairs in a most dangerous condition. It is better, therefore, to set aside, among other rooms in the basement, one for a beer and spirit store, with an entrance to it by a "rolling way" from the pavement. This cellar could be connected with the refreshment-rooms above by pumps, and a lift to take up boxes of mineral waters and bottles of wine, &c. This lift, which, in accordance with modern requirements, should be inclosed with brickwork on all sides, it is true, would make a connecting flue from floor to floor for the conveyance of smoke and fire from room to room.

An invention has lately been patented for the horizontal and automatic closing of lift openings at each level, in order to localise fire and smoke to a limited area in any part of the building, so that it can be coped with and overcome before spreading.

The openings to the well-hole at each of the floor levels are closed, by this invention, by self-closing horizontal iron sliding doors. Where, however, the projection of a girder or the presence of a wall prevents the doors sliding, they are made to rise like cellar flaps. These doors are opened by the action of the lift ascending, and closed by it descending, or can be worked by hand power from any floor or level in the building. The patent is called "Hallenstein's fire-doors." I should add that this description is only given after seeing a model, and that I cannot tell how it would actually work. The principle, however, appears a good one, and it is undoubtedly desirable to stop the up-draught in the flue created by the well-hole of a lift. It is the danger of such a strong and certain conveyance of smoke that has excluded lifts to some extent in theatres. They may, however, be considered necessary in connection with the commissariat of a theatre. Lifts, too, are of very great service in the dressing-room block of a theatre, saving actors the tiring trudge up many stairs each time a costume has to be changed, thereby taking away much of the natural energy required to be thrown into the action of the part.

* * *

NOTES FROM PARIS.

FRANCE has just lost another eminent sculptor in the person of Auguste Cain, whose death, following so closely on that of the celebrated sculptor Barye, throws additional mourning over the circle of Parisian artists, and leaves another large gap in the number of French sculptors. Auguste Cain, a sculptor of animal groups, was one of the most remarkable of the pupils of the late Barye, and son-in-law of the well-known sculptor Mené. Cain at an early age commenced work in the workshop of a joiner, but giving way to the inborn instinct of art, and following the bent of his young imagination, he entered the studio of the sculptor Rude, and later on studied under the late sculptor of animals, Barye. His first successful attempt was a small bronze exhibited at the Salon of 1846. Two years later he attacked the first series of the work which brought him fame, and produced the well-known group of the "Frogs asking for a King." From this moment his maturing talent asserted itself, and the several groups of animals, which have rendered the artist's name celebrated and placed him on a footing with the great Barye, were produced. After many successes at the Salons and Expositions he was decorated in 1878. Amongst his finest and best known works are the "Vulture and Fox," the "Tiger and Crocodile" (this last group earning for the artist the Legion of Honour), the "Lions Quarrelling over a Boar," and the "Family of Tigers" (his *chef d'œuvre*). The gardens of the Louvre and the Luxembourg are decorated with these groups, and with many others by the same sculptor; the Lions of the Paris Hotel de Ville are by Cain. Although notably a sculptor of animal life, this artist has left behind him many examples of decorative and monumental art. The late artist died at the age of seventy-two, leaving two sons, both painters of talent.

Architectural circles deplore the death of Edmond Guillaume, an old Prix de Rome, architect of the Louvre and Tuileries, and professor at the Ecole des Beaux Arts. Commissioned after his return from Rome with a scientific mission in Asia Minor he there made several very interesting explorations in Mysia and Bithynia, which were published in book form at the expense of the State. He made also many very interesting restorations of the Grecian Temples. Later on Guillaume was appointed architect to the Palaces of Saint Cloud, the Archives, Versailles, Louvre, and Tuileries. As Professor at the Ecole des Beaux Arts he published many interesting works on the history of art and ornament, and on Greek and Roman antiquities. He died at the age of sixty-nine.

A few notes on the new sanitary law which has just been voted for Paris may be interesting now that the city is to be drained by the system of Tout a l'egout. The town is authorised to borrow for the purpose of sanitary measures the sum of five million pounds repayable in 75 years, and to be thus employed: Work to be done for raising and carrying away drainage matter to the lands given up for the purpose of converting the matter into products for agricultural uses, the buying of these lands and the preparation of the same, one and a quarter million pounds; completion of the system of drains, repairing and improving of those existing, and the construction of new collecting drains, one and a half million pounds; completion of the water supply for drains, construction of reservoirs, filtering basins, two million pounds; the rest of the money being reserved for repaying and interest.

The proprietors of houses situated in the streets provided with public drains are obliged to connect their house drainage underground, and directly to the main; a delay of three years is allowed for the completion of this private work. The town of Paris is permitted to levy taxes on these houses proportionately to the rateable value of the property in payment for the removal of drainage matter, from a tax of 8s. 6d. on a house rated at £20, and proportionately to £20 for a house rated at £1,600 to £60 for property rated at £4,000 and above. If for any reason a property has no rateable value as regards taxes, the drainage tax is fixed at £2 per down pipe. The town is allowed a delay of five years for the completion of all work pertaining to this system of thorough drainage.

The hospitals for the construction of which a large sum of money was left by the late proprietress of the Bon Marché, Madame Boucicault, are now advancing, and but for the delay made by the Assistance Publique at Paris, should by this time be completed. These hospitals, of which there will be one at Paris for old people and idiots, and three in the provinces at Lille, Rouen, and Chalons, destined as refuges for girl-mothers, are supposed to combine all the best and most modern requirements of such buildings, and will probably form an interesting study when completed. The hospitals will be arranged for the reception of the young mothers in separate rooms if desired and privately.

The subject for the Prix de Rome, at the Ecole des Beaux Arts, this year, was a central school of arts and manufactures, to be erected in the capital of an important country. This school, reads the programme, is purposed for the formation of civil engineers for national industry, and reserve officers for the army and artillery. The building should therefore comprise two principal divisions, one for scientific studies, and one for military studies. The science division should contain the school offices and offices for the director, secretaries, treasurer, and dwellings for the school employés; a dwelling for the director with private entrance. The three school buildings for the three school years should be grouped around a large courtyard; there should be a large lecture hall for 250 pupils, having a surface of 2,000 square feet, waiting rooms for the professors and additional rooms for workshops, modelling studios, 24 class rooms, chemistry and physical rooms, and examination rooms, offices, galleries, and technical museums, a refectory for 750 pupils, kitchens and dependances, also a large library for 60,000 volumes, and galleries to contain objects of mineralogy and natural history. The military portion should comprise a large drill ground, stables, harness rooms, smiths' shops, and arm depots, and galleries to receive the artillery, also dwellings for the instruction officers.

It will be seen that the programme is very complete, and requires more especially the study of the planning than that of the façades, which should be characteristic, calm, and academical in aspect. Most of the ten plans and designs were well arranged as regards the various portions of the building. The winner of the Grand Prix is Mr. Recoura, of the second Mr. Patouillard, and of the third Mr. Heraud.

The official programme of the competition for the Exposition of 1900 is now ready for architects and engineers, or for any amateur who may desire to put forth his idea for the planning of the work. All desiring to compete will receive a copy of the programme, a plan of the available ground on a scale of one two-thousandth, a list of the general classification of the objects to be exhibited, and a plan of the necessary surface required for each group of exhibits. The ground given up for the Exposition will be the Champ-de-Mars, the Trocadero, and surroundings, the Conference and Orsay quays, the Esplanade des Invalides, the Palace of Industry and surrounding grounds. The principal communication between the two banks of the Seine will be a new bridge facing the Invalides. The available ground will therefore be much larger than that employed for the last Expositions, the Palais d'Industrie and grounds being added. In their plans and designs the competitors should indicate more especially the position of the principal buildings, and the proposed means of communication between the opposite banks of the river. Arrangements should be made for the large Salle des Fêtes and buildings for the congress and administrations, free spaces will be left for the buildings to contain exhibits from the colonies and foreign nations, and also those for private exhibitions, theatres, and cafés. The competitors should also study the arrangement of the parks, gardens, water effects, and other decorations, and also the means of mechanical conveyance of visitors in the exhibition grounds. The competitors have the liberty to modify any of the existing buildings including the Eiffel tower, the Trocadero building should, however, be left untouched. The building may be erected hanging over the river, on the quays, above the railways, and on the Invalides bridge if desired; but it is desired to obtain as decorative effect as possible with inexpensive materials. The competitors must provide a general plan at a scale of one two-thousandth; detailed plans, scale of one-thousandth; façades and sections, scale one five-hundreth; a bird's eye view of the whole design, an estimate of the total cost with details based on prices per square or cubic yard, for each of the elements of the design; an explanatory note on the whole design, with the manner of construction, and if the author desires a development of a portion of the idea to a large scale. Four months are given for the preparation of plans and designs, the last day for sending in being the 12th of December, when the drawings will be exhibited to the public and afterwards submitted to a jury of 31 members. The prizes to be awarded are, three of £240, four of £160, five of £80, and six of £40; the premiated designs becoming the property of the administration. The total surface to be covered by the Exposition will be about 10,000 acres.

At the Ecole des Beaux Arts the Chevenard prize concours, open to painters, sculptors, architects, and engravers has just taken place. A legacy provides an annual sum of £2,000 devoted to the aiding of poor art students who have already carried off several awards in the school competitions, and show a certain promise of ability. Those of the school pupils who wish to compete for these scholarships send in rough sketches of any design or subject which they may choose; of these sketches, six are chosen from each of the four sections of art, twenty four in all. The authors of the sketches chosen by the jury have to study and improve on their first idea during the course of a year, working on the subject until each one produces finished drawings, paintings, or designs for presentation at the final competition. Each pupil receives an indemnity of £5 per month on the condition that he studies seriously his chosen subject at the studio of the professor under whom he works. At the end of the year the test of each section of art receives a prize of £60. A large portion of the legacy is also devoted to aiding poor art students. In the section of architecture this year, four sketches only were considered interesting, these being for a military school, a large public square, Salle des fétes, and an Eden for 1900.

The prize of £60 given by the Academy for the best work of architecture completed in the year is awarded to M. Hardy for his fine work of Notre Dame de Lourdes.

The international exhibition of urban sanitation at Boulogne opened on the 5th of August, appears to be very successful; this exhibition will remain open until the end of September.

The new sanitary measures for Paris still meet with a large amount of opposition from proprietors of land around Paris, destined to be employed for the laying out and conversion of the drainage matter. At Herblay, a portion of country traversed by the main drain, the engineer entrusted with the construction of the work has been forbidden by the mayor of the commune to continue the work of excavation, and on the refusal of the former has appealed to the courts of Versailles for the carrying out of his desires *manu militari*. It is claimed that these lands have not been legally expropriated.

Paris will soon be provided with electricity for lighting and domestic purposes in every quarter of the city; centres of electricity are being established for each arrondissement. As in the crowded portion of Paris it is a difficult matter to find space for the erection of these centres, and the piece of ground and the cost of expropriation expensive, it has been found more economical and convenient to construct buildings underground for the reception of the power engines and dynamos. One of the most interesting of these now in the course of construction is that under the gardens of the Palais Royal destined for the supply of electricity to the quarter of the Exchange. The portion for the machines is situated directly under the large *cour d'honneur*, and consists of a hall over one hundred feet long by sixty-five feet broad, and nearly twenty feet deep. Three large lantern lights are raised slightly above the surface of the gardens, and are hidden as much as possible by shrubs. The smoke given off from the seven boilers is carried away underground for a distance of a hundred feet to a chimney stack erected in the courtyard of a house outside the Palais. The question of ventilation and aeration has been properly studied, and the centre is considered as a model of its kind. This centre will light a large number of lamps in its neighbourhood, the Théâtre Français and that of the Palais Royal, the galleries, dwellings, and shops of the Palais, and will serve as a help for the lighting of the grand boulevards, and the Elysée during fête time. The constructional work is due to M. Chabrol, architect of civic buildings.

Arthur Vye Parminter.

SKELETON BUILDINGS.

IN a paper on the engineering features of the Harrison Buildings at Tenth and Market-streets, the author, Mr. W. Copeland Furber, member of the Engineers' Club, Philadelphia, describes in the *Proceedings* of the Engineers' Club, the construction of this building. The Harrison building is a curtain-wall structure. All the weight is carried on the columns on three sides; the party-wall is of brick masonry. The columns are 21ft. apart, and of the Phœnix pattern. The girders supporting the curtain are rolled iron with top and bottom cover plates, and the interior girders are 24in. built beams. The attachment of the girders to the columns is by means of a "pintle" plate, which is a plate set between the sections of the column on its diameter, and is riveted to the web of beam. The joists are of Georgia pine, and the floor of 3in. spruce with 1in. maple floor. Asbestos and waterproof linings are placed between the rough and finished floor. The unit strains used for columns were $13,000 - 20\frac{l}{r}$; for rolled beams, 16,000; built beams, 13,000; and for wood beams, 1,500. For brick masonry the resistance to crushing was 150lb. per square inch. The floors were calculated for 200lb. live load, the girders for 85 per cent. of this, and the columns for 75 per cent. in addition to dead load. The footings are proportioned for a total load of 4 tons per square foot. No settlement has been discovered. The walls are of dark brown Pompeian glazed bricks, and the terracotta work is backed with common brick. Cement, with a small amount of lime, was used. The roof is covered with tin. The design is described as Italian Renaissance. The area of building is 65ft. by 200ft. Messrs. Cope and Stewardson were the architects. In the Harrison Stores, on an area 308ft. by 137ft., concrete piers are used square in area 20ft. in height for the basement, and were built to receive a load of 200lb. per square inch from the columns. The concrete was of Portland cement of American manufacture, mixed with three parts of coarse, tide-washed bar sand and five parts of crushed rock free from dust.

THE BATH PUMP-ROOM EXTENSION.

AT the Guildhall, Bath, on Friday, Mr. W. J. B. Clarke, Local Government Board inspector, held an inquiry into the application of the Town Council for power to borrow £30,000 for buildings in connection with the pump room. For the corporation Mr. King said that for several years there had been felt in Bath a need of more accommodation for visitors in connection with the pump room. The design the council proposed to carry out, provided not only for the extension of the pump room, but for the protection of the Roman bath, the idea being to incorporate it in the general scheme of the bathing establishment.

Mr. King alluded to the obtaining of plans for the building, and explained that, after full discussion, the council accepted as the architect the author of a design marked "K," which proved to be Mr. J. M. Brydon, the architect of the Municipal Buildings and the Technical Schools now being erected in the city. The Mayor, who gave evidence, questioned by Mr. David, who appeared for certain opposing ratepayers, said the council, in December, 1893, decided to adopt the plan of "O" (who proved to be Major Davis, city surveyor of Bath), but he did not put his name in the envelope; the council rescinded the resolution adopting this plan, and ultimately decided that "K" (Mr. Brydon) should be the architect of a modified scheme, with Mr. Alfred Waterhouse, R.A., as adviser. Sir Jerom Murch, seven times mayor of the city, also supported the plan. He was aware that the Society of Antiquarians had objected to the present scheme on the ground that the scholæ (the platform) around the Roman bath would be built upon. Mr. J. M. Brydon, F.R.I.B.A., was called, and gave evidence as to his plans. He declined to express an opinion on the plans of Major Davis. The disturbance of the Roman work would be infinitesimal, but it was impossible to cover the bath in one span without building on the scholæ. Major Davis, F.S.A., produced plans of new vapour baths, to cost £1,000, which are part of the scheme. Questioned by Mr. David, he said no plan could commend itself which contemplated building on the scholæ. The inspector said he was not an antiquarian, but it seemed that a very small percentage of the Roman work would be disturbed—about 400ft. out of a total of 5,000ft. The light pillars would be only a foot square each. After a previous inquiry the Local Government Board had sanctioned a loan of £6,000 for acquiring the site for the specific object of extending the baths. What could be done with the site if the building were not erected? Mr. David spoke at length in opposition to the proposal, contending that the plan of "O" was preferable, and that such an ill-considered expenditure should not be sanctioned by the Local Government Board.

AN IMPROVED T-SQUARE.

THE improved T-square shown in the figures is contributed to the *American Machinist* by Mr. F. W. Clough, who says:—The improvement consists of the addition of the steel plate D, which may be screwed or riveted to the blade B. Both of these have slots 1 and 2, as shown on a larger scale in Fig. 3. A swivel bolt, C, passes through slot 1. The sides of this bolt are flat, and fit the slot accurately. The slot 2 engages with the pin E driven into the head A. The advantage of this arrangement is that the blade can be set square to the head with great accuracy. In disengaging the pin E and the slot 2 the blade can be set to any desired angle, and, bringing these again into engagement, the blade will be square to the head without any testing of its accuracy. The reliability of the action is shown in Fig. 4, in which each one of the parallel lines was drawn after a separate setting. I have used this T-square with very satisfactory results.

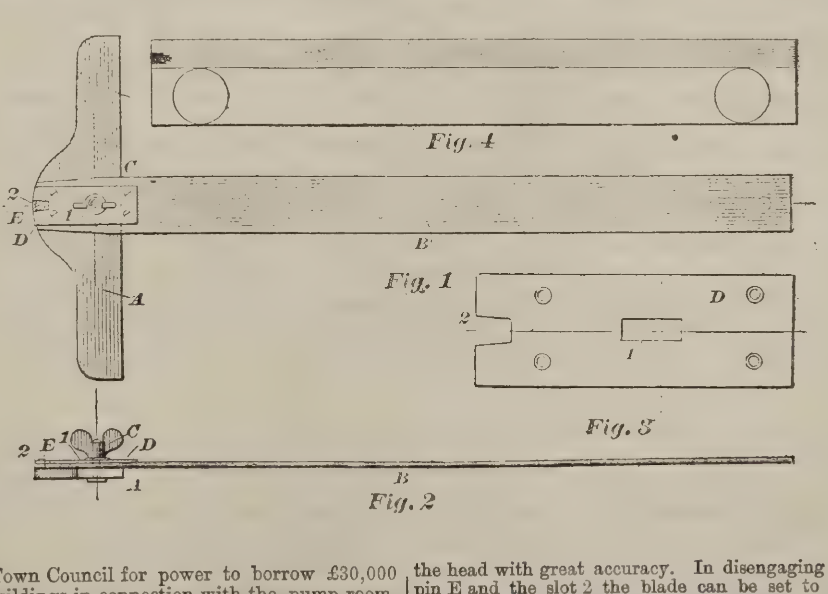

Fig. 4

Fig. 1

Fig. 3

Fig. 2

BRITISH BUILDING STONES.—XIII.

SCOTLAND (*continued*).

No.	Quarry.	County.	Geological Formation.	Description.	Colour.	Weight of a Cube Foot.				Water Absorbed per Cube Foot.	No. of Cube Feet to 1 ton.				Remarks. Where used, analysis, crushing strain in tons per ft super., cost per cube foot.
						Dry.		Wet.			Dry.		Wet.		
						lb.	oz.	lb.	oz.	Pints.	ft.	in	ft.	in.	
410	Ord (East) .. Berwick-on Tweed.	Berwick..	Old Red Sandstone. *Devonian.*	Fine-grained soft sandstone.	White, with a pink tinge.	128	5	137	2¾	7	17	5½	16	4	Corn Exchange, Berwick, Langridge Towers, and many villas in Berwick. Cube stones, under 6ft., 10d.; 9ft., 1s.; 12ft., 1s. 3d.; 14ft., 1s. 6d.; 16ft., 1s. 9d. Superficial stones, under 5ft. by 5in., 6d.; under 8ft. by 6in., 8d.; under 10ft. by 7in., 10d.; under 18ft. by 7in., 1s. 6d. Wall stones, per load, 1s. 3d. Long stones, under 4ft. by 12in. by 7in., 8d.; under 5ft., 10d.; under 7ft., 1s. Rybats, corners, ashlars, skews, and coursers worked in this quarry. Wall stones, 1s. 3d. per load; add 1s. 4d. per load cartage to Tweedmouth railway station. The stones in this quarry can be cut to any thickness, from 15ft. to 20ft. Some stones do not turn out quite so good for building as others.
411	Peterhead ..	Aberdeen.	Granite.	Transparent quartz, pink, orthoclase, whitish albite, and black mica (biotite).	Pink.	162	12	163	2	¼	13	9	13	8¾	Used for monumental work, shafts, pilasters, &c. Analysis silicon oxide, 73·70; aluminium oxide, 17·20; ferrous oxide, 0·41; ferric oxide, 3·15; calcium oxide, 2·92; magnesium oxide, 1·20; sodium oxide, 3·25; potassium oxide, 3·90; crushes with 973 to 1,345 tons (B).
412	Pitairlie ..... Newbigging, Dundee.	Forfar ..	Old Red Sandstone. *Devonian.*	A fine-grained compact sandstone; bedding distinct, little mica.	Bluish grey.	156	7½	159	7	Thick Rock. 2⅜	14	3¾	14	0½	The pavement is 6d. per foot super. on rail at Monikie station.
						153	3¾	156	15	"Slate" Bed. 3	14	7½	14	4	
413	Plean .... Bannockburn.	Stirling ...	*Carboniferous.*	Fine-grained sandstone, even close texture little mica rubs smooth. No bedding seen.	Light grey.	145	8¼	150	6½	3⅞	15	4½	14	10½	New Post Office, Falkirk; Burgh Buildings and Brentham Park House, Stirling; Burgh Buildings and Co-operative ditto, Alloa; Naemoor House, Rumbling Bridge. This rock is from 12in. to 3ft. thick. Random blocks, not confined to length, breadth, or thickness, 1s. 2d. per foot; sized blocks, under 15ft. cube, 1s. 2d.; up to 60ft., 4s. 3d. Broad stones, under 6ft. and 6in. thick, 8d.; 14in. thick, 1s. 6d.; under 35ft. and 6in. thick, 2s. 10d.; up to 14in. thick, 4s. 3d. Long stones, 4ft. by 12in. by 7in., 3s.; 4ft. by 24in. by 11in., 9s. 8d.; 12ft. by 12in. by 7in., 20s. 9d.; 12ft. by 24in. by 11in., 74s. 9d. Columns, 6ft. by 15in. by 15in., 18s. 11d.; 6ft. by 24in. by 24in., 63s. 11d.; 15ft. by 15in. by 15in., 109s. 10d.; 15ft. by 24in. by 24in., 325s. 10d. Stones under 12in. broad charged as 12in.; sized stones of common rock 10 per cent. less than above prices, which are quoted for delivery on trucks at quarry. Common rubble, 1s. 3d.; founding rubble, 2s. per ton; crushes with 569·5 to 637 tons (B).
414	Pyotdikes ... Muirhead. Dundee.	Forfar ...	Old Red Sandstone. *Devonian.*	Fine-grained, compact; rubs rough; little mica.	Bluish-grey.	156	3	158	10	2	14	4	14	1½	Dundee Harbour Works. Cube stones, not exceeding 5ft. cube and under 5ft. long, 1s. 2d.; ditto, and under 10ft. cube, 1s. 3d; 10ft. to 15ft. cube, 1s. 4d.; 15ft. to 20ft. cube, 1s. 6d. Ashlar, random lengths, under 8in. thick, sawn or face, 1s. 1d.; ditto machined on face, 1s. 2d. Steps, machine faced and sawn on breast, under 7ft. long and 7in. thick, 1s. 2d.; ditto machine breasted, 1s. 3d. per super. foot. Wheel steps 1d. extra per super. foot. Prices are for stones on trucks at Dronley station.
415	Ravelston ... Blackhall.	Edinb'rgh	Calciferous Sandstone. *Lower Carboniferous.*	Quartz grains in contact; cavities in mass, with ochreous spots, and mica in bed plans.	Light brownish-grey.	141	2¾	146	13½	4½	15	10¼	15	3	Has been exported to America. There are two kinds of rock in this quarry—common or bed rock, and liver rock. Cube stones, 10in. thick and upwards, under 5c.ft., bed rock 1s., liver rock 3s. 6d.; 15ft. to 20ft., 1s. 8d. bed rock, 5s. liver rock; up to 30ft., 2s. 6d. bed rock, 7s. liver rock per cube foot. Broad stones, under 10in. thick and containing under 10ft. super., bed rock 2s., liver rock 2s. 6d.; containing 25ft. and under 30ft., common rock 4s. 6d., liver rock 5s. 6d. Rubble, 2s. 6d. per ton; hill rubble, 2s.; hand rubble, 1s. 3d. Dyke stones, bottoming, 9d. and 6d. per ton, in carts at quarry. Crushes with 782 tons (B). This stone is similar to Craigleith.
416	Ross of Mull	Argyle ...	Granite.	Much transparent quartz; pink orthoclase, with a little biotite.	Pale pink.	163	3½	163	8¾	¼	13	9	13	8½	Westminster Bridge; Holborn Viaduct. Crushes with about 1,300 tons to the foot. The Viaduct piers failed with less than the hundredth part of this weight, owing to hollow bedding and the improper use of lead in the beds. Analysis:—Silicon oxide, 74·48; aluminum oxide, 16·20; ferric oxide, 0·20; calcium oxide, 0·13; magnesium oxide, 0·27; sodium oxide, 3·78; potassium oxide, 4·56; water, 0·60.
417	Rubislaw	Aberdeen.	Granite.	Fine grain; white quartz, and orthoclase; black mica.	Dark grey.	166	13½	166	14¾	1-13	13	5	13	5	Bell Rock Lighthouse, London Bridge, Waterloo Bridge. Crushes with 915 to 1,334 tons (B).
418	Springfield.. Kelso.	Roxburgh	*Lower Carboniferous.*	Moderately fine-grained sandstone; speckled with black; bedding not distinct	Grey.	128	13¾	137	9¾	6⅝	17	4½	16	3¼	This quarry does not produce large stones. Random blocks can be delivered to rails for 1s. 3d. per foot.
419	Stirling Hill Peterhead.	Aberdeen.	Granite.	Glassy quartz; pink orthoclase; black mica.	Pink.	161	2	161	10	⅝	13	10¼	13	9¾	Columns Carlton Club and Fishmongers' Hall, London; shaft Duke of York's Column; Provincial Bank, Dublin.
420	Swinton ,......	Berwick...	Calciferous Sandstone *Lower Carboniferous.*	Fine-grained micaceous sandstone.	Brownish-grey.	130	3	138	14¾	6½	17	2¼	16	1½	This quarry is worked by the proprietor of Whitesome Newton, No. 424, into whose hands it came about three years ago. He reports it as yielding a better weather stone than Whitesome Newton. "It will stand fire, looks well on a southern exposure, but is dark to the north." Prices of stone same as No. 424.
421	Sylavethie... Alford.	Aberdeen.	Granite.	Quartz, orthoclase hornblende, biotite, and sometimes schorl.	Dark grey.	170	0	170	7½	⅝	13	2	13	1¾	Used in Aberdeen for monumental and other polished work.
422	Threewells. Bervie, Fordoun.	Kincardine.	Old Red Sandstone. *Devonian.*	Micaceous fine-grained sandstone, rubs smooth; bedding not distinct.	Purplish brown.	141	5½	147	6½	4⅞	15	9½	15	2½	Both local banks. Free church, and several private houses, Bervie. Quarry beds from 3in. to 18in. thick. Cube stones not above 4ft. long, and not more than 10ft. cube, 1s.; stones for oven soles, 1s. 2d.; Garling, 10in. broad, 3in. to 4in. thick, 4d. per linl. foot; "ruble," 1s. 6d. per ton in load; "scuncheons," 18in. to 20in. long, 12in. to 13in. high, 6d.; broad stones under 6ft., 6in. thick, 7d.; 7in. thick, 8d.; 8in. thick, 9d.; 9in. thick, 10d.; under 24ft., 6in. thick, 11d.; 7in. thick, 1s.; 8in. thick, 13d.; 9in. thick, 14d. Long stones all 14in. by 7in., 3ft., 2s.; 4ft., 2s. 8d.; 5ft., 3s. 9d.; 6ft., 5s.; up to 10ft., 12s. 6d. Flat lintels one-fourth more. Prices are at quarry. Delivery to rail, 15d. per ton extra.
423	Victoria ..... Birsemore, Aboyne.	Aberdeen.	Granite.	Large crystals of pink felspar; glassy quartz, and biotite.	Dark grey, with pink crystals of large size.	164	14¾	165	2¾	⅜	13	7	13	6¾	A very handsome granite, something like that from Shap. There are crystals of milk-white felspar in the ground mass, but these are much smaller than the pink crystals, which latter make the rock porphyritic in structure.
424	Whitesome . Newton.	Berwick .	Calciferous Sandstone. *Lower Carboniferous.*	Fine-grained micaceous sandstones, with carbon spots.	Grey, with brownish-green tinge.	130	11½	139	8⅝	7	17	1½	16	0½	This quarry has supplied stone for nearly all the mansion houses in Berwickshire, and is extensively used in Edinburgh, where the "Students' Union" was recently built out of it. "Shows signs of weathering at Pillars in Meadows, 1888" (Craig). Randon block not exceeding 10ft. cube, 11d.; if cut to two special sizes, 1d. per foot extra; if cut to three, 2d.; and for every addditional foot, or part of a foot in length, 1d. per foot extra. Prices net on waggons at Edrom.

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ILLUSTRATIONS.

NORTHERN POLYTECHNIC INSTITUTE, HOLLOWAY ROAD.—"THE JOURNEY OF THE MAGI."—ARCHITECTURAL ASSOCIATION EXCURSION SKETCHES AT WELLS.—"BUILDING NEWS" CLUB DESIGNS FOR A COCOA TAVERN AND VILLAGE CLUB.—HOUSES AT THE HANWELL PARK ESTATE.—HALL IN A HOUSE AT WASHINGTON.

Our Illustrations.

THE NORTHERN POLYTECHNIC, HOLLOWAY-ROAD, ISLINGTON.

The building occupies a site with a frontage to the Holloway-road of about 132ft., but it extends backwards a considerable distance in rear of other properties, and there is a cart entrance from Brand-street in the Hornsey-road. All the social and recreative rooms are on the ground floor, the various classrooms and workshops being placed in three blocks of three floors each, one facing the Holloway-road, where is also the main entrance to the Great Hall, and also entrances for male and female students; a second block midway in the depth of the site, and the third, containing the men's technical classrooms, in the rear. By this arrangement all rooms have light on each side of them. The entrances from the Holloway-road lead into wide corridors extending the whole depth of the site, between which are the social and recreative rooms common to both sexes of students. The official rooms for the secretary and principal, inquiry offices, &c., are on the ground floor at the entrance, the governor's room being on the first floor in rear. The Great Hall accommodates about 800 persons, in addition to the orchestra for 250, and has cloak and retiring-rooms in front and rear, also a spacious band-room below the orchestra. In rear of it is the men's gymnasium, with dressing-rooms, &c., adjoining; also a large club or common room. The heating chamber is below in a half-basement. The men's side has classrooms and workshops for drawing, modelling, carving, masonry, brickwork, smith and founder, brass and ironwork, electrical and general engineering, carpentering, chemistry, and photography, &c. The women have rooms for cookery, laundry, dressmaking and needlework, drawing, designing, and art work generally; also a gymnasium. Refreshment rooms and kitchen are also provided, with lavatories on each floor. The heating of the buildings will be by steam and hot water, and the ventilation has been carefully studied. The general disposition of the various rooms has been considered and approved by Sir Philip Magnus and Professor Garnett, of the County Council Technical Board. The Holloway-road front will be of red Leicester brick and Bath stone. The Great Hall will have a semi-circular roof supported by iron principals, and the walls will be faced with white and coloured bricks. All the principal rooms and corridors will have glazed brown brick dadoes and solid block floors. The architect is Mr. Charles Bell, F.R.I.B.A., of 3, Salter's Hall-court, E.C., whose design was selected in October last out of six submitted by selected architects; and the contractors are Messrs. Macfarlane Bros., of Hornsey-road, whose tender of about £30,000 has been accepted, and two sections of the building will be proceeded with at once. We illustrated Messrs. Roger Smith and Son's design, submitted in the same competition, on December 1st, 1893, and that sent in by Mr. A. H. Tiltman on December 8, 1893, and May 25, this year.

OLD MASTERS ON THE CONTINENT.—VIII.

In our issue of the 27th ult. we illustrated and described one-half of the masterly fresco illustrating "The Journey of the Magi," executed by Benozzo Gozzoli, in the latter half of the 14th century, on the right-hand wall of the private chapel on the first floor of the Palazzo Riccardi at Florence. This week we give the second portion of the fresco, which joins on the right of that now published. It will be seen, on comparison of the two plates, to be more crowded, but more skilfully composed, and withal more full of interest and variety than the first part. Mr. C. L. Eastlake's article will be found on p. 241 *ante*, and further illustrations of these frescoès will appear in early issues of the Building News.

COLLEGE LIBRARY AND CHAPEL, VICAR'S CLOSE, WELLS.

We have concluded our descriptive itinerary in connection with the A.A. excursion this year in the neighbourhood of Wells, and have little to add here in respect to this building, of which we give two excellent pencil drawings by Mr. Charles Spooner to-day. The chapel, with the library over, dates from the days of Bishop Beckington, whose executors are reported to have completed the upper part. Portions of 13th-century sculpture are incorpórated in the walling above the principal window, adding much to the interest and richness of the work, besides recalling the skill of the artist who executed the portion erected by Bishop Joceline. The interior has been much improved by the restorations carried out by the late J. D. Sedding. Great difficulty was experienced in keeping back the damp soaking through the walls of the chapel on the north side from the land above the site, which reaches a higher level. This damp caused much damage to Mr. Heywood Sumner's mural decoration in sgraffito.

"BUILDING NEWS" DESIGNING CLUB: COCOA TAVERN AND CLUB.

We illustrate this week, by plan, section, elevation, and perspective, the design by "Boomerang," placed first, and that by "Art," placed second, in this Club competition. A critical review of all the designs submitted will be found on p. 242 *ante*.

HANWELL PARK ESTATE.

The houses herewith illustrated have just been built from the designs of the architects to the estate, Messrs. T. W. F. Newton and Cheatle, 121, Colmore-row, Birmingham. Mr. D. Edwards, of Barnt Green, was the builder. It is intended that the estate shall maintain a distinctive character in its architecture, and no house of the usual type so dear to the heart of Mr. Buggins will be allowed.

HALL IN HOUSE AT WASHINGTONVILLE, N.Y.

This interior view shows a modern American hall of somewhat novel treatment, and will prove of interest to our readers. The cosy alcove, partly revealed and partly screened off from the stairs by high turned balusters, makes a valuable adjunct to an entrance hall. Here a visitor may be interviewed without being admitted to more private parts of the house, or it can be utilised for a chat with a more familiar friend of an evening, when interruption from the outside world is not so likely to occur. The furniture and design of chimneypiece are in simple and good taste. Mr. E. G. W. Dietrich, of New York, is the architect, and we are indebted to the *American Architect* for the illustration.

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The little Roman Catholic church of St. Osmund, Salisbury—one of those designed by Augustus Welby Pugin—has been enriched by a stained-glass window in memory of the late Canon Crook. It represents St. George and St. Edward the Confessor. The work of enlarging St. Osmund's church and school has been commenced by the contractor, Mr. Kitch, of Bridgewater, the total cost being estimated at about £1,500. From the plans of the architect, Mr. E. Doran Webb, F.S.A., it is intended to add to the church a north aisle, corresponding with the south aisle, and to erect at the eastern end of the new aisle a chapel dedicated to the Sacred Heart. The sacristy is also to be enlarged. To the school, which adjoins the church, there are being added a porch and a classroom, 16ft. by 18ft.

BOOKS RECEIVED.

Modern Methods of Sewage Disposal, by Geo. E. Waring, jun., M.Inst.C.E. (London: Sampson Low, Marston and Co., Ltd.). The author of this work is an American, and his object is to set forth the results of study and experience of engineers, chemists, and biologists as to the methods of sewage disposal. Mr. Waring chiefly describes American practice, though frequent reference is made to English methods and authorities. The principles and practice of sewage disposal are set forth by the author in separate chapters dealing with the treatment of sewage before final delivery, discharge of sewage into roads, &c., methods of disposal, the degree of purification required, sewage irrigation and farming, filtration with aëration, chemical treatment, &c. Four methods of sewage disposal are discussed—(1) irrigation, (2) filtration, (3) chemical precipitation, (4) sedimentation, which are described. The author does not favour any chemical precipitation process; he alludes to the accumulation of offensive sludge, and the last process, unaided deposition of the heavier solids is objected to on the same grounds. Sewage irrigation is more favourably entertained under proper conditions, and the conclusions of the author are summed up in those of the Sewage of Towns Commission (1858). Mr. Waring's book is a useful *résumé* of methods and principles.

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CHIPS.

The Fulham workhouse is about to be enlarged from plans by Mr. Saxon Snell. The contractor is Mr. B. E. Nightingale, of Albert Embankment, whose tender, the lowest of six sent in, was accepted at £5,095 by the board of guardians.

The town council of Wolverhampton decided last week to raise the salary of Mr. Woodward, the waterworks engineer, from £250 to £350 a year.

The death is announced from Paris of M. Léon Cugnot, some of whose symbolic statues ornament the Louvre, the new Hotel de Ville, the Palais de Justice, and other public buildings in that city.

Edinburgh, notwithstanding the settlement of the recent application, is still in difficulties over its tramways, and the Board of Trade has just appointed Mr. Henry Tennant, of Holgate Hill House, York, to act as arbitrator between the city council and Messrs. Dick, Kerr, and Co., the new lessees.

Mr. W. Strawbridge, who has for some years been Deputy Surveyor-General of South Australia, has been appointed to succeed Mr. G. W. Goyder as Surveyor-General.

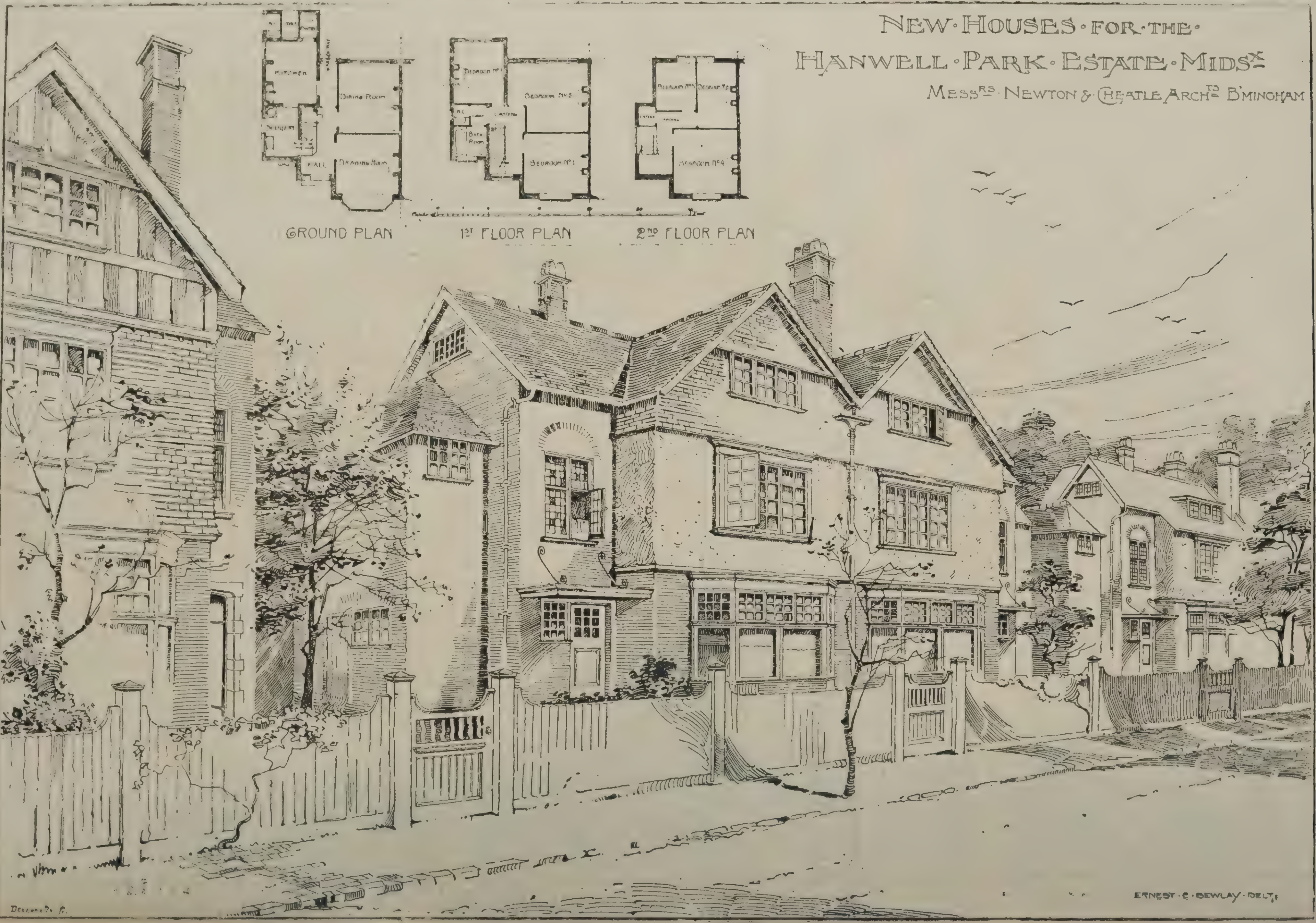
New vestries and a side-chapel are about to be added to St. John's parish church, Hammersmith, from designs by the architect of the reconstructed building, Mr. Hugh Roumieu Gough, of Carlton Chambers, Regent-street, W.

The town council of Maidstone, after considerable discussion, adopted at their last meeting a report from a committee, some of whose members had visited various common lodging-houses in London, Salford, Oldham, Huddersfield, and Bradford, and who recommended that steps be taken to provide a municipal common lodging-house in the borough to accommodate not less than 150 lodgers, viz., 110 single beds for men, 30 for women, and 10 double beds for married couples.

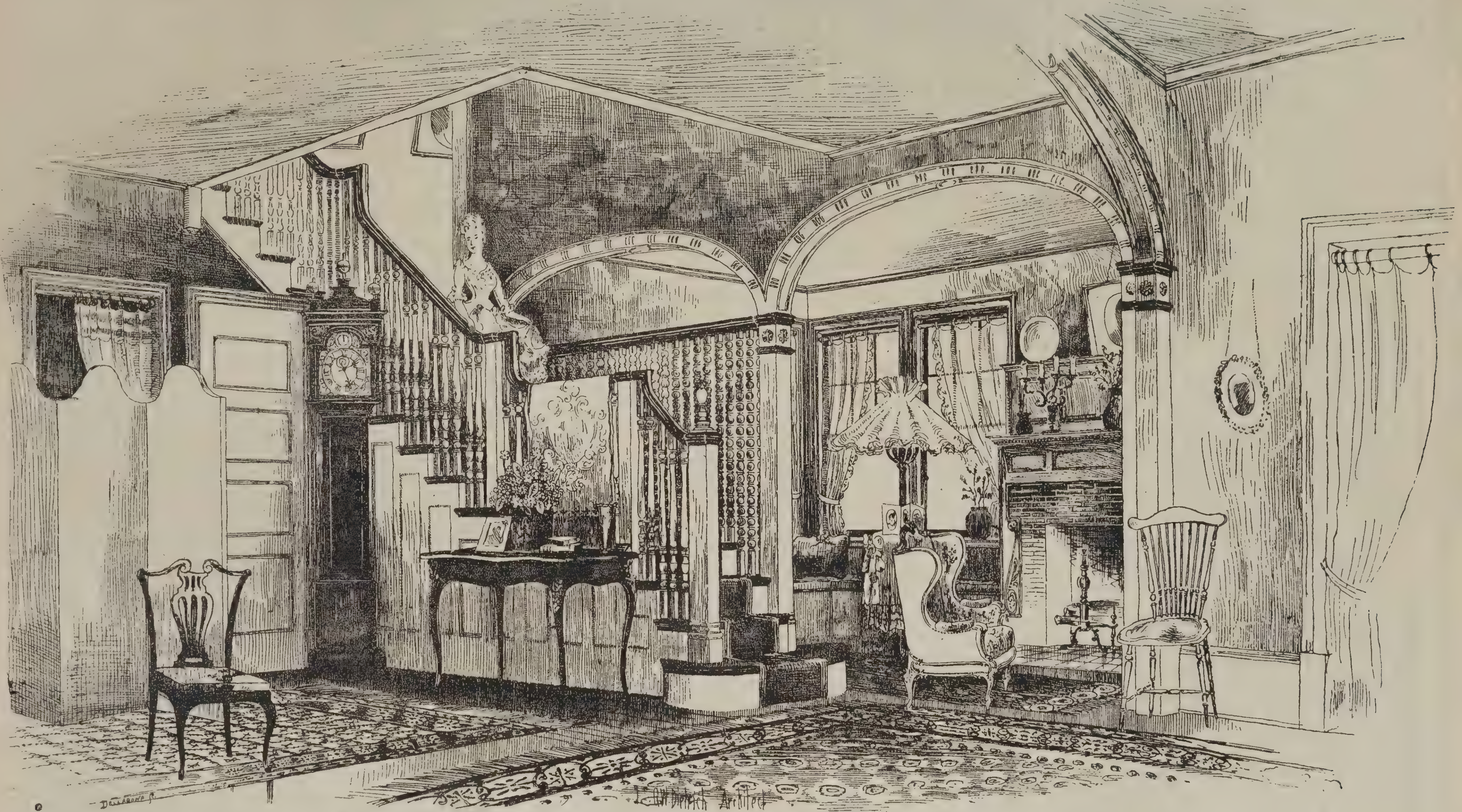
The bells of the parish church of Melton Mowbray, eight in number, have been re-tuned and re-hung by Messrs. Wm. Taylor and Son, of Loughborough, and in addition two new ones have been added to the peal, making ten bells. Extensive alterations were found to be necessary, in consequence of the decayed nature of the oak beams bearing the framework, which consists of two new steel girders supporting the oak beams and iron frames upon which they are now working.

The Mayor of Exeter will open the Ecclesiastical Art Exhibition, to be held at the Higher Market, Exeter. The ceremony will take place on the evening of Monday, October 8, and the exhibition will keep open till the following Friday.

A bazaar, which is to extend over the week, was opened on Monday at Riviere's Concert Hall, Llandudno, in aid of the building fund of the church now in course of erection at Llandudno as a memorial to the Duke of Clarence. The church is being erected on a site given by Lord Mostyn in East Llandudno, which forms part of the large and scattered parish of Eglwys Rhos. The mother church of Llanrhos, nearly two miles distant, has been found to be quite inadequate for the growing watering-place. Lady Augusta Mostyn has headed the building fund with a subscription of £1,000, the total amount now raised being about £4,000. The erection of the nave will cost £7,000. Accommodation is to be provided for 1,000 worshippers, and the total estimated cost is £10,000.



NEW·HOUSES·FOR·THE·
HANWELL·PARK·ESTATE·MIDSX.
MESSRS. NEWTON & CHEATLE ARCHTS. B'MINGHAM


E G W Dietrich Architect

Hall in Miss Elizabeth A. Hallock's House, Washingtonville, N.Y.

E. G. W. Dietrich Architect 18 Broadway New York

Engineering Notes.

Ivanhoe Tunnel, Col.—The Ivanhoe Tunnel, which is on the point of being completed, is cut through the backbone of the Rocky Mountains from Busk, a small hamlet 15 miles west of Leadville, Colorado, to Ivanhoe, another little village on the west side of the main range. The tunnel is 9,400ft. long, and is only surpassed in length in America by the Hoosac Tunnel and the Boulder Tunnel, in Montana, the latter being but 300ft. longer than the Ivanhoe. The tunnel is 21ft. high and 15ft. wide in the clear, and to admit of timbers the heading had to be 22ft. 9in. by 18ft. 6in. 200lb. of giant powder and 800ft. of fuse were used every 24 hours. During construction the tunnel has been lighted by electricity, with an arc light every 80ft., and several large air-compressors supply fresh air to the workmen. At each approach eight compressed-air drills were working, but the amount driven per day averaged only 8ft. The distance from the centre of the tunnel to the surface is 1,200ft. Where the Ivanhoe Tunnel enters the mountain at Busk, the altitude is 10,800ft. It lessens the distance between Busk and Ivanhoe by over seven miles. The rise to Hagennan is only 1·41 to every 100ft. Owing to the high altitude, doors will be placed at each end to keep out the snow, and the tunnel itself, for several hundred feet from each end, will be heated by steam. The work of construction, for which Mr. H. P. Keefe is the contractor, was begun in August, 1890.

Liverpool Docks.—The report of Mr. G. F. Lyster, dock engineer to the Mersey Docks and Harbour Board, shows that during the twelve months ending July 1st extensive alterations and improvements have been made on the Dock estate and the approaches to the docks. The principal improvements on the estate are those at the Canada and Huskisson Docks, which includes the construction, now in progress, of a 100ft. lock at the Canada, and a branch dock in connection with the same, and a new half-tide dock, with entrances and passages into the river. Altogether some 110,000 cubic yards of excavations have already been carried out, and about 60,000 cubic yards of masonry and concrete put in. As to the improvements in the river itself, during the year some 140,000 tons of rock, clay, &c., have been dredged up from the bed of the river to deepen the river entrances near the North Pierhead, whilst from the bar of the river nearly four and a half million tons of sand have been dredged up, and from the Crosby Channel upwards of 300,000 tons. The total quantity of sand removed from the bar since the operations were commenced is 6,845,860 tons. The result is that there is now a channel 1,000ft. wide, the depth of which is not less than 20ft. in any part at low water extreme spring tides.

The Royal Assent was given on Friday to the following, among other Bills:—British Museum (Purchase of Land). Valuation of Lands (Scotland) Acts Amendment, Public Libraries (Ireland) Acts Amendment, Dundee Suburban Railway (Extension of Time), East London Water, Southwark and Vauxhall Water, West Middlesex Water, London County Council (Improvements), North Cornwall Railway, Plymouth and Dartmoor Railway (Extension of Time), and the Exeter, Teign Valley, and Chagford Railway.

In 1889 the town commissioners of Ramsey, Isle of Man, commenced the construction of an entirely new sewerage system for the whole of the town, designed by Mr. James Mansergh, M.Inst.C.E. By this scheme the outlet for the town has been constructed at the extreme north end of the district, and up to the present the sum of £12,000 has been expended on the work. During the present year nearly all the sewage has been diverted from the harbour, and by the end of the year the whole of the sewage will be carried to the new outlet.

A new arcade is being erected in one of the main thoroughfares of Oldham by Messrs. Wild, Collins, and Wild, architects, of Clegg-street, in that town. At one end a large Cambridge quarter-chime clock has been fixed, striking the hours on a large bell, and a quarter-chime upon four smaller bells by automaton figures, representing King Richard, Robin Hood, Friar Tuck, and Gurth the Swine Herd, from Sir Walter Scott's "Ivanhoe." The architects have also introduced an illuminated dial 6ft. in diameter. All the work has been carried out by Messrs. Wm. Potts and Son, of 13, Guildford-street, Leeds, and 22, Collingwood-street, Newcastle-on-Tyne, from instructions received from the architects.

COMPETITIONS.

Bolton.—At a meeting of the school buildings and sites committee of the Bolton school board, recently held, the award of the assessor in connection with the plans for the new central higher grade board school was considered. It had previously been decided by the board that the competition should be confined to local architects, and seven firms sent in plans, for which premiums of £50, £25, and £10 were offered, the first to be merged in the commission of the successful architect in the event of the board accepting his designs. The assessor appointed was Mr. E. R. Robson, F.S.A., of Westminster, consulting architect to the Education Department, who made his award as follows: (1) Mr. R. Knill-Freeman, F.R.I.B.A. (under the motto, "Lux"); (2) Mr. J. Simpson; and (3) Messrs. Woodhouse and Potts. At a meeting of the board, since held, this award has been confirmed, and the carrying out of the work intrusted to Mr. Freeman. In giving his decision, Mr. Robson refers in considerable detail to each of the seven designs submitted to him, and speaks highly of their architectural merit. Dealing with Mr. Freeman's design, Mr. Robson says: "This competitor submits a series of plans all very skilfully drawn and finished. The central hall measures 100ft. by 32ft., and on the basement there is no attempt to incorporate the areas at each end. At the back the whole area is judiciously excavated to the level of the basement floor. In the general treatment of the basement, the central portion is devoted to a gymnasium and dining-hall, similar to the school-halls overhead, while the manual instruction room, kitchen, &c., are placed next the street. On the ground and first floors the arrangement of the master's room, book store, lift, lavatory, &c., together with the supervision window into the hall, is very suitable and good. The building, which would accommodate 1,000 children, is proposed to be erected in dark-red brick, and is to have red terracotta dressings. One of the main features in the design at each end is the manner in which the utmost amount of light is obtained in the central halls. I have no hesitation in giving this competitor first place of merit as to architecture." In addition to the foregoing accommodation there are also provided, in Mr. Freeman's design, a physical laboratory and lecture-room, classrooms for the instruction of the different branches of drawing, and a large chemical laboratory and lecture-room to same. Suitable teachers' rooms and lavatory accommodation are also provided. The building is to be of four stories, with a handsome elevation, the style of architecture being the Renaissance, and the estimated cost of the work is £20,000.

Sheffield.—At the last meeting of the School Board, the Buildings Committee reported that a letter had been received from Mr. E. M. Gibbs and Mr. C. Hadfield, on behalf of the council of the Sheffield Society of Architects and Surveyors, with reference to competitive plans for the Tinsley Park-road School, pointing out, that in view of the assessor's report, and the fact that only three infants' classrooms are shown on the plans marked "Sanglier Rouge," those plans should have been set aside, and the first place awarded to "Multum in Parvo." The committee recommended that the following reply should be sent: "The Board regret to find that objection has been taken to their decision upon the recent competition; but I am to point out that your council has evidently laboured under the mistake of supposing that an assessor was appointed, whereas the Board simply asked for advice, and reserved to themselves the full power of determining which, if any, plan should be adopted. They made their selection in perfectly good faith, after very careful consideration, and they cannot alter their decision." The committee also considered a protest signed by nine of the competitors; but they did not recommend any action thereon. Mr. Rawson said that the plans which were selected did not conform to the conditions, as they only provided for three classrooms instead of four, and the other plans did conform. It seemed to him that there was justification for the protest of the architects, and good ground for the board asking for an explanation. Mr. Fletcher, chairman of the Buildings Committee, regretted that the architects had felt it necessary to make this protest, because there had not been the smallest desire on the part of any one connected with the board to do the least unfair thing towards them, and the committee had not allowed the assessor to select the designs: he had simply given the committee his advice, and they had treated it as the counsel of a skilled man. After some further discussion, the report of the committee was adopted.

Truro.—The City council of Truro in response to an offer of £175 in premiums, have received four schemes for the drainage of the city. The estimated cost of scheme No. 1 is £8,963, with an annual expenditure, exclusive of repayment of the loan, of £312; No. 2, £13,003 and £415: No. 3, £12,965 and £250; and No. 4, £12,915 and £439 respectively. It has been decided to submit the four proposals to an expert, to examine them in conjunction with Mr. Clemens, the city surveyor, and report back to the council, who reserve the right to select a scheme.

West Ham.—The Corporation of West Ham, who purpose to adopt a competition for a technical institute and free library, to be built on the Green, have decided to throw it open, and not to restrict it to eight invited competitors, as at first intended. The total cost of the building is limited to £40,000, and Mr. J. MacVicar Anderson, F.R.I.B.A , has been appointed as the assessor.

CHIPS.

At the Cutlers' Arms, Cutler-street, E.C., a testimonial was presented to Mr. Lewis Isaacs, F.R.I.B.A., late M.P. for Walworth, by his friends. Mr. Councillor John Hutt, of Manchester, presided, and made the presentation speech, in a felicitous address, commenting on the honest and upright career and the philanthropic virtues of their friend. The testimonial consisted of a gold chronometer watch and chain, together with a vellum address in a frame. Mr. Isaacs having responded, the festivities concluded with a dinner.

An iron girder bridge has recently been erected at Pontfadog, to supply the district with a means of access to the south side of the Ceirog. The bridge is of 32ft. span, and was built by Messrs. De Burgh, of Manchester. The abutments are of Cefn stone. The opening took place last week.

A block of Public Rooms is about to be built at St. Austell, from plans by Mr. Silvanus Trevail, M.S.A., of Truro. There will be a large hall, 80ft. by 40ft., on the first floor, and also a drill hall, local board room, fire brigade station, surveyor's offices, storerooms, kitchen, cloakroom, armoury, &c., on the ground floor, with club-room, cloakrooms, offices, &c., above.

One of the great breakwaters at Venice, extending nearly two miles into the sea, is now nearly completed, and the corresponding one well advanced. When they are completed, the port of Venice now so difficult to enter for large ships will be among the most accessible.

At the last meeting of the town council of Newport, Mon., it was decided to accept the tender of Mr. James Young, of Newcastle, for carrying out the works of water supply, and Mr. A. Sutherland, of Newport, was appointed clerk of works at a salary of £300 a year.

A new building is about to be erected for the Bridgnorth and South Shropshire Infirmary, on a fresh site in Broseley-road, Bridgnorth. Mr. Maidment is the architect, and the estimated cost is £4,500. The foundation-stone is to be laid in October.

At the London County Sessions, at Clerkenwell, on Friday, the churchwardens of Christ Church, Lambeth, appeared to prosecute a man named Reader for keeping a disorderly house in Southwark-street. During the hearing a Mr. Winsford, described as a builder, of Stamford-street, admitted that he "had made a good thing out of assisting in the prosecution of disorderly houses." He had got twenty convictions, and had received £200 in rewards. The witness was submitted to a very severe cross-examination, and admitted that he rather liked being an informer.

The will of Mr. Arthur Cawston, F.R.I.B.A., of 13, Queen Anne's-gate, and 18, The Grange, Wimbledon, who died on June 8th from a revolver accident, was proved on the 4th inst. by Mrs. Eveline Alice Cawston, the widow and sole executrix, the value of the personal estate amounting to upwards of £11,000. The testator appoints his share of the real estate and trust funds under the will of his late father, Samuel William Cawston, in trust for his daughter Cicy; and leaves the residue of his real and personal estate to his wife absolutely.

The agitation with regard to a public right of way across Kinderscout, in the Peak district, has led to the formation of a society for the protection of the public rights in footpaths and open spaces. At a meeting held on Thursday in last week, at Manchester, it was resolved that the society should be named "The Peak District and Northern Counties Footpaths Preservation Society." Rules for the conduct of the society were framed, and a committee was appointed to take further steps in the matter.

WAYSIDE NOTES.

SINCE Mr. Passmore Edwards accepted the presidency of the London Reform Union, several desirable features have been introduced into the propaganda of that organisation. One of the most useful is undoubtedly the institution of the "Citizens' Visit," a new educative function intended to instruct the public in the workings of municipal government. Last Saturday's was the fifth of the excursions, and the success attending them is worth chronicling in view of the fact that the "visits" are likely to be imitated in other large towns. The excursion was to the great drainage outfall at Crossness. The whole method of dealing with the London sewage was explained and studied on the spot, as was the vast deodorisation, precipitation, and separation work. Very few of the visitors who placed themselves under the care of the London Reform Union had any previous conception of the magnitude of the works and the extent of the processes they were about to witness, and when they read the reports of the main drainage committee of the County Council in future, it will be with a keener interest and more intelligent eye.

One of the older-fashioned artists' houses is going. Sir Edwin Landseer's house in St. John's Wood-road, in which he lived for nearly fifty years, is about to be demolished. Here the greater part of his life's work was executed, and in it his father, John Landseer, the engraver, died. It was for a long period the centre of the kindly artist's *entourage*. It is the dwelling which of all others in London belonging to artists has received the greatest number of distinguished visitors, always excepting that of Sir Joshua Reynolds in Leicester-square. Every room contains some trace of its former occupant. The door panels of one apartment pictorially chronicle the Queen's visits in 1863; a rustic seat in the shrubbery has the deeply-cut initials "E. L., 1857"; and even the courtyard contains signs of his handiwork. In a few days the work of demolition will commence, the site being required for the Manchester, Sheffield, and Lincolnshire Railway's London extension. Since Landseer's death, this house and studio have been occupied by Mr. H. W. B. Davies, R.A.

A new conservatoire of music is, by command of the Czar, being erected at Moscow, and the building will altogether cost £80,000—that is to say, two-thirds more than the Guildhall School, and nearly twice as much as the Royal College of Music. The architect is M. Zagorsky, and the school will accommodate about a thousand students, several of whom will be residential. In the square by which the new building will be surrounded are, by the Czar's wish, to be placed statues, and, among them, one of the late Nicholas Rubinstein, who was once director, and of Tschaikowsky, who for many years was a teacher at the Moscow Conservatoire.

Although not a fortnight has passed since the competition for the Paris Exhibition of 1900 was opened, there has been quite a rush of aspirants anxious to have the honour of furnishing the designs for the vast enterprise. The competitors, who number 260, are mostly young and unknown men, but this is probably due to the fact that the more distinguished architects are away on their holidays. A few members of the Institute, and some winners of the Grand Prix de Rome are, however, taking part in the contest.

Professor Virchow has been making a trip to the island of Gothenburg to view the numerous ancient edifices there to be found. He speaks with admiration and astonishment of the old architectural remains of a long-past time which are to be seen in the ancient Hansa town of Wirby, and other points of the island. Some of these are undoubtedly worth sketching, and if any of your own readers should be tempted thither this autumn, they might do worse than give us the benefit of their travels in your pages.

Clubland is closing for repairs. The Athenæum will probably complete this year its scheme of redecoration which has been in progress since 1891. Three years ago a committee of artists, which included Alma Tadema, E. J. Poynter, and Arthur Lucas, supervised the first part of an extensive scheme of ornamentation, the entrance hall and grand staircase being the scene of operations. In 1892 the rooms on the ground floor were taken in hand, and last autumn the workmen were engaged on the first floor. The chief designs have, so far, been furnished by Mr. Tadema and Mr. Poynter, the former being responsible for the decorations in the hall and on the staircase, and the latter furnishing ideas for the coffee-room and the morning-room.

No one is better qualified to appeal for the preservation of the Berkshire White Horse than Judge Tom Hughes, whose delightful book on "The Scouring of the White Horse" is familiar to most schoolboys. This figure, which was formerly more conspicuous than at present to passengers on the Great Western main system between Didcot and Swindon Junction, is cut in the hillside at Uffington, to the south of the railway, and the steed, made by removing the turf so as to show the chalk beneath, is 355ft. from nose to tail and 120ft. from ear to heel. It is traditionally said to have been made to commemorate the victory of Alfred at the battle of Ashdown; but in the opinion of Tom Hughes it is of much older date. Whatever may be its origin, it has a recorded existence of eight centuries. The Judge pleads that efforts should be made to preserve this, the last of the Saxon White Horses. After the last scouring it was understood that Earl Craven undertook to keep the old figure fresh and clean; but since the passing of the Ancient Monuments Act the family seems to have left the duty to the nation. Anyway, the figure is sadly overgrown with weeds, and can be made out only with difficulty from the Vale of Stanford, although it is alleged locally that a ten-pound note would cover the entire cost of scouring.

The Uffington figure, although the oldest and best known, is not, of course, the only extant specimen of its race. There are other "White Horses" at Westbury, Cherhill, Marlborough, Pewsey, Broad Hinton, and Wootton Basset. Yorkshire has two of modern date. There are a horse and a stag on Mormond Hill, in Aberdeenshire. At Tysoe, in Warwickshire, there is a Red Horse. Weymouth has a very crude hillside picture of George III. on horseback. There is a human figure at Cerne Abbas which is known as "The Giant," and at Wilmington is a still larger one which is called "The Long Man."

Canon Wilberforce, who has recently moved into one of the old buildings in Dean's-yard, Westminster, has unearthed some interesting old frescoes, the existence of which was suspected ten years since, when the discovery of a panel painted on tempera was made in one of the rooms, hidden under a substratum of plaster. Two sides of a large room have been laid bare, and frescoes of great beauty brought to light. Each panel is about 14in. wide, divided by oak studs arranged vertically. Much of the design consists of scroll-work, while the "hippocampus," or grotesque little Mediterranean fish, is of frequent occurrence. Over the fireplace there is a design somewhat resembling a coat of arms. Two pillars, surmounted by the triangle of Freemasonry, inclose a sort of shield, upon which is emblazoned *fleur-de-lys*. The painting is most likely of the time of Henry VII., and may have been the work of some Italians brought over from Rome by Abbot Littlington, when he went to do homage to the Pope for his abbacy in 1350. A third wall of the same apartment is panelled in oak, 500 years old. In the basement is a range of cellars used for wine and coal. The canon has knocked down the party-walls, cleared away 40 loads of rubbish out of the floor, and dug down through the front hall into an old archway of the date of Henry VII. The original roof built by Nicholas Littlington in 1362 has rewarded his efforts. The groins and roses are as crisp and fresh as on the day they were carved, and the actual paint laid on the roses by the monks more than five hundred years ago is still plainly visible. The crypt, erstwhile coal and wine cellar, is now perhaps the most unique dining-room in London.

According to the *Australasian Builder*, several of the English railway companies propose to try the New South Wales hardwood sleepers. The Great Eastern Railway Co. has agreed, it states, to lay down 1,000 iron-bark sleepers, and the London, Brighton, and South Coast Company have ordered 2,000 red-gum sleepers. The sleepers are being shipped for their destination, and the agricultural department of the colony is arranging for the supply. With regard to the iron-bark sleepers, the railway company wanted them delivered on their trucks at 5s. each; but it was found impossible to deliver them at that price. The department has accordingly agreed to pay the extra cost from the ship's slings to the railway trucks. The red gum sleepers cannot be delivered for less than 6s. each. No doubt it will be worth the colonial department's efforts to introduce the hardwoods of the colony into this country, and there can be no doubt the railway companies will find it to their advantage to use ironbark or red gum instead of the perishable fir timber now put down.

For some years past the architects in private practice in the United States have been chafing under the rule by which all buildings erected for the Government are carried out from plans prepared in the department of the supervising architect to the Treasury. A Bill has now been introduced into Congress providing that this state of affairs shall be altered, and authorising the secretary, in his discretion, to obtain plans and specifications and local supervision for its public buildings by the system of competition among private architects. While not mandatory, it authorises the secretary to employ the architect whose plans are approved, to superintend the construction. The compensation of such architect will be determined, as in private employment, on fixed commission on the cost of the work. The measure does not take from the supervising architect any of the functions or authority belonging to the office which, under existing conditions, he performs. He will still, as now, retain general supervision and control of the work. He will remain and continue the representative of the Government in all matters connected with the erection and completion of the buildings, the receipt of proposals, the award of contracts therefor, and the disbursement of money thereunder, and perform all the duties that now pertain to his office, except the designing and preparation of drawings and specifications for such buildings, and the local supervision of the construction, and such drawings and specifications shall be subject to his approval and to modification by him. In fact, this measure is intended to make him what the title of his office indicates, the supervisor of architects; not the Government's architect, but the supervisor of the architects of the Government's works.

The House Committee on Public Buildings and Grounds has just made a unanimous and favourable report on the Bill, which is favourably regarded in both Houses of Congress, and stands a good chance of being passed. The Bill is virtually one drawn up by a committee acting in conjunction with the American Institute of Architects, and modified on the recommendation of the Committee on Public Buildings and Grounds. Its importance to the architectural profession in America may be apprised from the fact that according to the official returns, the United States Government has at this date nearly 300 public buildings in the various stages of progress, of planning and construction, all under the supervision and control of the Supervising Architect of the Treasury, and from 50 to 60 new buildings are authorised to be constructed by each congress. The committee report that while private works show a constant progress in methods of construction, equipment and artistic expression, accompanied by a continual increase in economy of construction, in the case of the buildings for the Government, there has been but little, if any, advance upon methods of construction or equipment in recent years; "in fact, the buildings constructed recently by the United States, as compared with those constructed a quarter of a century ago, show a marked deterioration of artistic quality; that, despite the marked inferiority of the typical Government buildings, the cost has been relatively and positively much greater than that of private buildings of the best type.' Further the committee has been furnished reliable and trustworthy information and data, showing that the cost of the best types of buildings constructed for States, municipalities, corporations, and private citizens ranges from 38 to 50 cents per cubic foot of space, while the cost of the buildings constructed by the United States ranges from 50 cents to one dollar per cubic foot.

The committee point out that owing to the steady and vast increase of department work since the office of supervising architect was established, that official cannot himself design and make original plans for each new building; but they are necessarily prepared by clerks, who utilise the drawings and specifications originally made for one locality for any other of like size, regardless of the varying climate and geological conditions, thus involving wanton wastefulness of expenditure, and absolutely precluding the possibility of progress in architectural design. The supervising architect, it is demonstrated, rarely if ever sees one of these buildings while in course of erection. Its construction is generally under the supervision of some local carpenter or builder who never made any pretence to architectural knowledge or study, and whose appointment was secured, not because of his skill or knowledge of the work, but because of the political influence he could marshal to secure him employment, and whose greatest solicitude is to prolong the tenure of his employment by delaying the completion of the work. Another very serious evil resulting from the system and methods now employed in the States relating to the construction of public buildings, to which the committee call attention, is the length of time required to construct and complete one of these buildings. "A building which, if the property of a private citizen, would be constructed in months, when erected by the Government requires years for its completion. This necessarily results in great wastefulness and loss of money to the Government by the payment of unnecessary salaries of superintendents and other agents, by the expense of watching and caring for the materials and structure, and by the loss, waste, and deterioration of such material, besides the inconvenience to the citizens resulting from such delayed construction. From three years upward is the time employed in constructing a building that a private citizen or a corporation would complete in one year or less." The abuses under this system have indeed become so serious that the committee can not conscientiously recommend public buildings at many places where the business would justify such buildings could they be provided at a cost not greatly exceeding the necessary expenditure by a private owner for similar purposes.

The assistant engineer in India is, according to *Indian Engineering*, getting into disrepute. Great dissatisfaction is springing up in the Punjab over some recent appointments of so-called "temporary engineers." These temporary engineers are largely employed in the Punjab irrigation works. The older hands, properly trained and qualified engineers, feel aggrieved, and rightly, at the increase of temporary men, who are often unqualified men, and one correspondent says fully 50 per cent. of them are completely out of place. One of these gentlemen, it is said, could not work out a common cube, and at different times filled the occupations of a sailor and a jockey. These "impostors" and "loafers" are said to abound, much to the detriment of individuals who entered the service 20 years ago, and on very different terms. Much disgust is felt over the appointments made. Is the Government of India to blame?

The State of Minnesota have not behaved very liberally to architects in their invitation for plans of the proposed Capitol building for that State. According to the *Engineering Record*, the statute creating the Board of State Capitol Commissioners directs the latter to invite competitive plans and specifications for a building which, it is thought, will take ten years to complete, but for which no compensation is offered in the usual way. It seems that the Capitol Act provides that the Board shall appoint a "suitable person" to superintend the erection of the building, whose duty is to begin after the contract is let, and who shall be paid a "reasonable compensation to be established by the board." The accepted design is to remain the 'property of the architect, and shall not be used in whole or in part, except said architect is employed as architect and superintendent, and the fee is not to exceed 2½ per cent. of the amount named in said Bill, which means that the State is to pay nothing for the design, but only the supervision of the building. No premium is to be paid other than the fee allowed for designing and superintending. The Minnesota Chapter of the American Institute has taken objection to this unusual proceeding, and urges that the architect be employed for full professional services, and receive compensation for his design and superintendence separately.

OBITUARY.

We regret to announce the death, at the age of 72 years, of Mr. Wyatt Papworth, F.R.I.B.A., the genial and accomplished curator of Sir John Soane's Museum. Mr. Papworth, whose portrait was given in the Building News for June 6, 1890, represented in the third generation the traditions of the architectural profession, as his grandfather was one of the architects, builders, and decorative plasterers of the closing years of the 18th century. Beginning life in the service of the Commissioners of Sewers for Westminster, one of the predecessors of the London County Council, the late Mr. Papworth won the Institute Medal in 1849, and afterwards became surveyor to the Alliance Fire Assurance Company. His works as an architect include the Junior Army and Navy Club and the Alliance Office at Ipswich. It was, however, as a voluminous and painstaking writer on the bibliography of architecture, its classics and archæology, that Mr. Papworth will be longest remembered. His chief monument will be the exhaustive but unwieldy "Dictionary of Architecture," a work begun so far back as 1852, on the lines of the notes and collections of himself and his late brother, John Wyatt Papworth, by the Architectural Publication Society, and carried out until its completion in eight folio volumes in 1892, under his sole editorship. In 1864 Messrs. Longmans intrusted to Mr. Papworth the editorship of a revised edition of Gwilt's Encyclopædia, and all the editions since issued have been brought out under his supervision. He was a constant contributor to *Notes and Queries*, and to the *Journal* of the R.I.B.A. Among the many papers of permanent value and interest read before the Institute of Architects may be mentioned those "On the Superintendents of English Buildings in the Middle Ages, with especial reference to William of Wykeham," and "Collections for an Historical Account of Masons, their Customs and Institutions." Mr. Papworth was one of the senior members of the Institute of Architects, having joined as one of the former class of Life Fellows in 1860; he had served four or five terms as a Member of Council, was re-elected to that office last May, and also rendered good service in connection with the library, which was enlarged, arranged, and catalogued by him on the removal to Conduit-street in 1860. He was also interested in the work in aid of technical education of the Clothworkers' Company, and served as Master in 1889-90. Last November he presented a large architectural painting, representing a columned Classical interior, by Emmanuel de Witte, to the permanent collection of the City Art Gallery at the Guildhall. In December, 1892, on the death of Mr. James W. Wyld, he was elected as curator of the Soane Museum, an eminently felicitous choice, and he may be said to have died in harness, for it was at the Museum he succumbed to paralysis, after six weeks' illness, on Sunday last. He is survived by his wife, two sons, and a daughter. The funeral took place yesterday (Thursday) at Highgate Cemetery.

Franz Schmitz, the cathedral architect at Cologne, died at Baden-Baden on the 8th inst., aged 62 years. His father was the master mason employed upon Cologne Cathedral, and from 1852 to 1868 the son's whole time was occupied with designs for the details of the cathedral, and when his master, the then Dombaumeister, Professor Friedrich von Schmidt, died, Franz Schmitz was appointed to succeed him. The two towers at the west end of the completed cathedral are his work. He was employed in the restoration of mediæval works all over Germany, and there are numerous churches built after his designs. In 1867 the highest prize for architectural works was allotted to him at the Paris Exhibition. On the death of Hortel in 1890, he was appointed cathedral architect at Strasbourg, where he carried out the restoration of the west front of the cathedral.

Mr. Charles Liddell, the chief engineer and surveyor of the Metropolitan Railway, of Abingdon-street, Westminster, who died on the 10th inst., at the age of 81, was a brother of the lately retired Dean of Christ Church. He was a pupil of George Stephenson's, and from that time till a few weeks before his death was actively employed in the construction of railways, principally in the United Kingdom. Under George Stephenson, Mr. Liddell superintended the making of the Birmingham and Derby Railway, that of the Grand Junction, and the line from Rugby to London. In conjunction with Robert Stephenson he constructed the Leicester and Swannington Railway, the system to Peterborough, and the Rugby and Stamford Railway. He, with his then partner, Mr. L. D. B. Gordon, was subsequently engineer-in-chief, of the Newport-Hereford and Abergavenny Railway, and the extension of the Taff Vale with the Aberdare branch. About a dozen other lines were constructed by Mr. Liddell in England and Wales, as well as the Danube and Black Sea Railway in Turkey, and the Novara and Lake Orta Railway in Italy. Only a few months since Mr. Liddell completed the extension of the Metropolitan Railway to Aylesbury, and a few weeks since he completed that of the Manchester, Sheffield, and Lincolnshire to Nottingham through the heart of the Derbyshire coalfield. He also laid out the extension into London of the latter line. As a partner in the firm of R. S. Newall and Co., wire-rope makers, Mr. Liddell took an active part in laying submarine telegraph cables. He laid a cable between Varna and Balaclava.

CHIPS.

The Glasgow school board rejected, on Monday, by seven votes to five, a motion to the effect that in all specifications issued by the board inviting tenders a clause should be inserted binding contractors to pay not less than the standard rate of wages. The chairman, in moving the "previous question," stated that the board did not deal with unfair contractors. Their system in giving out contracts was to invite ten or a dozen firms of good standing and repute to tender, and then the lowest offer was accepted.

Mr. E. G. Jones, late assistant engineer to the St. James's and Pall Mall Electric Light Company, has been appointed electrical engineer to the corporation of Cape Town.

A new public clock has been placed in the tower of Stanhope parish church, near Darlington. The clock, which was made and fixed by Messrs. William Potts and Sons, of Leeds and Newcastle, was formally started on Sunday.

The Jubilee art loan exhibition of pictures at Peel Park Museum, Salford, was finally closed on Sunday. Since its opening on April 16, it has been visited by 123,156 people.

The Turkish Ministry of Public Works have determined upon the reconstruction of the ancient water conduits of Jerusalem, dating from the age of King Solomon. The new conduits are to be joined to the ancient aqueducts of Arob, and are to be carried through a tunnel 11,550ft. in length. the total outlay in connection with these works is estimated at £80,000 sterling.

The almshouses at Tregony, belonging to the Boscawen Charity, are about to be reconstructed on the present site, from plans by Mr. Silvanus Trevail, of Truro.

In the case of William Horrox, of Levenshulme, Lancashire, a discharge from bankruptcy has been granted conditionally.

The town council of Aberdeen discussed on Monday a recommendation by their public health committee, that Exchequer-row, a densely-populated locality which had been condemned by the medical officer of health, should be declared to be an unhealthy area under the provisions of Part I. of the Housing of the Working Classes Act. Although the opponents of the scheme declared that the reconstruction would cost £50,000, the recommendation of the committee was adopted by eighteen votes to seven.

At Wolverhampton on Wednesday, William Backhouse, a carpenter on strike, was sentenced to one month's imprisonment, in default of paying a fine and costs, amounting to £4 15s., for what the stipendiary termed "the serious offence of intimidating a non-society workman, and depriving him by a trick of the use of his tools."

The first piece of turf for the East Glamorgan Railway—a line to connect Barry Dock with the Ogmore Valley—was cut on Monday by Mrs. Szlumper, wife of the resident engineer. The new line will give a direct connection between the coalfields of the Ogmore Valley and Barry Dock.

In addition to the monument to Professor Jowett which is to be placed in Balliol College Chapel, a marble bust will be presented to the University of Oxford on behalf of the subscribers to the fund. This work has been intrusted to Mr. H. Pinker. The bust will be placed on a pedestal of Sienna marble in the Bodleian Gallery.

Opening services were concluded on the 19th inst. in connection with restorations to the United Methodist Free Church, chapel, and school, at Britannia, near Bacup, which was destroyed by fire in October, 1892. The work has been carried out under the supervision of Mr. F. E. Bolshaw, architect, of Southport and Crewe, at a cost of £1,500.

Building Intelligence.

Bridlington.—The Roman Catholic Church, Bridlington, which was opened yesterday, has been designed by and carried out under the superintendence of Messrs. Smith, Broderick, and Lowther, architects, Hull. The church is in an Early style of Gothic architecture, and consists of a nave 54ft. long by 17ft. wide, with north and south aisles 8ft. wide, and at the end of each aisle is a side chapel: one is dedicated to the Sacred Heart and the other to the Blessed Virgin. Each chapel has above the altar and at the sides beautiful traceried stone windows, which have been filled in with stained glass; the roofs are groined with the best selected pitch-pine boards and moulded ribs, which terminate with a carved boss. The sanctuary is 20ft. in length and 17ft. in width, and has an octagonal apse with traceried stone windows, and is divided from the nave by lofty arches resting on clustered shafts of polished Derbyshire marble, and capitals richly carved in Early English foliage and moulded bands and bases. The arches separating the sanctuary from the side chapel are filled in with traceried oak screens. The nave is divided on either side from the aisles by arcades of four moulded bays, with moulded arches on octagonal shafts of Hopton wood polished stone, and moulded caps and bases. The nave has a clerestory of lancet-headed windows, and the aisles are also lighted by similar shaped windows. The choir gallery is at the west end above the main entrance, with an organ-chamber at one side. The west front of the church is the most prominent feature, it is built of the best red stock bricks and stone dressings, and the massive angle buttresses terminate in lofty pinnacles of stone. A long two-light traceried window and a single-light one on either side fill the gable above the western entrance. Stone-carved niches are fixed between the centre and side windows for statues of the patron saints. The gable is coped with moulded stone, and the apex is a finely-worked cross. There is a large working and private sacristy, and in a recess in the aisle wall is the confessional. A large heating-chamber is formed below the sacristy for a high-pressure heating apparatus. The accommodation provides for about 300 adults. The contract was let to Mr. John Rennard at £1,870. Mr. Bayart, of Bruges, has executed the oak stalls and screens, and Mr. Ebner the whole of the marble terrazzo floors. Mr. Frith, of Hull, has executed the stone carving, and the stone altar in the Lady Chapel is also his work.

Castle Bromwich.—A new racecourse is being provided for the citizens of Birmingham at Castle Bromwich, about 3½ miles from the centre of the city. The engineering work is being rapidly pushed forward, and the first races will take place next Easter. Upwards of 300 men are now engaged in building and carpentering operations, draining and levelling, tree-felling, road-making, and constructing a 35ft. waterway, into which the River Tame is to be diverted. The whole of the work is being carried out by Mr. W. Hopkins, Thorp-street, Birmingham, whose contract price was £27,200; the architects are Messrs. Owen and Ward, Colmore-row; and the clerk of the works is Mr. H. Preece. A piece of land has been acquired by the Midland Railway Company near by, which may be utilised for a new station. Bromford-lane, from the railway bridge, is to be widened to 53ft. for a distance southward of about 300yds., to the principal entrance. Here there will be a caretaker's house, with a recreation-room, dormitories, and offices, the whole block being 74ft. long, 17ft. deep, and three stories high. On the right and left of the house will be loose-boxes, and on the opposite side of the 35ft. yard will be other loose-boxes, accommodation being found in all for 64 horses. Each box will be 12ft. square. At the rear of the stabling will be the paddocks. The entire length of the course is 2 miles 4 furlongs. The grand stand will be of wood, with glass sides. It will be 250ft. long, 56ft. deep, and, with 14 tiers of seats extending from end to end, will accommodate upwards of 4,000 people. Immediately in front a lawn will be laid out, and Tattersall's inclosures will be provided. To the right of the grand stand is the public stand, the dimensions being 200ft. long and 32ft. deep. The 14 tiers of seats will provide space for nearly 3,000 people. The space underneath the two great stands will be converted into refreshment-rooms. A serious item in engineering is the diversion of the course of the River Tame, which at present winds in and out through a portion of the track. The river in other portions of the land acquired, will be widened, so as to avoid flooding. Extensive draining works are being carried out, and a great deal of levelling will have to be done. At the Bromford end of the land the river bed will be widened by 15ft. for a considerable distance, and through the Corporation sewage farm. Lower down the river again runs under the railway and crosses the "gallop," and it is at this point that its course will be diverted, and the old waterway filled up. The diverted river channel will be led close to the railway for a distance of over 2,000ft. towards Castle Bromwich Station, and will be 35ft. wide and 6ft. deep.

Edinburgh.—The Chancelot Roller Flour Mills, on the northern boundary of the city, erected by the Scottish Co-operative Wholesale Society, will be formally opened to-morrow (Saturday). The frontage to Dalmeny-road has a length of 328ft. It is of Classic design, boldly treated—the façade being broken up by four pilastered bays, surmounted by a domical roof, finished by iron cresting. The central tower, 42ft. square at the base, rises to a height of 185ft. It shows at the angles clusters of pilasters and pinnacles; the four clock faces are placed in a series of moulded dormers surmounted by a sheaf of wheat, and crowning all is a high-pitched conical roof, terminating in a platform surrounded by a massive iron crest, into which are worked the monogram of the society and the Scottish thistle. An open balustrade is carried right round the wall-head of the mill, save where the bays and towers intervene; and a similar balustrade adorns the wall-head of the plainer warehouse block behind. To the east of the tower is the engine-house, 61ft. by 35ft. and 27ft. high. The whole of the buildings are built of stone, the walls are 2ft. 6in. thick at the base, and internally are plastered with Portland cement and Keen's cement, which gives to them a hard white surface. The mill has been fitted up with plant capable of turning out 25 sacks per hour, and is fitted up with Symon's roller plant. The front building is of five stories, and is 65ft. in height to the wall-head. The different floors vary from 14ft. 6in. to 12ft. 6in. in height. To the north of the mill, and separated from it by a courtyard 40ft. in width, is a range of warehouses, six stories in height; and to the north of the silo-house are workshops for mechanics, the boiler-house, and chimney-stalk, which rises as a Doric column with grilled top to a height of 215ft. The total cost of the buildings and their equipments will be about £100,000. The designs were by the late Mr. James Simpson, burgh assessor and architect, Leith; and since his death the work has been carried out by his son, Mr. George Simpson, who also succeeded his father in his civic appointment. The whole of the masonry was built without the intervention of contractors, and, on an average, between 200 and 300 masons and labourers were employed upon it. Part of the work, however, had to be contracted for—such as the malleable ironwork by Redpath, Brown and Co.; the cast-iron work, by Mackenzie Brothers; the slater work, by Maclean and Reid; and the glazier work, by Dickson and Walker. The society's clerk of works was Mr. Davidson.

Folkton.—The parish church of Folkton, near Scarborough, is now being partially restored. The works which are now being carried out are the repairs of the masonry of the inside of the church, and also of the walls. The floor of the church is being lowered to its original level, and the alleys repaired with rubbed flags, the floor of the sacrarium being tiled. The nave of the church will be seated with open benches, and stalls are being placed in the chancel, and new altar rails and standards, and there is to be a new pulpit. The wood windows on the south side have been replaced with stone ones of 15th-century character, and a new door is also to be placed on this side of the church. The whole of the works are under the superintendence of Messrs. Smith, Brodrick, and Lowther, architects, of Hull, and the contract is being carried out by Mr. R. Kilvington, of Nafferton, and Mr. Rudd, of Driffield.

Leeds.—The new premises of the Yorkshire Penny Bank were formally opened by the Duke of Devonshire on Friday. The building, which has been designed by Mr. G. B. Bulmer, F.R.I.B.A., of Messrs. Perkin and Bulmer, Leeds, is treated in a bold Domestic Gothic style. It adjoins the new Post-office, and has a frontage to Toronto-street of 115ft., and to Infirmary-street of 103ft., while at the angle a tower, finished with pyramidal roof, rises to a height of 120ft. The bank proper is 90ft. by 40ft. A series of arches with carved stone caps and bases run around the room, those to the front and rear inclosing the windows, while the corresponding spaces on the side walls are filled in with marble, and the spandrels between the arches with marble mosaic. The floor space in front of the public counter is laid with marble mosaic, the floor being laid with wood blocks, and the ceiling panelled with fibrous plaster. The desks, counters, and wall panelling are of oak. At the far end of the room is a hydraulic lift, which carries the ledgers down to a vault. The manager's room is panelled with oak, and adjoins a strong room, constructed of steel plates and steel rails in cement. On the other side of the public office are the sub-manager's room and the inspector's room. The board-room is 53ft. 6in. by 24ft. The walls are panelled with a dado of English oak, the space above being lined with Sienna marble. The floor is laid with parquetry. Facing the entrance is a fireplace, carried out in Hopton Wood stone and alabaster, and inclosing a grate of wrought-iron and hammered copper. On either side of the mantelpiece are large panels in bronze, containing portraits of Colonel Akroyd and Mr. Peter Bent. The premises are lighted throughout with electricity, the electroliers being of wrought-iron, with copper enrichments. The two upper floors are laid out in suites of offices, approached by a stone staircase in the tower, and also by a hydraulic passenger lift. The building, which throughout is constructed as far as possible of fireproof material, has cost £50,000, and has occupied about three years in erection. Messrs. Nicholson and Sons, of Leeds, were the general contractors. The marble and mosaic work has been provided by Messrs. Pattison and Sons, of Manchester; and the coloured glass by Messrs. Powell Brothers, of Leeds. Mr. J. E. Brotherton was the clerk of works.

Newcastle-on-Tyne.—During the alterations which are now being made in the Trinity Chapel, or De Athol Chantry, of St. Andrew's Church, Newcastle, some of the old walls have had to be removed, to enable the chantry to be re-constructed in its original design. In removing one of the old pillars, the basin of a holy-water stoup has been discovered built into the wall. It is evidently of the same period as the piscina yet preserved in the south wall of the chancel. Several chiselled stones, small shafts of pillars, and masons' marks have also been discovered, which have been carefully preserved by the architect, Mr. W. S. Hicks, of Grainger-street, Newcastle. The east window of the De Athol Chantry has never before been opened out, and the rich design of its flowing quatrefoils have now been brought to light. The large north window has also been cleared of thick obscured glass. The ancient monuments have now been replaced in their respective positions, with the addition of the two tombstones which for many years stood outside against the south wall of the tower.

Oxford.—The City Technical School in Church-street, St. Ebbs's, was opened on Tuesday week. The building has been erected on a site previously occupied, partly by the Bluecoat School and partly by cottages. The cost, including fittings, has been about £4,500. The front elevation consists partly of the old schoolhouse and partly of new work, the latter being of red Headington bricks, with dressings of Box Ground freestone, and gabled. The front of the old school-house is also gabled to match. The main gateway leads through a wide arched corridor into a yard. From this corridor there are entrances on the right hand and on the left to the various classrooms, and also to the caretaker's rooms. On the north side of the yard are the workshops for the wood and metal departments. The department for science students consists of three rooms, a lecture room, a chemical and physical laboratory, and a master's room. The department for art students includes a room, 52ft. by 22ft., also two class rooms, together with a master's room. The art rooms are on the first floor of the new buildings; on the ground floor of the same is a corridor opening into three large class rooms. The buildings are heated by hot water, the boiler and storage rooms being in the basement below. The architect is Mr. H. W. Moore, the builder, Mr. Charles Curtis; and the clerk of the works, Mr. R. England.

Correspondence.

TOMBSTONES.

To the Editor of the Building News.

Sir,—Referring to Mr. E. E. Minton's letter under the above heading, the late Rev. Ed. L. Cutts' "Manual for the Study of the Sepulchral Slabs and Crosses of the Middle Ages" (1849), published by Parker, used to be almost the only book of the sort one could readily fall back upon. But, in "Ancient Sepulchral Monuments," by Messrs. Brindley and Weatherley (1887), printed for the authors by Vincent Brooks, Day, and Son, are measured illustrations of over 600 examples, dating from the times of Queen Cleopatra, right through to the latter days of Old Bunhill Fields Burial Ground. With this book at one's elbow, no man, young or old, can go wrong, and if it were appreciated as it ought to be, it would do more to educate the monumental mason than all the rest of the works on the same subject ever written.

I remember that after the fatal theatre fire here in 1887, when something like 200 unfortunate persons were consumed alive, it was proposed by the Fire Relief Committee to erect a memorial in the Exeter Cemetery. Some local sculptors were asked to prepare suggestive designs, and amongst them myself. Soon afterwards the committee called at my studios, and General Freemantle, who happened to be the spokesman, said, "Mr. Hems, the committee are unanimous in considering your design the best." "Indeed, General," I answered, briskly; "it is no design of mine: it is simply a replica of an old Celtic cross in Ireland, which you will see, drawn to scale, in *Ancient Sepulchral Monuments*," producing the work just referred to, "and," I added, "I would propose that the work be carried out in the selfsame material—Ballinasloe limestone. It is only reasonable to believe that a duplicate of what has already stood nearly 2,000 years will, in itself, stand just so long into futurity."

And so the cross (illustrated in the Building News, January 17, 1890) was put in hand, and is, I hope, a credit to its day and generation.

The cost of *Ancient Sepulchral Monuments* is three guineas, and for all practical purposes it would be cheap at double, yea treble, the money. —I am, &c., Harry Hems.

Fair Park, Exeter, Aug. 17.

NEW ESPLANADE AT WEST COWES.

Sir,—In last Friday's issue of your valuable paper, I observe you kindly make note of our new esplanade works, but the length is not quite correct. The Local Board of West Cowes have completed their section, terminating at the district boundary, which gives a length of 210 yards, the cost of which I estimated at £2,300. The Ward Estate commenced their section from the district boundary, and have already constructed a length of 250 yards. This does not, however, represent the total length of the work, for it is still being continued in the direction of Gurnard. The whole of the undertaking is being carried out under my supervision, and without the intervention of a contractor, and, I am pleased to say, well within the estimate in both cases.—I am, &c., Nelson F. Dennis, A.M.I.C.E.

Town Surveyor's Offices, West Cowes,
August 18th.

VENTILATION OF SEWERS.

Sir,—I have devoted much attention to this subject with a view to discover a convenient means by which actual demonstration may be obtained of the principal facts involved in organic reactions in sewer air and their relations to certain forms of disease. It will, I think, be admitted that demonstrations of this nature might properly be carried out by the State in the public interest; but should any medical officer desire to test the facts, I will gladly give every information regarding the appliance required.

My attention was very practically drawn to the subject between 1878-86 from experiencing the aërobic effects produced by aërating sewage and other liquors containing organic impurity. The general conclusion arrived at was that within certain limits of time the reactions, though offensive, are both normal and innocuous in effect, whilst the reactions which result from fermenting sewage, operate with a totally different effect. Acting on this experience, early in 1892 I ventured to suggest to the M.D.L.B. that the latter form of reaction formed "the chief factor" in the course of a then prevalent form of zymotic disease, and a subsequent official inquiry by the board attributed the malady chiefly to the presence of refractory organic impurities in the air.

It is obvious these obscure reactions and the results, whether occurring in the sewer or in the open air, must of necessity be governed by the operation of the principles of time, temperature, and movement in air or oxygen supply; and as much light was thrown on the subject by Dr. Frankland, F.R.S., at last year's congress of the B.A., by giving observed results with organisms exposed to similar conditions which operate in sewers, the following conclusions advanced by the authority named, and which cover the subject of sewer air, may prove interesting and instructive by drawing attention to the vastly important issues involved:—

By educational culture the character of an organism may be quite changed; on the other hand, the virulence can be increased, although *as yet* no pathogenic organism has been raised from non-pathogenic; but as similar *modification processes* "evidently" go on in nature, we must grant that bacilli acquire new characteristics under new conditions. (Extract from a paper, "Bacteriology," by Dr. Percy Frankland, F.R.S., B.A. Congress, 1893.)

We have real anthrax, and an exceedingly similar innocuous modification, both occurring in the soil; *many toxic* forms — cholera, typhus, diphtheria bacilli have *pseudo* forms. In certain cases the modification may be due to the exclusion or exhaustion of oxygen. Assuming aërobic fermentation in presence of air to be normal, as in the early days of Pasteur, then a modified reaction can apparently proceed when no more oxygen is at disposal.

In conclusion, I would like to say that the above important conclusions show that an actual demonstration of the facts involved in sewer emanations must of necessity go much deeper than discovery of typhoid or diphtheria organisms in sewer air itself.

As regards Bristol being quoted as free from typhoid, I suggest the cause lies in the fact that the natural conditions limit the reactions to practically the normal innocuous stage. In fact, Bristol in a measure indicates the procedure required in inland towns; in the former case the sea water continuously dissipates and neutralises the material on which the modification reactions apparently proceed, whilst in the latter case continuous destruction of the same elements by fire would produce still happier results.—I am, &c.,

Hill-Hartland.

728, Grimesthorpe-road, Sheffield, Aug. 20.

Sir, — In reference to the correspondence connected with the above subject, I think the suggestion made by one of the members some time since at the Conference of Sanitary Engineers was the best - viz., to insist upon each houseowner putting in an earthenware ventilating pipe from the sewer side of the disconnecting trap or manhole, and run this backwards to the house attached to a 4in. iron ventilating pipe running up above the roof.

This iron ventilating pipe could also be made to act as the ventilator of the house-drains as well, if it be placed in a position at the head of such drains, which it could be. By this means there would be no need to abolish the disconnecting traps or manholes, cutting off sewer from house-drains; the sewer smell or gases would not go up the soil-pipe, and so run the risk of entering house through defective traps, and there would be no need for ventilating grating in the street.

By this means each house would assist in ventilating the sewers with more effect than the present grating, at the same time without fear of bad smells entering the house through defective traps attached to either water-closets or sinks.

I think, as sewers are made for the benefit of the public, the latter should contribute to the ventilation thereof, providing a system can be devised by which all risk of bad air entering the house is avoided, and I think the above would effect this.

Should the above iron pipe be used to ventilate the house-drains as well, it would be necessary to trap the bottom of all soil-pipes, which would be a still greater security against bad smells entering the houses.—I am, &c.,

James N. Crofts, Architect.

5, Harrington-street, Liverpool, Aug. 22.

Intercommunication.

QUESTIONS.

[11201.]—**Lightning Conductor.**—We have lately had a conductor fixed on a chimney stack on a building in a very exposed situation. The top of the fork is about 6in. above the chimney pots, and appears to us too low (the stack is about 6ft. by 2ft.) Will some reader kindly inform us of a rule to guide as to height, and the amount of a building protected by each conductor?—R. S.

REPLIES.

[11194.] — **Testing Drains.** — Under the Public Health (London) Act, 1891, the sanitary authority have power to inspect premises and to abate nuisances, and they can undoubtedly cause a drain to be tested that may be considered "injurious or dangerous to health." There is no uniform rule as to testing. Some authorities exercise the power, but not all, though it is evident if a careful inspection has to be made testing becomes a necessity. I know that some of the London vestries require the drains to be tested; others certainly do not.—G. H. G.

[11198.]—**Nene Valley Churches.**—What affinity there may be between Greek temples, "whether in existence or passed away," and the Nene Valley churches, "Student" probably only knows! If, however, he wants to know all about these interesting churches prior to visiting them, he should procure "The Churches of the Nene Valley, Northamptonshire," by Edmund Sharpe, M.A., and J. Johnson and A. H. Kersey, architects, published by Batsford (1880). This capital book contains 112 full-size plates (1ft. 2¾in. by 10½in.), giving measured details from 46 different churches in the Nene Valley. They embrace St. Peter's, Aldwinkle; All Saints, ditto; All Saints, Stamford; Bainton, Barnack, St. Andrew's, Barnwell; Brasenose College, Stamford; Castle Ashby, Cogenhoe, Denford, Earl's Barton, Etton, Finedon, Fotheringhay, Helpstone, Higham Ferrars (when I helped to restore this church in 1863, under the late Mr. Slater, architect, the place used to be written Higham Ferrers!), Irchester, Irthlingborough, Islip, Lowick, Market Deeping, Northborough, Oundle, Polebrook, Raunds, Kingstead, Rusden, St. James's, Deeping; St. John's, Stamford; St. Leonard's Priory, Stamford; St. Martin's, ditto; St. Mary's, ditto; St. Paul's, ditto; St. Peter's, Northampton; St. Sepulchre's, ditto; Stanwick, Tansor, Tallington, Titchmarsh, Uffington, Warmington, Wellingborough, West Deeping, Whiston, and Woodford. Writing the names of these fine old churches recalls many bright memories, for I have been personally associated with work at fully half of them; and the happy recollections are tinged with some sorrowful ones, too, for the best of those with whom I was so closely allied in the various works in question have, nearly all of them, gone to their rest. *R.I.P.*—Harry Hems.

[11200.]—**Hollow Walls.**—I fully agree with the excerpt quoted by "Perplexed" from the Building News—viz., that a hollow space or wall with a cavity in it is much more soundproof than one of solid material; but if the hollow space be closely packed with silicate cotton, the transmission of sound will be entirely stopped. This method was adopted by Mr. Knightly, the architect, in the erection of Queen's Hall, Langham-place, W., with the most perfect result.—J. Christie.

[11200.]—**Hollow Walls.**—It is quite true that a hollow wall is better than a solid one in checking the passage of sound through it, but a 10in. wall with two half-brick thicknesses and an inch cavity is scarcely thick enough to prevent the transmission of sound. I have generally preferred a 16in. wall made up of a 9in. and 4½in. thicknesses, the latter inside, and 2½in. cavity. The inch cavity is probably filled up by mortar droppings or timber which accounts for the sound passing.—G. H. G.

CHIPS.

The parish church of Alsager is being rebuilt, and is making satisfactory progress. Mr. Fielding, of Alton, Staffs, is the contractor.

The Jewish Synagogue in Belgrave-street, Leeds, after having been entirely renovated under the supervision of Mr. Henry Perkin, F.R.I.B.A. (of the firm of Messrs. Perkin and Bulmer), was reopened on Friday. The interior of the building has been decorated by Mr. George Hall, Woodhouse-lane, Leeds. A new heating apparatus has been put in by Messrs. Henry Holmes and Co., of Boar-lane, and an electric lighting installation by Mr. T. Harding Churton, South-parade. Structural alterations and general repairs have been carried out by Mr. W. H. Dews, and Messrs. Craven and Umpleby. The total cost of the alterations is £550.

Simon Ingersoll, the inventor of the Ingersoll rock drill, died at his home in Glenbrook, Conn., on July 24, at the age of 76. He had lived in retirement for some years, and was a plain and unassuming man. He died poor, although others made fortunes, by their efforts and business skill, out of his inventions.

The foundation-stone of a Conservative Club was laid at Pontypool on Wednesday week. The building is being erected in the Osborne-road, for a company, at a cost of £2,000.

The foundation-stones of a new Wesleyan chapel, to be erected in Argyle-street, Hull, were laid on Friday. The building will accommodate about 900 persons, and is estimated to cost £3,300. It will be in the Renaissance style, and is to be built of Lincolnshire red bricks, with dressings of Howley Park and Ancaster stone. Mr. W. A. Gelder, of Hull, is the architect, and Mr. David Robinson, of Freehold-street, Hull, is the contractor.

Legal.

ABOUT THE BUILDING LINE.

THAT the zeal of local boards in the country is apt to outrun their discretion, statutory and otherwise, and even to drop into caprice, is pretty well known to those with whom they come in contact. And the worst of it is, that when a local board does refuse to ratify plans of proposed buildings, although they may be entirely wrong, the litigation required to set them right is both costly and complicated. A recent case affecting the North Omesby Local Board (August 9) is typical of what too often occurs under similar circumstances. The owner of land on one side of a road, which the Board had taken over and dealt with as a public street, built himself a house in November, 1893, and set it back as far as 26ft. from the road, doubtless desiring to have a good garden in front of his own dwelling. He lately desired to put up some cottages upon his own land, upon the same side of the way, 90ft. from his residence, and for that purpose he submitted his plans to the board. But as these showed that the new buildings were to be erected only 10ft. from the roadway, they rejected his plans, on the ground that his own house, 90ft. away, with an intervening space of land between, fixed the building line, and so these cottages must be put back as far as was his house from the roadway. He now applied to a Divisional Court for a *mandamus* to compel the board to approve his plans, and he did so successfully.

Mr. Justice Mathew laid it down that the old statute must be construed reasonably, and each case decided upon its own facts. When it is proposed practically to take away a man's land from him, the Court must look closely into all the circumstances. If this land had been laid out for building purposes it would be different; but where there was no continuous building line of any kind, the statute could hardly apply. The Court finally held that the local board had no reasonable grounds for their objection—that although they might exercise a discretion, they had no right to enforce a caprice, and that, in short, there was no evidence of the existence at the side of the original building of any line of frontage which could be binding upon the owner of the land. It is quite right that the building line should be preserved as much as possible in all towns and cities; but when it comes to applying it in this rigorous way in what is practically a country lane, and to fixing an arbitrary frontage which the building owner never intended, it is satisfactory to find the Court interfering so decisively. **Fred. Wetherfield**, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

A. J. B.—Building Line.—1. I think that, under the circumstances, and as the consent of the local authorities has not been obtained, B. is right, and on his complaint the authorities would have to take the proceedings mentioned in Sec. 3 of the Act. There is, however, a question to be argued, and A. should object to set back his buildings unless compelled by a decision to that effect. 2. I don't see that by-laws can override the rights of private property, and the contention of X. seems to be reasonable, and to observe the by-laws strictly he cannot build right up to the edge of his plot.

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Mr. Harry Hems, of Exeter, has received a communication from Mr. W. Fitzwilliam Terry, the secretary of the British Commission, intimating that the International Jury have awarded him and his son the gold medal for their exhibit of ecclesiastical sculpture and carved work at the International Exhibition at Antwerp. It is the same exhibit precisely that beat all comers, and took the highest award at the World's Fair, Chicago, last year.

Mr. W. J. Bird Clerke, M.Inst.C.E., an inspector of the Local Government Board, held an inquiry at the offices of the Barry and Cadoxton local board, on Tuesday week, into the application of that body for consent to borrow £1,733 for purposes of street improvement, and £1,967 for works of sewerage. Mr. C. R. Walker, M.Inst.C.E., and Mr. J. C. Pardoe (surveyor) attended, and explained in detail the plans of the proposed works. No objection was offered. The first loan is for the purpose of widening Barry-road, Cadoxton, and Croghan-hill, leading to the Merthyrdovan cemetery, and the second for works of sewerage in different parts of the district to complete the general scheme.

LEGAL INTELLIGENCE.

In re C. E. Newby, of Cardiff.—A meeting of the creditors of C. E. Newby, builder, Cardiff (summoned by himself), was held on Wednesday week. It was stated that there were liabilities of £2,617 to unsecured creditors, with £7,280 to creditors who held securities valued at £9,322; also £1,965 to a bank, and other smaller amounts. The assets showed a total of £2,229, which left a deficiency of £408. Ultimately, it was resolved that, if satisfactory terms could be arranged, a deed of assignment should be executed; failing this, that a receiving order should be applied for.

Chancel Screens.—The Chancellor of the Diocese of London, Dr. Tristram, delivered judgment on Wednesday in the case of the adjourned petition for a faculty to enable certain alterations and improvements to be made in St. Peter's Church, Eaton-square. It was proposed to remove the existing pulpit, and to erect a wrought-iron screen with a pulpit of the same material attached, and to so alter and add to the south transept and south-east chapel as to enable the latter to be used as a side-chapel with an altar. The estimated cost of the proposed alterations, for which Sir A. W. Blomfield and Son are the architects, was £2,100, the whole of which had been promised. Objection had, however, been taken by parishioners to the erection of the proposed screen; and with respect to this, the Chancellor delivered judgment on Wednesday, acceding to the application, he having last week granted a faculty for carrying out the other alterations proposed.

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CHIPS.

Last week Mr. James Bolton, C.E , who has just retired from the post of borough surveyor of Oswestry, which he has held for six years, in order to commence private practice, received a presentation of a case of silver fish knives and forks from the corporation workmen.

The Madeley and Brosely sanitary committee have resolved to proceed with the Sutton water scheme for Ironbridge immediately. For supplying pipes they have accepted the tender of Messrs. Cochrane and Co., Dudley.

The authorities at South Kensington Museum have been informed by the solicitors of the late Mr. John Hill that he has bequeathed to the Museum, under special conditions, his collection of pictures, bronzes, china, ivories, enamels, jade, and lacquers.

Mr. Mark Burbridge Smith, railway contractor, of Helsby, expired suddenly on the platform of Chester Station on Friday night. The deceased, who was 57 years of age, had travelled from London, and was walking across the Chester station, when he fell down and expired, death being due to heart disease.

The statue of Shelley, executed by Professor Lucchesi, will be unveiled at Via Reggio early in September. It was on the shore at Via Reggio that the poet's body was found on July 8, 1822.

A new church, dedicated to the Holy Trinity, is about to be built at Torquay. Mr. John Watson, of Lower-terrace, in that town, is the architect.

The new convent of Our Lady of Mercy, which has been built at Dundee, was formally opened on Saturday. The foundation stone was laid by the Right Rev. Bishop Smith in October, 1892, since which time the work of building has been vigorously pushed forward. The convent contains a community room, which will be used as a chapel for the inmates, a refectory, and a large number of cells.

The nave and tower of the parish church of St. Michael, Beguldy, Radnorshire, are about to be rebuilt from plans by Mr. W. R. Bryden, of George-street, Buxton.

A stained-glass west window was on Thursday in last week dedicated in Bednall Church by the Ven. the Archdeacon of Stafford. The window is filled with a "Te Deum" subject, and represents our Lord in majesty. Around Him in the various lights are grouped members of the "Glorious company of the Apostles, the goodly fellowship of the Prophets, the noble army of Martyrs, and the Holy Church throughout all the world." In the tracery are the "Agnus Dei" and two angels. The artists are Messrs. Heaton, Butler, and Bayne.

The contractor for the new fish dock at Hull, Mr. Kennett, of London, will commence operations in a few weeks' time. A considerable number of men are already employed in draining the site, and the project must be completed in eighteen months. The new dock will be about 1,000ft. in length, 300ft. in breadth, and 30ft. in depth. It will cover something like ten acres. The existing dock gates leading from St. Andrew's Dock to the graving dock are to be removed, and in their place a swing-bridge will be erected.

The foundation-stone of the Wood Green Cottage Hospital will be laid in Bound's Green-lane to-morrow (Saturday), by Mr. J. Passmore Edwards, the donor of the building.

WATER SUPPLY AND SANITARY MATTERS.

Conway.—The scheme for the supply of water from Cowlyd Lake, above Llanrwst, to Conway and Colwyn Bay, has been so far matured that the Mayor of Conway was enabled, on Monday, to turn on the Supply to Conway. This crosses the Conway river for Colwyn by a bridge, the only one of its kind in the Principality, almost on a level with the tubular bridge which carries the line of railway across the river. The approximate cost of the scheme is £50,000, Mr. T. B. Farrington, C.E., borough surveyor of Conway, being the engineer, and Mr. T. Bugbird, Carnarvon, the contractor.

Failsworth.—The first sod in connection with the construction of the sewage-disposal works for the township of Failsworth was cut on Friday. The site is in Green-lane, Clayton Bridge, at the extreme edge and lowest level of the township. The engineer, Mr. Charles J. Lomax (Messrs. Lomax and Lomax, Manchester) gave an outline of the scheme which is now being carried out. At the present time the district is only indifferently sewered, and practically new sewers for the whole of the district, comprising an area of 1,073 acres, have to be made. The main concentrating sewers are now being constructed by Messrs. W. and A. Peters, of Rochdale, and when these, together with the tributary drains, are completed the sewage will be completely diverted from the various watercourses, including the river Medlock and Moston Brook, and further contamination effectually prevented. The board have decided to adopt the "International" process at the outfall works, under which the solids will be precipitated in tanks and the liquid filtered through polarite beds before being turned on the land and subsequently finding its way into the Medlock, on the banks of which stream the works are situated. The purification works will consist of two detritus tanks and three precipitating tanks, each capable of holding 225,000 gallons. The sewage will enter the works at a level of 12ft. above the tanks, and the head will be utilised for the working of a water-wheel, which will do all the mixing of chemicals, in addition to elevating the sludge. The clarified sewage will pass from the tanks on to six polarite filters, so constructed that the filtered water from any one of them can be made to cleanse the surface of the others. The area of these filter-beds is extensive, it being the intention to deal with a large volume of storm water. For the outfall works the contract has been let at £8,700 to Messrs. George Freeman and Sons, of Hollinwood. The cost of the whole scheme is estimated at £28,000.

Worthing.—Major-General C. Phipps Carey held an inquiry at Worthing, on Friday, into an application made to the Local Government Board by the town council, for permission to borrow nearly £63,000 for certain works connected with the water supply of the borough. Mr. Corrie Grant, barrister (instructed by the corporation solicitor), conducted the case for the town council, and among the witnesses examined in support of the application were Mr. Jas. Mansergh, M.I.C.E., consulting engineer to the corporation, and Mr. Joseph Quick, consulting engineer to the West Worthing Waterworks Company. Of the sum stated, £35,300 will be expended on the new waterworks now being constructed at the foot of the South Downs, in the parish of Broadwater, the site being 78ft. above Ordnance datum, and a spot declared by Mr. Mansergh to be absolutely free from all possible risk of contamination. The machinery will be capable of pumping a million and a half gallons a day, and a reservoir with a capacity of two million gallons will be constructed. Another portion of the loan asked for is to be devoted to the purchase of the West Worthing Waterworks, the value of which has yet to be determined by the umpire, Mr. Woods. Two grounds were urged in favour of the acquirement of the works—the first, that the water supply of the entire municipal district might be under the control of the governing authority; the second, that the works, which are in the centre of a populous and growing neighbourhood, might be closed, so that all possible chance of contamination would be avoided. There was no opposition to the proposals.

◆

A south porch, of 13th century design, has been added to the parish church of St. Peter, Greatworth, Northants. The builder was Mr. Watts, of Helmdon, and the architect Mr. J. Timms, of Banbury.

Alterations are being made to the Working Men's Club, Barrow-in-Furness, including the ventilation, which will now be carried out on the Boyle system, the latest patented improved form of self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

The city council of Rochester have decided to expend an estimated sum of about £3,250 upon works of storm-water drainage at Strood, the low-lying parts of which suburb are flooded whenever there is heavy rain.

Our Office Table.

Sir James Linton and Mr. Orrock have returned to the attack in the *Times* on the director and trustees of the National Gallery, whom they charge with allowing the asphaltum-painted works of the British school in that collection to deteriorate, because the atmosphere surrounding them is not kept sufficiently humid. They point out that in the Diploma Gallery of the Royal Academy, not half a mile from Trafalgar-square, there have been hanging for many years a number of pictures exactly the same in origin and date as those which are said to be now decaying in the National Gallery—pictures by Wilkie, Stanfield, Constable, and other English artists of that period—which are asserted to be essentially in good preservation. The difference is said to be due to the fact that water-troughs are provided at Burlington House and not at Trafalgar-square; but it is doubtless to some extent owing to the crowded condition of the one gallery, with the consequent impregnation of the air with carbonic acid, and the deserted state of the other suite of rooms. Possibly, as Mr. E. R. Robson, F.S.A., contends, improved ventilation might diminish the evil; but, as Sir J. C. Robinson points out, while the employment of gas and of heating apparatus increases the rapidity of cracking, the deterioration is inevitable in the case of works in which bituminous pigments were used; indeed, some of Wilkie's pictures under Sir John Robinson's care in Buckingham Palace, which have certainly never been exposed to great fluctuations of temperature, exhibit similar seams and cracks.

An anonymous donor has presented to the National Gallery a work by the late William Dyce, R.A. (1806-64), representing "St. John Leading Home the Virgin Mary from the Sepulchre," exhibited at the Royal Academy in 1860. It was hung on Monday on the west wall of Room XIX., measures 42in. in width by 29in. high, and is numbered 1426. The scene is the hillside without Jerusalem, the masonry entrance to the new tomb hewn in the rock being on the right. Prominent in the foreground is the Virgin Mary, who has thrown a mantle over her red robe, beneath which her sandalled feet are visible. In her left hand she carries the crown of thorns, while her right hand is laid in the palm of the Beloved Disciple, who is shown with the traditional youthful face and long hair, and clad in dull green and grey robes, but bareheaded and barefooted. Seated on the ground beside the tomb are the two other Mary's, and two bearded men, probably intended for Joseph of Arimathæa and Nicodemus, are leaving the garden inclosure. To the left are one or two of the towers and buildings of the Holy City, and overhead black cumuli are sweeping up over the dark-blue sky. The colouring is harmonious, and the grouping, dress, and scenery of the character deemed a generation since appropriate to Palestine. It is the second work in the collection by Dyce, the other being his "Pegwell Bay, October, 1858" (also a painting from the Academy Exhibition of 1860), purchased in March last at the James Brand sale, and now hung on a screen in the adjoining room XVIII., and numbered 1407. The work by Adam Elsheimer, mentioned by us last week as one of four new pictures, has been numbered 1424, and is hung on the south-west pier of the Dome. It is a bequest from the late Mr. Samuel Sandars.

The curatorship of the Soane Museum, which has become vacant by the death of Mr. Wyatt Papworth, referred to elsewhere, is worth £300 a year, clear of all deductions, with residence. The conditions of the appointment are peculiar. Under the private Act governing the management of the museum, the appointment is vested in the President and Council of the Royal Academy, who must proceed to an election within three months of the occurrence of a vacancy, the requirements being that the curator shall be an architect of English birth, and not less than 25 years of age, who shall have distinguished himself in architecture or have carried off some academical prize. Since the museum was opened, on the death of Sir John Soane, January 20, 1837, a period of 57½ years, there have been but four curators—George Bayley, Soane's pupil and assistant, 1837-60; Joseph Bonomi, the Egyptologist, 1860-78; Joseph W. Wild, the Orientalist and decorative artist, 1878-1892; and Wyatt Papworth, the bibliographist of architecture, who died at the Museum on Sunday.

Under the title of "A Rare Opportunity for London," Mr. W. Howard Seth-Smith, past president of the Society of Architects, pleads with the Duke of Bedford in yesterday's *Times* that he should take full advantage of the possibilities of beautifying and dignifying the Metropolis, which will arise in the approaching rebuilding of his estates. As Mr. Seth-Smith points out, half one side ot Russell-square is now advertised for lease, and such a magnificent site is probably already the subject of some speculative scheme in the hands of parties who, alas! too often, either from ignorance or greed, study their utilitarian interests without consideration for the feelings of their fellow-citizens. Such a disaster has, he added, just befallen the neighbourhood of Lincoln's Inn-fields, and it is to be hoped that a repetition will not be permitted in Bloomsbury. He therefore appeals to the Duke of Bedford to act in a public-spirited manner, for it is only the great freeholders who have it in their power to create appreciable oases of beauty in this great desert of ugliness.

According to the annual report of the medical officer of health of the London County Council, the population of the County of London shows a decline in the rate of increase, partly due to a decrease in the number of immigrants. Since the decade between 1841 and 1851 there appears to have been a fall in the rate of increase per cent. In that period the increase was 21·2 per cent., since which it has been going down, till between 1881 and 1891 it was only 10·3 per cent. The population at the last-named year was four millions and a quarter, representing an addition of 396,199 persons during the decade, or a number which is said to be exceeded only by four large towns—Birmingham, Liverpool, Manchester, and Glasgow. The manner this number is distributed points to considerable fluctuation. In some parts of London—the central portions—there has been a decrease; but in other districts—in the north and south—there has been an increase, due in a measure to immigration, showing a decided efflux of the population outwards.

Down to the end of 1892 the London School Board has spent on the building of schools a sum of close upon three millions sterling, and the expenditure of 1893 brings the total cost of all the schools erected out of the rates in London to upwards ot that sum. Last year alone 14 new schools were opened, and 25 old schools were enlarged, and the accommodation thus provided afforded place-room for 22,000 boys and girls. The development of the technical schools is a marked feature of the board's arrangements for the year. Thirteen new cookery centres have been opened, besides 18 new laundry centres and 15 centres for manual training, while two centres for the blind and three for the deaf have also been established.

The members of the Sanitary Inspectors' Association held their annual summer meeting on Friday at Ramsgate. The visitors were received by the Mayor (Alderman Blackburn). At the business meeting Mr. Thomas, of Bermondsey, presided, in the absence of the President, Sir B. W. Richardson, who is in Paris. Dr. Styan, Medical Officer for Ramsgate, and Mr. W. A. Valon, borough engineer, read papers dealing with local matters. Mr. E. Tidman, M.S.A., member of the council, contributed a paper on the future work of the Association. He advocated the establishment of headquarters, of a series of lectures, and of a journal devoted to the interests of the Association. Mr. Thomas, in his address, dwelt upon the importance of sanitary officers' duties, and suggested that the tenure of office should not be for a year, but for an indefinite time, provided that the inspectors were competent and men of the highest integrity. After these proceedings the guests, who included members from all parts of England and Wales, were entertained at luncheon by the Mayor and Corporation, and later in the day took a trip to sea round the lightships and the Goodwin Sands.

Some interesting experiments are at present being made in the relaying of Buchanan-street, Glasgow. For many years wood has been the pavement used for this thoroughfare, and in order to test the particular timber best suited for the traffic, four different kinds of wood are now being used in the relaying of the street. These are Jarrah, Karri wood, Kauri pine, and carbolished pitch-pine. In addition to these, a new cork pavement is also to be experimented with. Some time ago brick paving was tried, but this has been given up as a failure.

According to *Indian Engineering*, Bombay Harbour is "incredibly abominable." Although large sums have been expended on sewers, the harbour is described as being most insanitary. The authorities themselves are blamed for allowing offensive drains to discharge into the harbour and basins above low-water mark, beyond which the natives are permitted to bathe in the harbour. An intercepting sewer, to protect the eastern shore of the island, is recommended, as proposed by Mr. Baldwin Latham.

Trade News.

WAGES MOVEMENTS.

Bolton.—The federated employers resolved on Friday to lock out the operatives in the building trade if the stonemasons' strike against sawn stone is not settled within a fortnight.

Glasgow.—A strike of Glasgow lathsplitters has taken place for an advance of 1d. per hour—½d. to come in force from Monday last, and the other ½d. in November, with proportional advance in piecework. The employers offered ½d. advance on 1st October.

CHIPS.

Henry Barker, a building material dealer, was at Stratford Police-court, on Saturday, charged, on remand, with removing and concealing large quantities of goods within four months of his bankruptcy, with intent to defraud his creditors. Further evidence was given in support of the charge, and the prisoner was again remanded.

At Liverpool County Court, on Wednesday week, in an action under the Employers' Liability Act against Mr. James Bell, a contractor, his Honour Judge Shand awarded £130, together with costs, as compensation for injuries received at the Brunswick Goods Station by a labourer named John Brown.

Mr. W. J. Bird Clerke, M.I.C.E., one of the inspectors of the Local Government Board, held a public inquiry at the Town Hall, Cowbridge, on Wednesday week into the following applications by the town council:—(1) Approval of loan of £800 for improving the town hall; (2) also of loan of £600 for works of paving in the borough; (3) approval of the sale of land for the site of a proposed young men's institute. The plans and details of the town hall improvements were explained by Mr. C. B. Fowler (Messrs. Kempson and Fowler), architect, Cardiff; and those of the paving scheme by Mr. John Daye, engineer and surveyor, Roath, Cardiff.

On Saturday last the members of the York Architectural Society visited Newburgh Priory, Coxwold Church, Shandy Hall, and Bylands Abbey.

Messrs. P. Munro and Son, architects, of 2, St. Stephen's Chambers, Baldwin-street, Bristol, write:—"Referring to your notice of the grand pump room and spa, recently opened at Clifton, in your issue of the 10th instant, we beg to say that we were the architects, and Mr. G. C. Marks the engineer. Kindly correct this error in your next issue, and oblige."

At the last meeting of the Hampshire County County Council the lunatic asylums committee reported that tenders for the erection of sanitary spurs had been received, but they regretted that the lowest tender exceeded the sum which was estimated after consulting the county surveyor. The lowest tender was £8,080, and this, with the clerk of works' salary, would need an extra £1,600, but the additions would not only provide the sanitary accommodation, but set free space for 48 additional beds. The extra 1,600 was voted without demur.

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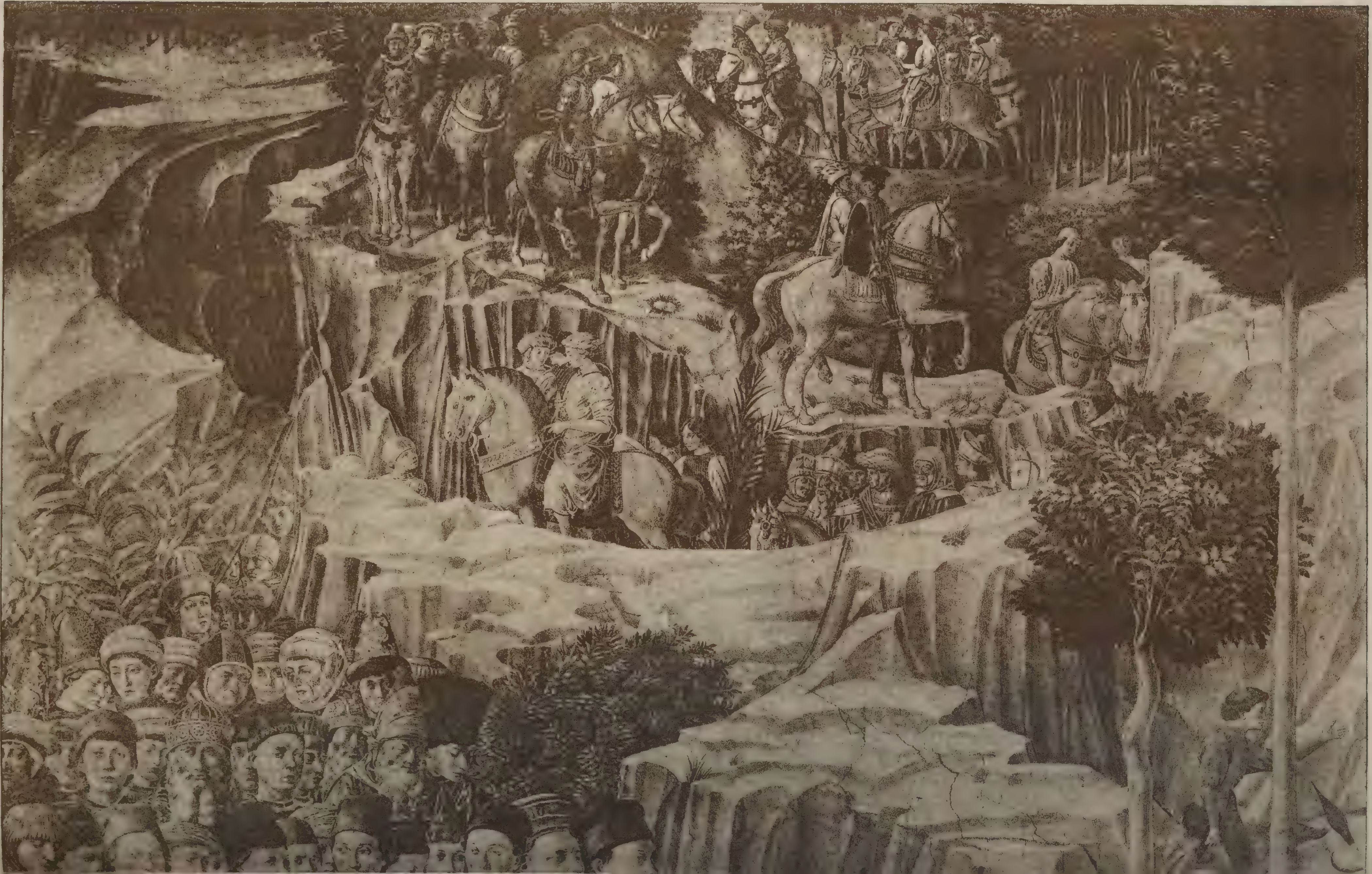

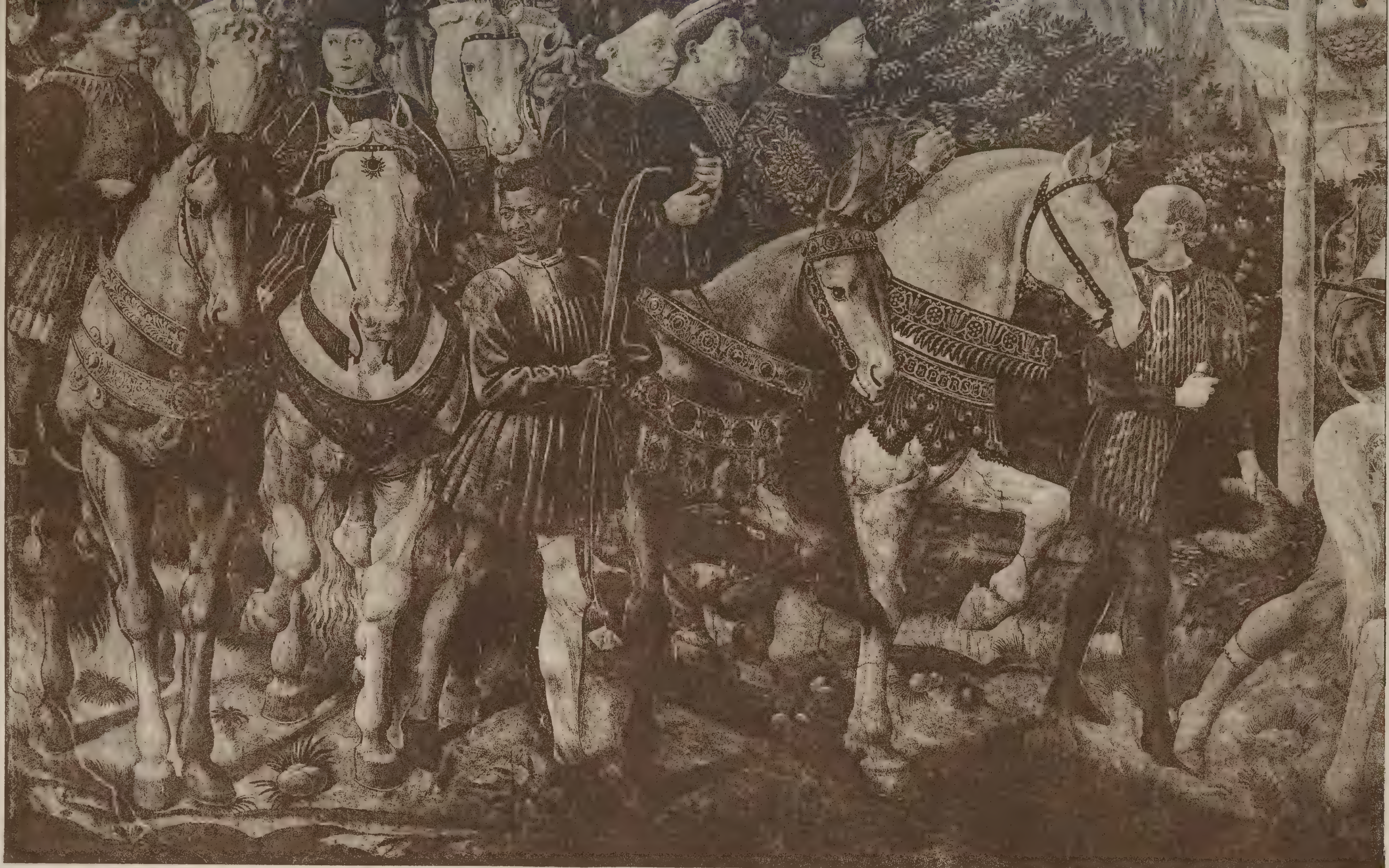

"PHOTO-TINT" by James Akerman 6 Queen Square London W.C.

OLD·MASTERS·ON·THE·CONTINENT·N°8·

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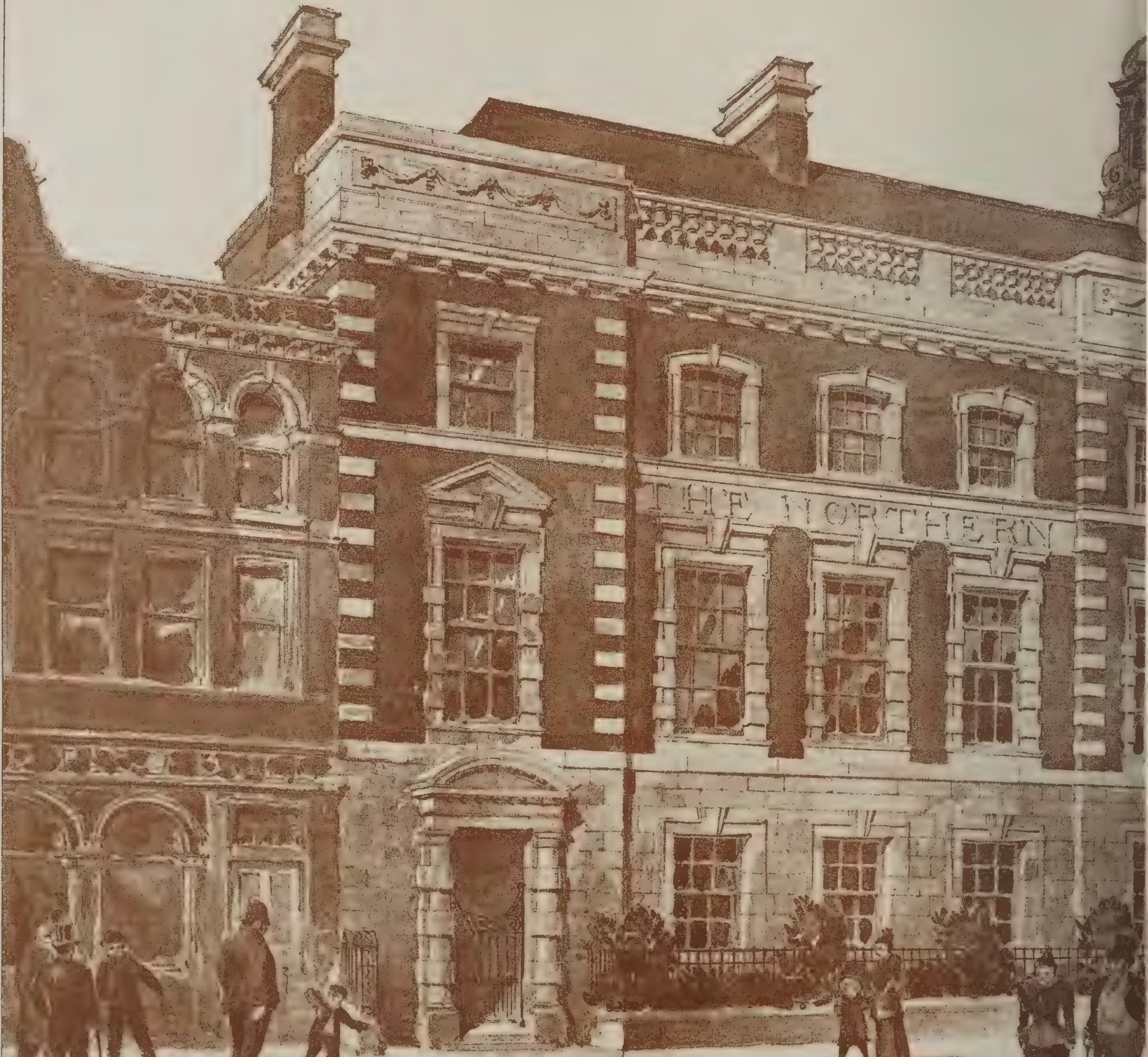

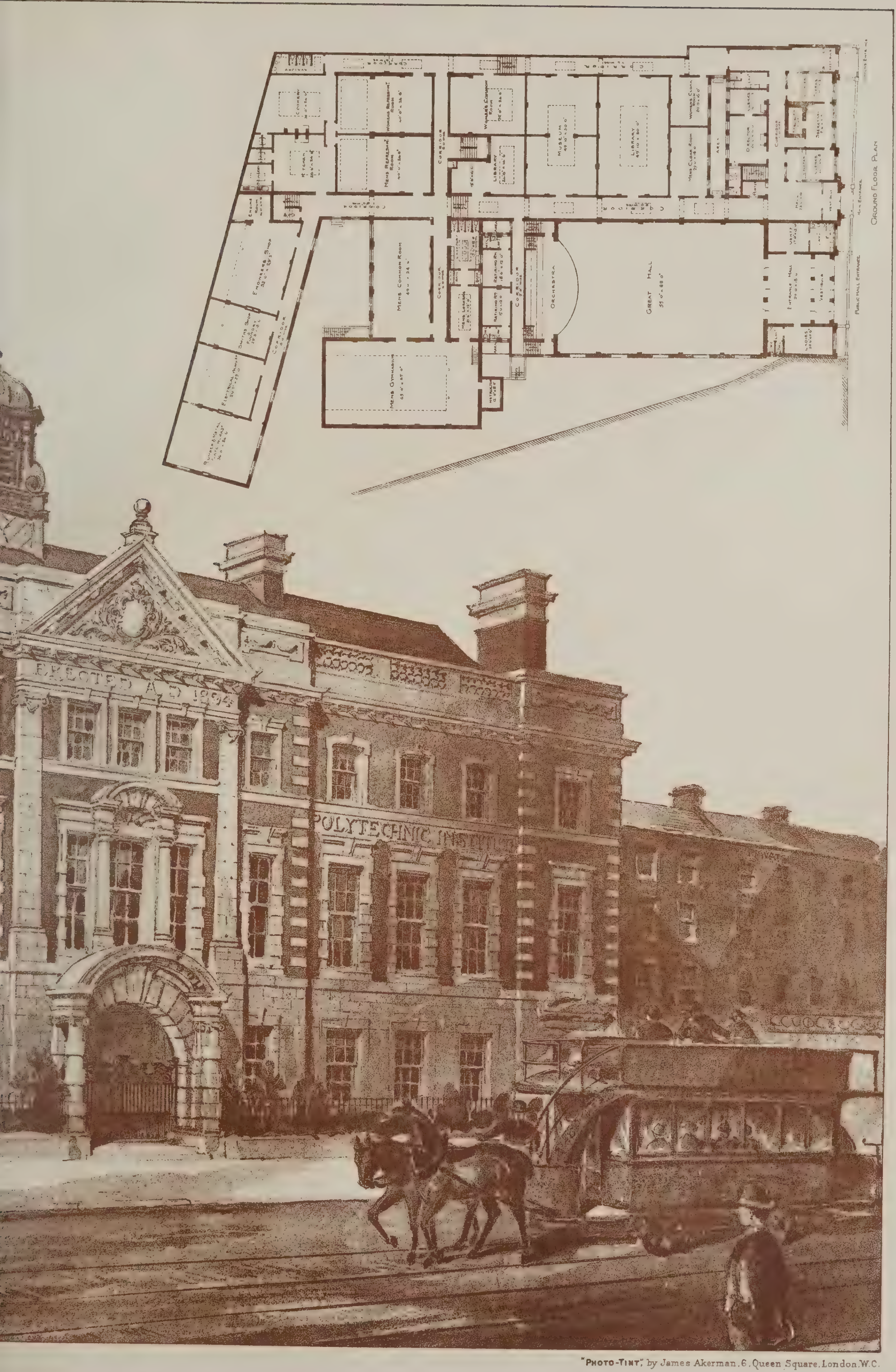

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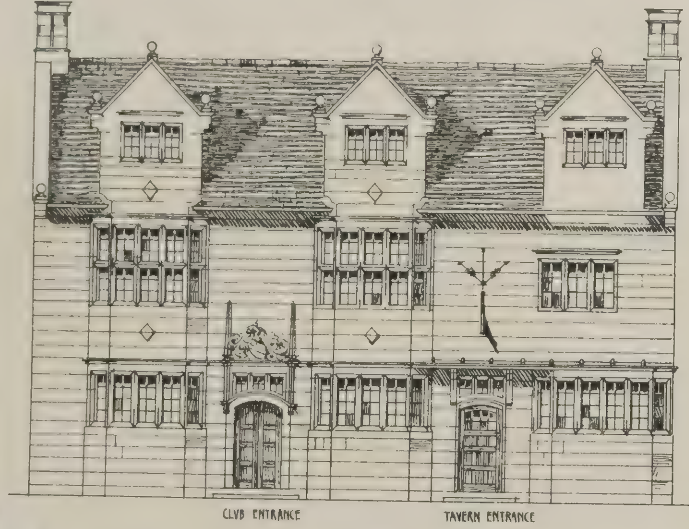
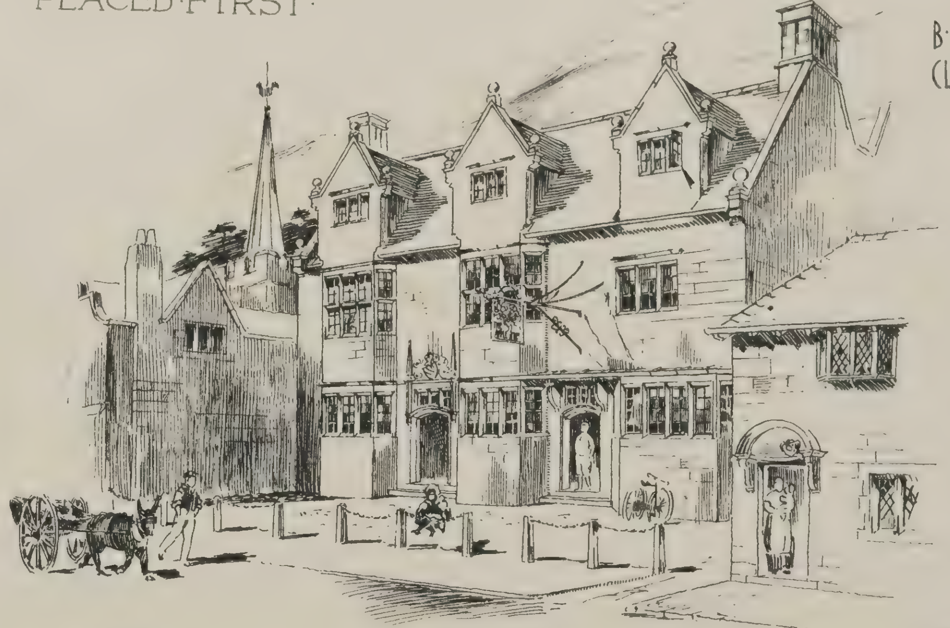
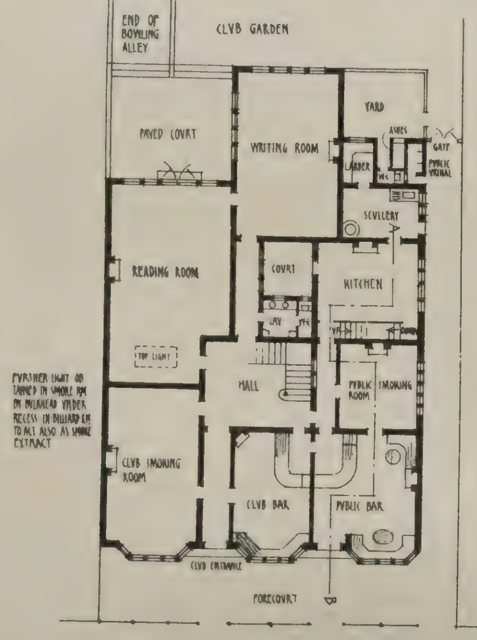


FRONT ELEVATION





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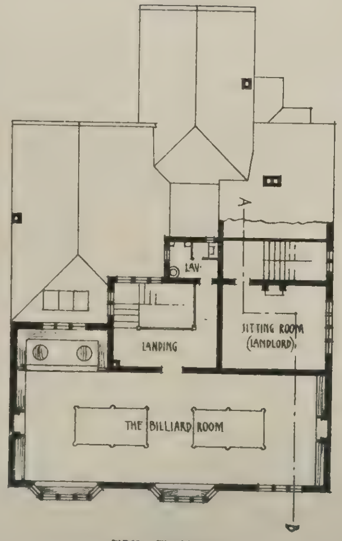
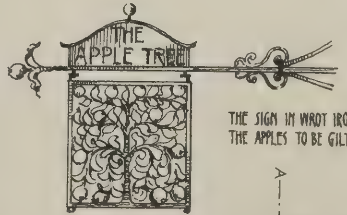
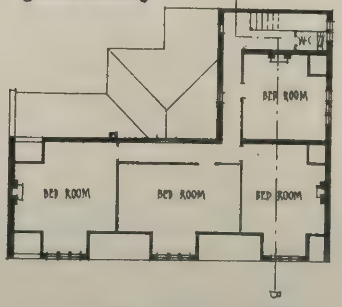
GROUND FLOOR PLAN



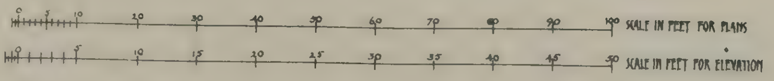
FIRST FLOOR PLAN

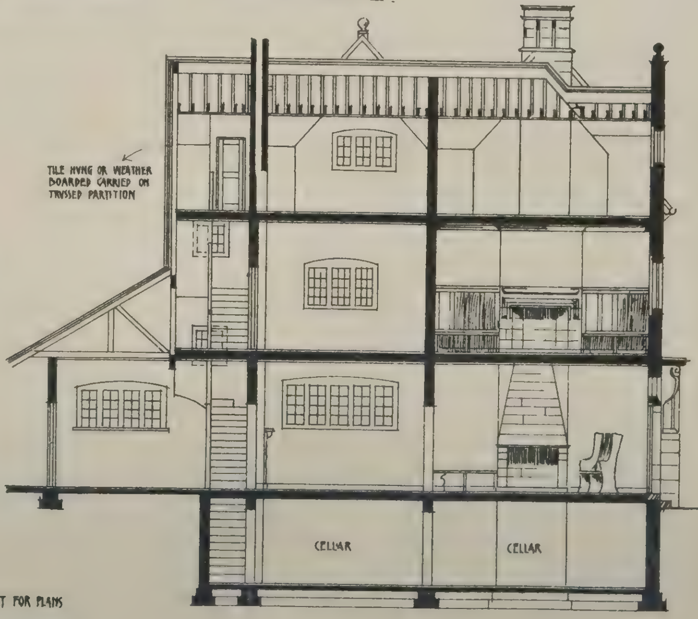


THE SIGN IN WROT IRON THE APPLES TO BE GILT



SECOND FLOOR PLAN (LANDLORD)





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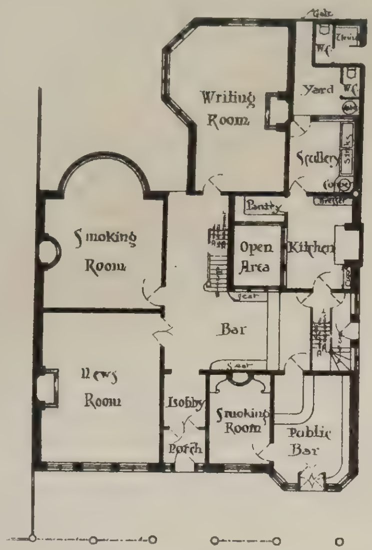

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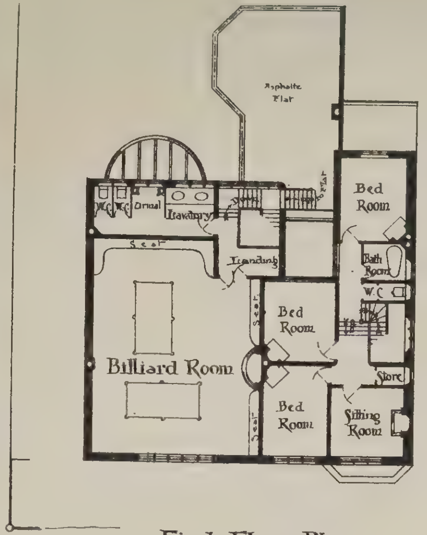

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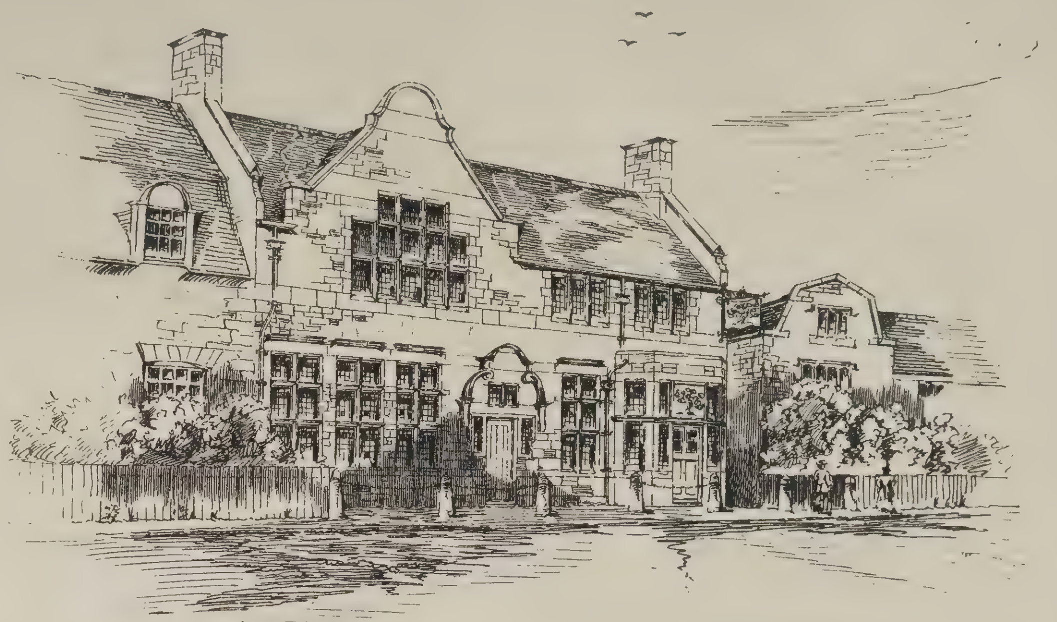

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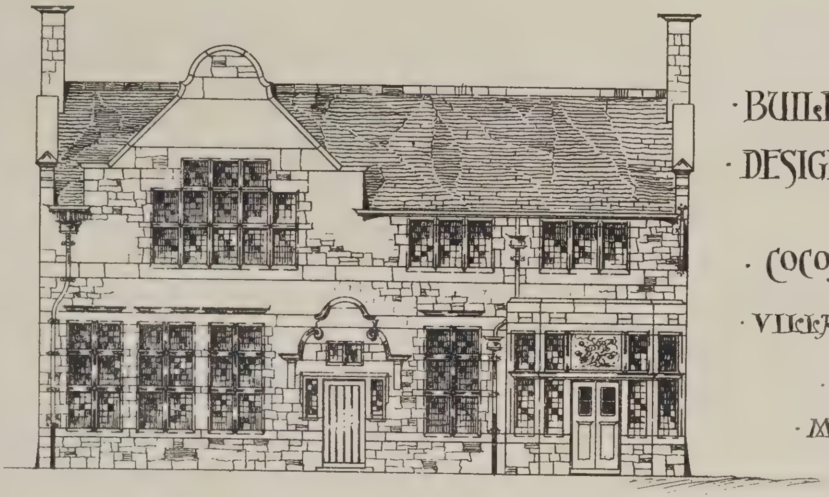

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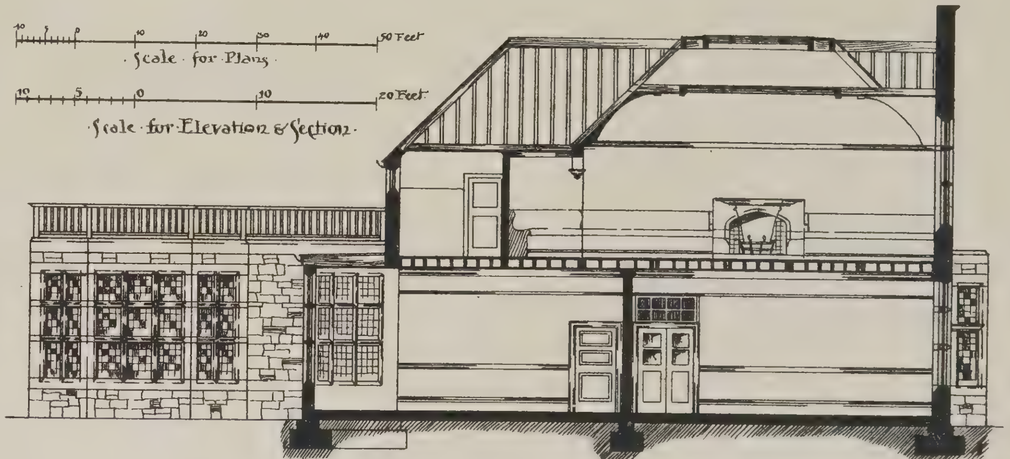

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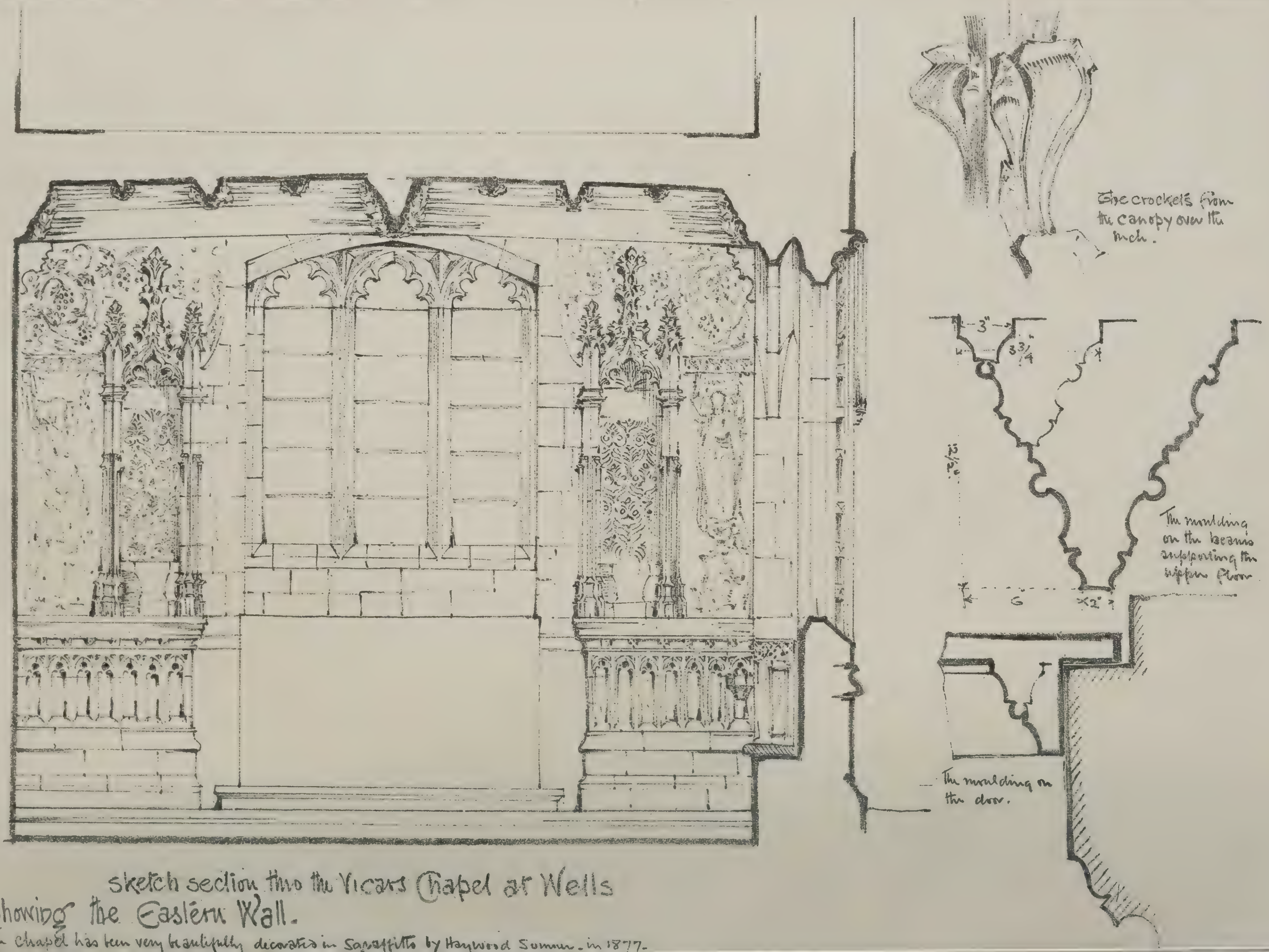
The crockets from the canopy over the arch.
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3¾"
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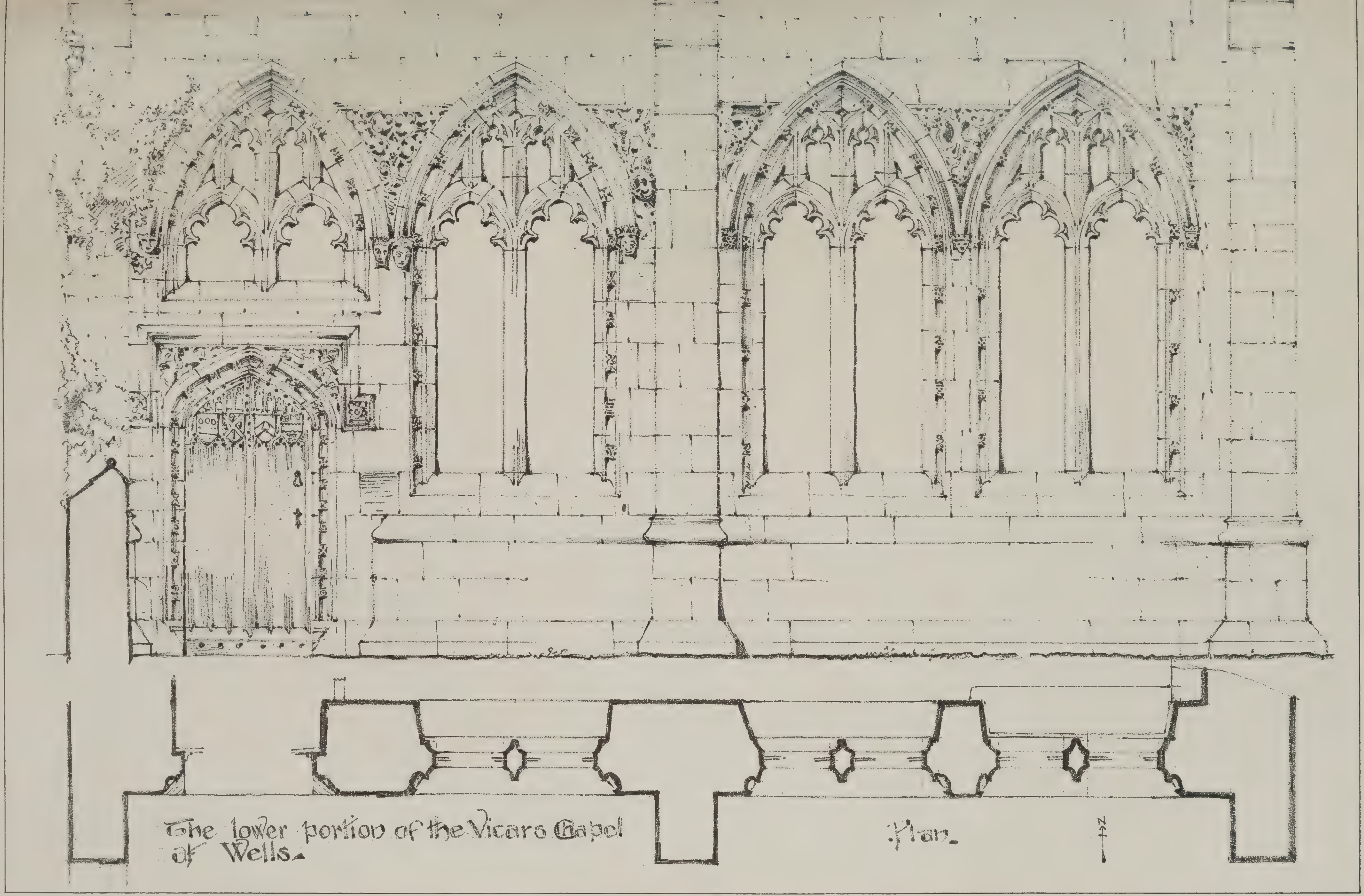
6
2"
The moulding on the beams supporting the upper floor.
The moulding on the door.

sketch section thro the Vicars Chapel at Wells showing the Eastern Wall.

The Chapel has been very beautifully decorated in Sgraffitto by Haywood Sumner - in 1877.



DRAWN·BY·CHARLES·SPOONER·

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THE·ARCHITECTURAL·ASSOCIATION·EXCURSION· 1894·

UNIVERSITY OF ILLINOIS

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2069.
FRIDAY, AUGUST 31, 1894.

SUGGESTIONS FOR THE SKETCHING SEASON.

AN American novelist has expressed a strong opinion that "all the stories have been told." We sometimes hear it stated, in like manner, that all the buildings have been sketched. And when we see how, almost every year, the same, or nearly the same, views are repeated by one architectural student after another, we can easily understand why the belief arises. The fact is, there is a run upon certain subjects. Sometimes it is because they are within easy reach. Sometimes, again, it is because they are in an attractive neighbourhood, and in other cases because there is good accommodation in their vicinity for man and beast. This last is by no means an unimportant circumstance. A careful drawing takes time, and if it involves repeated journeys from a distance, it becomes both troublesome and expensive. It may happen that such journeys are taken needlessly. Both comfort and cleanliness may be found in very modest hostelries, and it is not everyone who prefers to stay in a railway hotel with the latest improvements, when, for half the money, he can take up his quarters in some village inn, "where the sheets smell of lavender."

After all that has been done to illustrate English architecture, there are many imperfectly-studied subjects, as well as many almost untouched localities. There is, for instance, the subject of ancient glazing, both ecclesiastical and secular. Where it consists of figures, a certain proportion of it has been drawn; but ancient glazing of a less ambitious type is even more suggestive for ordinary purposes—and yet how little it is generally understood. No doubt it is hard to meet with, and what remains of it is commonly in odds and ends, patched up with modern additions. It has to be picked up here, there, and everywhere, as one comes upon it; and, as a rule, not much can be met with in a single holiday. But sketches accumulate, and after some years spent in different parts of the kingdom, enough might be brought together to make a very interesting book.

Coloured decoration is another field which has not been systematically explored. There is a larger, if not a richer, harvest to be reaped here. Many of the examples, too, lie closer together. The Eastern Counties may be successfully searched for work of this class, both on walls, roofs, and ceilings. There are remains of it in Gloucestershire, as at Fairford and Oddington, and a good deal is left on Devonshire chancel screens. Even in well-whitewashed churches a fragment may be found here and there behind pulpits and pews of the past Reformation period; and bits of coloured woodwork may be brought out from lumber-places in the tower, or in less dignified positions. No doubt the golden age for discoveries is over. The first church restorers were only too fortunate, had they but known it. A few of them, like Mr. Street, preserved all that was worth keeping, and preserved it so as to make it public property. But with others the custom was to "clean and modernise," and the cleaning included the removal not only of dirt and of whitewash, but also of the distemper ornament which the whitewash had overlaid.

Not much has been done in collecting details of artistic plumbing. The world has almost forgotten that such a thing is possible. The incompetent plumber it knows, and the careless plumber, and it is coming to know the registered plumber; but to speak of an artistic plumber seems to it a mere contradiction in terms. Yet artistic plumbers flourished, both here and on the Continent, for centuries. If their productions are scarce, it is not so much because there were originally few of them, as because they have more enemies than the handiworks of the mason and the carpenter. We shall never know how many of them were melted down in the time of war, or stolen in time of peace. Of those which remain, a few are Mediæval, but most are Elizabethan or Jacobean. There are many in out-of-the-way villages in Huntingdonshire—such, for instance, as Layton, where Herbert the poet was rector before his removal to Bemerton. Some of these, which are chiefly the rainwater pipes of the church, are very original and interesting. They show how even an unpromising material like lead can be made beautiful, not by disguising it with forms derived from other substances, but by bringing out, on the contrary, its own special characteristics and capabilities. One example here is dated 1632, and another 1634. There are, or were some years ago, other specimens of the same or a rather earlier period at Easton, Hunts, and at Woodford and at Lower Aldwinckle, Northamptonshire. We published in 1878 some interesting sketches by Mr. Lethaby of the fine series of lead water-shoots which remain at Haddon Hall and at Duffield. These are similar in general form to the Layton ones, but perhaps a little older, as well as considerably more elaborate.

Encaustic tiles, probably, are going out of fashion. If so, it is because the making of them in our times has not been an art, but rather that terrible thing which is the opposite of all art, and which goes by the name of "art-manufacture." Art-manufacture consists in taking a design—perhaps good in itself, perhaps far from good—and then stereotyping it and mechanically repeating it all over the country, till everybody is sick of it. So it was that, in the earlier days of the Gothic revival, a certain number of old 13th and 14th-century tiles were copied and manufactured wholesale. The designs were "correct," and the quality was excellent. From then till now we see these same designs in pattern-books, we see them in churches, we see them in halls, we see them in railway stations, till we pray that they may speedily wear out, and that nobody may see them any more for ever. But we do not weary of ancient encaustic tiles in this way. The people who made them knew when to stop. They understood that it is possible to have too much even of a good thing. They were wise enough to refuse the fatal facilities for repetition which the pattern-maker offers to the otiose architect and the money-seeking manufacturer. They were always getting rid of stock forms, and always inventing new ones: new ones, moreover, that were made each for its special position, and that so have the charm of individuality about them. The student whose holiday is spent anywhere in the neighbourhood of the Severn will still find much to do that is both easy and useful in preserving memoranda of unpublished tiles. Many of the patterns in modern use were copied from specimens at Malvern, but many others remain there, or did remain, before the Priory Church suffered its last restoration, which are very little known. Tiles were made in the parish from the 12th century, as it would seem, down to the 18th. It would be interesting to know whether they were exported to any distance by ship, and whether it was from Worcestershire, for instance, that the few which remain in a church at Pembroke were originally brought. But, however this may have been, we do not find many of the Great Malvern patterns in old work elsewhere. Even in Little Malvern the types are different, and they are still more so at Chasleton, an interesting little Gloucestershire church some thirty miles away.

So much for unexhausted subjects. Little-visited localities exist here and there all over the kingdom. Very often they lie near a well-worn track. The Great Western, from Newton to Plymouth, is tolerably familiar; but few of those who traverse it know that to the south of it lies a country almost as remarkable for architecture as for coast scenery. It is full of churches of the Cornish type, for the South Hams, as this district is called, were practically a part of Cornwall down to the later Middle Ages, and Cornish was actually spoken there. These churches are generally without clerestories. They have high western towers, severely plain and yet impressive—their principal feature being the staircase turret, carried up for a beacon, in the centre of one side. Within there are wagon-roofs—at least to the chancels—and very often elaborate oak chancel screens. The style in general is rather Late Perpendicular. At Aveton Gifford, however, near Kingsbridge, there is a much earlier cruciform church with a central tower, worth measuring up and publishing. The exterior has always been plain, but the windows inside have been shafted and richly moulded. Totnes is better known. It is a curious old town, with houses covered with vertical slating to keep out the rain, and this slating twisted and tortured into the semblance of columns, pilasters, entablatures, and everything else that slating naturally refuses to represent. To see how slate-hanging ought to be used, we must go further—say to Penzance—and there, in a few old houses, we may see how Cornish workmen, a couple of hundred years ago, had learnt artistic secrets which still seem hidden from the wise and prudent architects of Central England.

North-west Devon and North-east Cornwall are more often visited. Ilfracombe is almost as familiar as Brighton; and yet, at Pilton, a few miles away from it, and close to Barnstaple, there is a church containing most interesting wood-carvings, between Late Gothic and Early Renaissance, which do not seem to have met with the attention they deserve. They strike one as rather Flemish than English, and so, indeed, does a good deal of the other woodwork in this district. This is the land of carved bench-ends—not traceried ones, like those which abound in the Eastern Counties, but bench-ends really carved, each with a different design. Some have sacred emblems, some have heads, others have coats of arms, and others, again—whose owners, unlike Master Shallow, could not "write themselves *armiger* in any deed or quittance"—have only initials and dates. They are all interesting; they are doubly interesting to students with a taste for heraldry, and especially with some knowledge of local history. There are many at Morthoe, many more at Braunton, and some, probably, in most of the churches where worshipped the captains and sailors of Kingsley's "Westward Ho!"

THEATRE DESIGN.

A GOOD deal goes by rule in the design of our public buildings. The traditional form lingers long, and any departure is regarded as an experiment of doubtful value. In this country we have this conservative instinct very strong in the building of our houses, churches, and public edifices. Any form which has not grown with our habits, or the uses of society, we naturally regard with suspicion and mistrust. In America, we see many strange developments taking place in the erection of domestic buildings, as well as in those which minister to amusement. If we take, for example, the theatre, it has been reserved for our Transatlantic cousins to make several modifications we do not think in every respect improvements upon our own, but which have their suggestiveness. In a recent contribution to the *Engineering Magazine*, Mr. Dankmar Adler writes about "Theatre-building for American Cities," and what he says may have some interest to those who build theatres here. As he remarks very truly, while a theatre counts its patrons by the thousand, only a few have any personal or financial interest in its erection, or become acquainted with the details of its construction, equipment, or operation. Therefore it is that public opinion—that is, theatregoers—have very little to do with theatre construction and management, and they continue to be erected as the embodiment of the few who have a financial interest in their erection. The public will go to any house which has a sufficient attraction, no matter how badly equipped or planned it is for means of entrance or egress, how badly ventilated, or how indifferently administered. As Mr. Adler remarks: "No matter if the house be a notorious fire-trap, or how steep and incommodious the stairs leading to different parts of the auditorium," no matter how vile the atmosphere, or how bad the acoustic qualities, a popular attraction is sure to draw a crowded house. Fortunately, the proprietors and managers are beginning to awake to the advantages of a liberal outlay. In this country the by-laws that have been framed, which insist on a certain degree of isolation of the building and its approaches, and a proper number of entrances and exits, and the fireproof construction of the staircases and other parts, have initiated many of the improvements which our American cousins are carrying out. It is quite certain that if the playgoer has his choice he will go to a comfortable, safe, convenient, and well-ventilated theatre, rather than to one of the old-fashioned, unsafe, and insanitary kind.

Mr. Adler is justified in his remark that it is undesirable to have too large an auditorium, and that a house containing from 1,200 to 1,500 seats will be more satisfactory than a larger one. Except for grand opera and great spectacular performances, seating capacity should not much exceed these numbers. He says truly:—"A certain intimacy of relationship between the actor and spectator is essential in all the lighter forms of stage production, and the ability not merely to hear what is said or sung, but also to follow closely the facial expressions and gestures of the actors, is a necessary condition to the enjoyment of plays of every kind, except only the purely spectacular or the purely musical, or combinations of the two." Many people, as he says, "hear partly with their eyes," and it is, therefore, necessary that the stage should be near the bulk of the audience—a condition rendered impossible if the auditorium has more than 1,800 seats, which limit is considered the danger line. In a series of articles that have been appearing in our pages the importance of so arranging the seats that their occupants can see the stage has been brought before the reader, for, as Mr. Adler says, if the entire action can be seen, the hearing is much less difficult. Mr. Scott Russell's "isacoustic curve" principle is adopted in the majority of good theatres—that is, by making the stage floor at the curtain-line the centre to which the lines which determine the curve are drawn. To make the total rise of seats come within the available limits of space, certain modifications may be necessary—as drawing the sight-lines over every second head, or setting the seats alternately behind each other. Of course, the sides as well as the centre of the stage ought to be visible, which renders it necessary to draw the curve of the seats in such a manner that those seated at the sides may have good sight-lines or diagonals. The plans of M'Vicker's Theatre, Chicago, illustrate a good example of a bank of curved seats arranged to allow an easy view of the corners of the stage. Upon acoustic principles, as they are exemplified by the theory of the transmission of sound-waves on the principle of the trumpet propagation, the proper curve on plan is fan-shaped, which cuts off a number of front side-seats, from which a poor view is obtained; and as our readers know the vertical section of the auditorium must be so designed as to imitate somewhat the trumpet shape, to conserve the sound-waves; to this end the proscenium must be low—only just high enough to allow a view of the back of the stage from the highest seats, and the ceiling of the auditorium will consequently increase in height from the proscenium outwards. The Auditorium, Chicago, gives a longitudinal section of this shape, arranged in a series of arched soffits, one larger than the other, the lowest being close to the proscenium. The value of breaking up the ceiling and wall surfaces is obvious in checking reverberation, and the architect does well to introduce pilasters, arches, beams, and other obstructive means for breaking up the sound-waves and deflecting them into the auditorium. These advantages, as it is shown, are better secured in a moderately wide and short house than in a narrow long one. The stage, too. may be larger than required for an effective stage setting. The great size of some of the Continental stages, like that of the Grand Opera House, Paris, is seldom called into requisition. M. Adler says: "The theatres that are likely to be built in the future will be devoted to a light class of performance, which can be given with a small number of people, and with stage fittings less ambitious as to size than those of the great theatres of New York, Chicago, Boston, and other cities." It is easier to produce splendour of effect on small than very large stages, and such theatres are most suitable for travelling companies. Alluding to the width of proscenium opening, 30ft. is considered ample for all houses less than 70ft. in width between the walls. Openings of from 45ft. to 50ft. are adapted for the most elaborate spectacles, and these dimensions are found only in the Auditorium, and Metropolitan and other large theatres of the States. For depth, from 25ft. to 50ft. is not considered too much, even for light comedies, and for height, 60ft. to 80ft. is not excessive. These facts and figures are worth bearing in mind by promoters and architects of new houses, when space is so valuable in our large towns, and the regulations in force are so exacting. Mr. Adler's paper deals also with the necessity of ample light for the stage, which cannot be too brilliant; for workshops for the manufacture and repair of properties; for the accommodation of the orchestra and their instruments; and for dressing-rooms—which provisions are often very inadequately met.

OLD AND NEW PROBLEMS.

A GREAT deal of the work of the ordinary architect consists in "following instructions," or in carrying out the whims of clients—a condition from which the painter, the sculptor, and the composer in other arts are exempt. Indeed, the working out of a given problem is that which separates architecture from the sister arts. Both the painter and sculptor know nothing of this restraint—they have simply to imitate or reproduce Nature in colour or marble, or to allow their imagination free play. The history of architecture shows clearly that the problem has increased in perplexity. The early Greek architect had simply to enshrine a deity, to form a fitting receptacle for his god or goddess, and the simple cella surrounded by the majestic peristyle was the result. No more beautiful or fitting form could have been conceived. This idealised structure has never been excelled for such a purpose. It was to enshrine art of the highest kind that the temple form had its beginning, and even the peristyle itself is assumed to have had its origin in protecting the paintings on the walls of the cella—so, at least, some have thought, for Fergusson has doubted whether an arrangement so apparently devoid of purpose would have otherwise been invented; but this is only an opinion, which hardly seems to be worth much. If not used as an ambulatory, the open peristyle was, we rather think, a sensible arrangement for screening the cell from the rays of the sun, and for emphasising the dignity of the structure. The tombs and palaces of Egypt and Assyria, equally with the temple, were embodiments of simple requirements. The Mediæval architecture of Europe exhibits a more complex problem. The requirements of the religious houses of different orders and an elaborate ritual necessitated the design of buildings of more intricate character, embodying more complex arrangements. Modern, social, and industrial progress have paved the way for still more complicated building problems, and we have to-day a variety of institutions—educational, religious, industrial, and social—which no previous age knew anything about. The building problems are not only numerous, but more complex. The modern house is a far more intricate building than any previous Domestic type. Science has placed at our disposal modes of draining, ventilating, heating, and lighting, which have to be embodied in the architect's design. Then our schools, libraries, museums, municipal buildings, baths and washhouses, hospitals, asylums, institutes, factories, &c., are problems that have only been called into requisition during quite recent times. Our forefathers knew nothing of them. All these things have vastly added to the intricacy of architectural problems, and have made it immeasurably harder for the designer to achieve the artistic triumphs of his predecessors, for, as Macaulay has said in his essay on Milton's poetry, our more complex civilisation has served to stifle genius, and to render it impossible to produce works of the kind which were common when mankind had simple wants and tastes, and imagination was childlike and untrammelled.

It is not exaggeration to say that the simplest ideas have favoured the best art; that when modern conditions and requirements imposed restraints on the architect, he fell away sadly from his first estate. The simplest ideas and aspirations of humanity found their expression in the temple and the tomb, and in these designs architecture came nearer to the sister arts of painting and sculpture. But we are now confronted with a variety of problems more or less complex. The architect has to take Mr. Brown and Mr. Smith into his confidence, to consult their wishes and follow their instructions; the client has to be pandered to, even in those things he understands so little about; and the contractor and building tradesman have to be consulted, for there is a conventional understanding under our present system that an architect cannot choose exactly for himself, but must follow the dictates of the trade, and must use or specify those materials and fittings which have been sanctioned and put into the market by the manufacturer and his agents. In these days it is seldom a question of designing a building just as one likes without let or hindrance. A matter of requirement, of plan, and cost all stand in the way, and the highest praise is due to the architect who can honestly carry out his instructions with an artistic sense and appropriateness. It is this question of a problem, then, that makes architecture so different to all other arts. Mr. Great-Show instructs his architect to design his corner business premises with as large a window-space on two fronts as possible, with an entresol mainly of glass above it. The architect fears to say, "No, it is bad architecture to give so much space to plate-glass, and to carry the superincumbent brick building on stilts of iron." The instruction must be obeyed, however much the grievance may be mitigated or disguised. The problem here is to render artistic that which is a flagrant violation of architectural propriety, and the architect has no alternative but to comply or refuse. Many designs have to be made under a most trying conflict of opinion and caprice. The corporation of the thriving town of Pushington desire to erect a town-hall and offices, and they advertise for designs after their own surveyor has tried in vain to embody their wishes at a ridiculously low figure. One member declares that a larger hall can be secured for the money; another magnate that it would be easier and cheaper to convert some old corporation premises than to build. The competing architects are hampered by absurd conditions, and have to fulfil the most irreconcilable instructions. The boldest and most defiant competitor wins, simply because he has ignored the cost altogether, and gone in for a perfect scheme. The ratepayers throw the whole overboard, and advertise another competition. This is no imaginary case of an ill-considered problem, in which the architect is put to trouble and expense to teach his employers what they want. How many competitions have ended disastrously for the profession simply because of wrong instructions of ill-conceived problems! How often the employer or committee learn their experience at the expense of the architect, who goes out of his way in preparing designs from instructions which he knows to be imperfect, but is afraid to point out their defects. The competing architect knows too well how many times he has been baulked by following too closely the instructions—in not using his own judgment. If he has left space enough to preserve an "ancient light" he is outdone by another competitor, who, less scrupulous, has made a larger hall to fulfil the accommodation required. The plan with carefully worked-out areas is set aside by the assessor for one of more skilful design. How far is the competitor justified in following one instruction if it militates against another and more important condition? Suppose the conditions require a certain number of rooms or offices to be provided on the ground floor—more, in fact, than can be got in; is the designer at liberty to reduce the dimensions of the rooms, or to place one of them on the first floor? These and many other points occur to all competitors in solving a problem.

The residential block, or hotel, is a modern problem of complexity of which we have no equal in former times. City life in this age has created a number of necessaries, and the man who has to design a block of modern residences of a superior class has to make himself acquainted with the habits and customs of civilised society. The requirements are numerous and perplexing. Promoters of such buildings may give certain instructions as to accommodation, but the architect is held responsible for any serious defect. As to the architectural success of these blocks of flats there is not much to boast of, when every floor is a repeat of the one below. Nevertheless, it is one of the many problems which makes the architect's work distinct from that of any of his artistic compeers. He has so to clothe buildings of the most exacting utility that they shall not be offensive to the eye. The technical school, the fever hospital, the modern baths, the workmen's flats, are all of this kind. If architecture is to become again an art worthy of its earlier traditions, the problem to be solved should be clear and explicit. Those who instruct the architect ought to know exactly what they want. But how few of those who employ architects do! Their ideas are vague. In matters of plan, dimensions, and cost their views are taken from particulars that have no reference to analogous buildings, but from arbitrary opinions. The question whether an architect ought to pay attention to instructions, or adopt his own views of what is right, is important, as it may result in all the difference between a good or inferior design. The point is one which deserves the attentive consideration of the profession. No doubt there are special occasions when the client must be consulted, as in matters pertaining to his particular requirements; but there are more occasions when the architect is necessarily the best judge. As the law holds him responsible for mistakes of judgment, he should certainly be able to decide on those questions of plan and construction which he is called upon to solve. In questions of art he, at least, ought to be the authority. He is not in the position of the student. In one of the reports issued by the examiner of the stage of elementary design at South Kensington, it is observed that "candidates have done what seemed good to them, and not at all what was given them to do." Very casual attention is paid to instructions, and the examiner insists that it is more than ever essential that obedience to conditions should be enforced on students. But these conditions apply to material, given space, whether the design is to be composed of straight lines or curved, and the principles of design applicable to students. No such leading conditions are necessary for architects. The instructions they receive from clients are more or less arbitrary and defective. Many of the particulars issued to competitors are drawn up by committees wholly unacquainted with the building or the requirements of good design, and there is much loss of time and much ambiguity caused by competitors writing for answers to questions that occur to them. All round, the profession is trammelled in this way. The fact is, public opinion has to be consulted, and the architect has to embody the views of interested parties, of managers and promoters, rather than of those who really use and have to inhabit the buildings.

OF CHURCH EMBROIDERY.—XIII.

By May Morris.

[CONCLUSION.]

IN glancing over these notes on old ecclesiastical embroidery, I notice that I have omitted to say a word about *colour*, beyond a few abusive references to the quality of modern colours of ritual. So, before referring to my present illustration, and therewith drawing to a conclusion, I should like to make just this general observation on the subject: Roughly speaking, you may say there are three methods of treating colour—firstly, the design is distinctly dark on a light ground; secondly, the design is lighter than the ground; thirdly, ground and design are near each other in tone, and form a patchwork—a piecing-in or, as it were, a *mosaic* of colour, though, of course, clearly defined and separated by contrast and by a distinctive outlining. Of these schemes, the second and third are to be principally considered, and I should say that the second—light design on a dark ground—is, on the whole, the most decorative. It is richer in colour than a dark design on a light ground, which may look hard and poor, and is more susceptible of beauty of form than the third or mosaic scheme of colour on colour. In the first scheme, colour is mostly subordinate to form; in the third, form (I say this with reservation) is subordinate to colour; in the second, form and colour both have their due place. I do not want to suggest a hard-and-fast and pedantic distinction in this; but if any of my readers care to confirm the observation, so far as concerns the difference in quality between dark on a light ground and light on a dark ground, they might compare the illustrations for this and the last two numbers. The sheet accompanying Number XI. of these notes has two designs—one dark on light, the other light on dark. It does not take much consideration to choose the best of these two. The fact is, the dark design on a light ground is apt to start out a little from the "picture-plane," hanging in mid-air, so to speak—a bad fault in flat ornament; whereas the stork design, and those in the sheet accompanying the present paper, as well as the beautiful scrap given with Number XII., are richer in tone and look distinctly flat. In embroidery, certainly, more than in woven stuffs, almost anything can be done in the way of laying colour upon colour; but sometimes a more simple scheme is required, and then it will be found, as a rule, that that arrangement is the most satisfactory in which the ground is several tones darker than the colours laid upon it.

Such embroidery, rich and elaborate, as lends itself to a mosaic-like colouring, requires skilful treatment, and is perhaps most successful in the hands of Oriental workers. Gold, I have said elsewhere, can be considered in two ways—either as mere *colour*, or else as *metal* itself. That is, if you want a golden lining to a mantle, or a golden nimbus round a saint's head, do not hesitate to put it in, even if the scheme of colour does not include a rhythmical or in any way continuous use of the metal. There will be no fear of spoiling the harmony of colour if the gold thus used is lowered in tone so as to reduce it to the same key as the other colours used: such toning down is done by employing fine silk of different colours for sewing down the gold, and sometimes by coloured silk laid underneath the gold thread. The raising or modelling of gold treated in this way should be of the slightest, and better avoided altogether. When treated as metal, on the other hand, it may be raised and moulded to any extent, and made as brilliant as may be, the effect heightened with pearls and other stones, with rare enamels, and so forth. Here the very materials must look precious, magnificent, and regal—a little showy, if you will, or, shall we call it, Byzantine. But, alack, Eastern showiness is not 19th-century showiness, and we have to be careful to avoid vulgarity, just because we are so self-conscious, and are supposed to know better than the Grecian workman. This is no fanciful distinction between the methods of handling gold. Make the same study and comparison of the best work that I have done, and you will confirm these notes on the difference between flat colour-gold and raised metal-gold mixed with goldsmith's work, and closely allied to it.

You will be rather surprised at my having chosen as illustrations to preach upon lately as many as five examples taken from woven fabrics, while our subject is embroidery merely. I detest as heartily as anyone that lazy amateur habit of applying a design intended to be reproduced in one method and special materials, to another method and different materials, and therefore hope no one will think me guilty of suggesting any of these illustrations as "suitable for any kind of needlework." But I have chosen them as excellent examples of living nature in mediæval art, and because they are beautiful specimens of the designer's skill, workmanlike and well balanced, the ground neatly covered, the forms vigorous, and instinct with observation and knowledge of nature under every aspect. The designs on the present sheet, moreover, are interesting technically on account of their construction. The pelican group does not at first sight look as though it were formed on the "net" construction; but if you were to repeat it over a large surface you would see the lines of the net at once, not in the design itself, but in the band of empty ground between the groups, which are placed alternately. The same with the bird group on the left side, the net here being flatter and not quite so obvious, owing to the tips of the wings nearly meeting on either side, and filling up the bare band. Both are taken from paintings, the pelican from an altar-piece at Ghent, and the other from a picture of the old Cologne school; but this latter, I should think, and most likely both, Italian in feeling, and copied from some Italian fabric. The pelican group is extremely handsome, and so simple that you feel that you could have done it yourself. If one were to take away those little groups of bell-flowers hanging at the bottom, they would look quite stiff in themselves, yet in their place they are flowery and right. I like forms that are right and beautiful in their proper place to look wrong and tiresome away from it. One feels a spiteful pleasure at seeing a fine, well-conceived piece of work that has been taken away from its surroundings and used for a different purpose, obstinately refusing to look beautiful any more. I have been asked to admire the design of a Persian plate utilised for drawn-thread lace; I have been shown the border of a Greek mosaic turned into decoration for a woman's gown. Such little ingenuities make no one happy but the misguided adapters themselves. One objects to having design made to do "general utility"; the historic table that opened into a step-ladder, or shut-up into an ironing-board, was not put to a more promiscuous and miscellaneous use than are some specimens of ornamental art in the hands of an amateur designer. "Pray you avoid it." The untiring examination of ancient skill and patience that I would press upon young students of design and embroidery, too, is not, let me repeat, for the purposes of copying, or adapting, or even faithfully reproducing, the old stuff itself. We have had too large a dose of sham Gothic in our architecture, sham Greek, and sham Roman too, and in my special department of the arts I am very anxious to put in a plea for spontaneity of some description, however unpretending. No, if the tendency of such study is to keep the taste of students in a groove, rejecting everything outside, they had better leave it alone altogether. But one expects and hopes such study to be pursued critically first; the reverence can come in afterwards, if by comparison and consideration, and generally speaking, by the light of ordinary intelligence, they find what they have looked into worthy of reverence. And take anyone who laughs at Mediæval draughtmanship as a grotesque and affected travestie of nature to the British Museum, and show him some of the finest specimens of 13th or 14th-century MSS., with plenty of red and blue penman's work in the borders. If he is an artist, ask him to draw you a dog with a curly tail in six strokes of the pen, and make it look as lively and full of devilry as any of the hundreds of animals in the work before him. If he says that he is a figure-painter, and has not made a study of animals, you can point out that the Mediæval artist could draw one as easily as the other, and thought no more of depicting King David with his harp than the little bear standing on his head on a hill, that I mentioned the other week. He will then most likely remark, with quiet scorn, that he considers the little brown bear low, and only fit for a comic page in *Pick-Me-Up*. At this stage of an argument one usually changes the subject, for a person who makes up his mind not to be amused or edified one day (and how well I know this perverse frame of mind!) may on another occasion, if treated with *finesse*, relent, and be prepared to allow that you may be in the right. For I am very much convinced myself, and therefore anxious to convince others, that Mediæval draughtsmanship, whether in an MS., or round a carved frieze, or on a "storied" mantle, was extremely naturalistic in the right way, and that when we can't sympathise with it, it is —I won't say our fault—but because of the difference in the point of view, and by no means because the Mediæval conception or execution is wrong. It is useless for me to say that a thing is right because I, through temperament and education and a hundred other reasons, like it. But it is reasonable to point out that such and such qualities exist in it, and that they overbalance such and such defects. I will not venture nearer than that to an assertion of the absolute in art!

An unsympathetic cousin aged twelve, in what I should think must have been his only moment of inspiration, once so far forgot himself as to call me a "Mediæval brute," owing to the cut of my youthful frock, which was unfashionable in those days. But I don't want you to take me for an incorrigible Mediævalist. To place an age which is behind us beside the present age, and favourably compare it, under all its aspects and with all its tendencies, is just about as unintelligent as the spirit which used to nickname an interesting period of history the Dark Ages; but one must admit qualities in the work of those times that no longer exist. With the change, the point of view is changed. The Academician cannot always enjoy the dignity of an ancient story seen through the naïve and earnest eyes of the Mediæval artist; but, so far, I do not think he has anything better to offer in its place. Certainly I like a clever, well-drawn street advertisement as well as anyone, but I rather think it is the blackguard side of me that enjoys the blackguard and artificial prettiness of these things; another side of me seems to want great purity of line, and an epic simplicity of design which the art of the street cannot supply me with. *Soyons de notre siècle*, and let us make the best of it, too, but while my Venetian and Ravennese peacocks drink at the fountain of life, or peck at the eternal tree, while the great warriors Roland and Oliver solemnly stand guard each side of the portals of Verona church, while the great dalmatic of Leo, third of that name, lies in its quiet place in the Sacristy of Peter at Rome, I beg, like the Goth that I am, to be allowed to love these things, and to project myself while thinking of them, into the queer days that engendered them, with their jumble of splendour and hardship, folly and wisdom; to lose my hold on modern life for the moment, on County Councils, School Board, the Woman Question, and Progress generally, and to forget—

> "Six counties overhung with smoke,
> Forget the snorting steam and piston stroke,
> Forget the spreading of the hideous town;
> Think rather of the pack-horse on the down,
> And dream of London, small, and white, and clean,
> The clear Thames bordered by its gardens green."

The moral of this rambling—for I am drawing to the close of my story and must make a "good end"—is that design, to be memorable, must have study of nature and knowledge of history behind it. The study of nature makes you bold in one direction, and the study of history in another, and without boldness the artist is as a leaf in the storm. An amateur may feel timidly that this or that is right, but could not say why, and dare not express what is in him for fear of offending against the canons of art; but the artist who has the certainty of knowledge within him will trample his own way through the canons and come out victorious in the end, and write his own page in the many-sided history of art, which is, in all its multitudinous forms complex and simple, a manifestation of Nature's effort and repose, the History of Life itself.

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GREAT NIAGARA TUNNEL AND WATER POWER.

By an Act of the New York Legislature, the Cataract Power Company obtained powers to construct a tunnel at the Niagara Falls for the purpose of creating a water-power of 100,000 horse-power, with option of duplicating the same. The Dominion of Canada also gave the company power to put a third tunnel on the Canada side of a still greater capacity than both combined on the American side, of 250,000 horse-power. In a paper read lately by Mr. Emile Geyelin at the Engineers' Club, Philadelphia, the engineering features of this work are described, and the construction of certain turbines recently put into operation. This tunnel is to serve as an outlet of the waters from future great hydraulic motors, and is, in fact, nothing more than a waste-way for the waters from the turbines from which the great power is to be obtained. The tunnel is lined with two thicknesses of brick, laid in Portland cement. It has an interior area of 314sq.ft., and a total length of 6,200ft. It starts about 4,200ft. above the Falls from a depth of 145ft. below the upper level of the Niagara River, and by varying incline terminates at about 50ft. below the new Passenger Suspension Bridge 250ft. below the cliffs of the great Falls. There are six turbines, each of 1,100H.P. under 140ft. fall; each of them has an efficiency of 80 per cent., and requires 5,200c.ft. of water per minute, or a total of 31,200c.ft. The motion is transmitted by means of upright shafts and bevel wheels to three horizontal shafts, each making 200 revolutions per minute, placed 154ft. above the lower level. Those interested in the details of this great work will do well to read Mr. Geyelin's paper in the *Proceedings* of the Engineers' Club of Philadelphia. The author states: "The turbines are performing the full duty they were intended to perform, the bearings are cool, and the gears show no sign of weakness or tremor. The water, as it leaves the turbines, falls over the sides of the casings, its terrible force wholly spent on the wheels."

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A FURTHER NOTE ON SEWER AIR AND SEWER VENTILATION.

By Robert Harris Reeves, C.E.

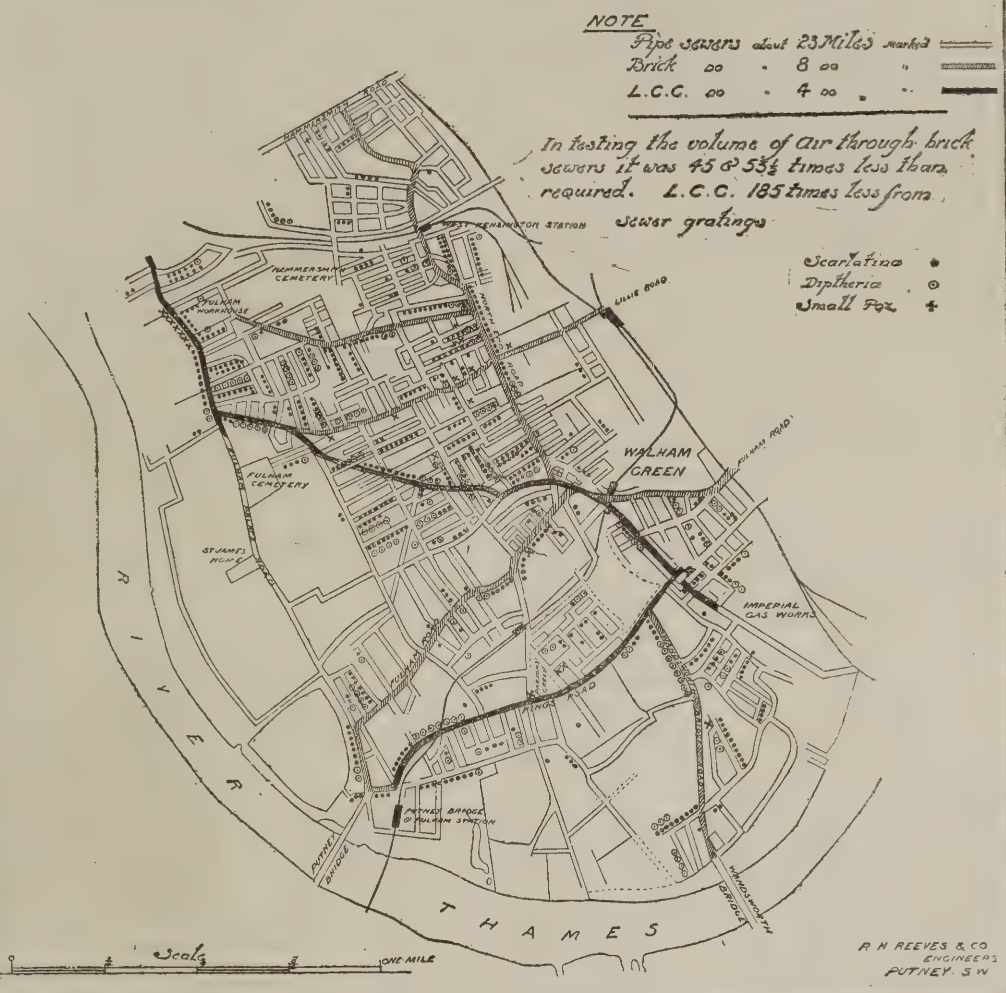
Since the publication in June last of my pamphlet, noticed in this journal on July 6, entitled "Reports and Investigations on Sewer Ventilation," I have added materially to the weight of evidence in favour of the views I therein ventured to set forth. I have prepared a plan of the sewerage of Fulham, and, following the excellent report of the medical officer for 1893, I have located thereon all the cases of disease according to the streets in which they are stated to have occurred. A reproduction of this chart on a reduced scale is given on p. 279.

There were in all 30 cases of small-pox reported, denoted in the plan by X, 4 of which proved fatal; 230 cases of diphtheria, denoted by , 55 of which proved fatal; and 701 cases of scarlatina, denoted thus ., 43 of which proved fatal. And on reference to the chart, it will be seen that the worst cases lie along the line of the sewers which, as a matter of common knowledge, give off the worst gases; whilst it will also be apparent that this chart in a general, but none the less striking, manner illustrates and enforces the truth of the remarks I made when dealing with the sewerage of this district in pamphlet, page 13. I there showed the degree of unsanitariness of the pipe sewers, of the branch and main brick sewers of the vestry, and main sewer of the London County Council, when I stated that they had respectively 7½, 45, 63½, and 185 times less fresh air passing through the gratings than the amount required. It is clearly evident from all this that disease follows the path of sewer gas; but these 961 cases of disease were, according to the highest medical authorities, preventable. Why, then, were they not prevented? On whom lies the responsibility of their occurrence? How are they to be prevented? It is for others to answer the first and second of these questions, but I answer the last by saying: Get rid of the sewer gas, and preventable diseases disappear in proportion as you are successful in doing this, and that this is a comparatively easy and inexpensive thing to do.

THE SMALL-POX OUTBREAK AT MARYLEBONE.

In my pamphlet I suggested the following as a solution of the problem as to how outbreaks of zymotic diseases originate—viz., that the germs of zymotic diseases are always with us; that under certain conditions they are harmless, but under certain other conditions they become most dangerous; that sewer air produces an atmosphere most favourable to their becoming dangerous, when by

PLAN SHEWING ZYMOTIC CASES IN PARISH OF FULHAM IN 1893



their action on water, milk, and other food they lower the system until it yields to their attacks and disease develops. Several medical men have adopted this theory as the basis of their opinion on the origin of outbreaks, but the medical opinion generally still is that they originate by "infection." On the "infection" theory the origin of the outbreak in Marylebone has been attributed to one case which remained unisolated from the 2nd July to the 5th July, and from that one case 139 cases were notified as occurring between the 23rd and 31st July. By way of explaining how that could be possible, it is stated that "small-pox is liable to be carried by money, by goods, by personal contact with those nursing the sick, and in a variety of insidious ways not easy to follow or trace." This is not very definite and not very convincing, and does not satisfactorily account for the fact, as alleged, that from one case 139 individuals derived the disease, many of whom, if not the most of whom, had no connection by space or any admissible circumstance with it; and if the "infection" theory appears so weak when looked at in view of the almost instantaneous appearance of so many cases, it becomes more so when viewed in connection with the expected second outbreak, which happily did not occur. On this point the official report merely states, "that the small number (of cases) up to date (17 days after the second outbreak was expected) of what might be called the 'second crop,' was remarkable. It went far to show that the early period of small-pox, before the eruption maturates, was not one of strong infection." Further on, I shall show inferentially that this is a sound conclusion as far as it goes, and that it inevitably leads to the final conclusion that the "infection" theory, as at present understood, must be abandoned altogether. I now proceed to state, in necessarily brief terms, how in my view the Marylebone epidemic originated; and in doing so I am merely applying the principles I laid down as to the origin of all zymotic epidemics, not only in my pamphlet referred to, but in the paper I read before the Congress of the Sanitary Institute at Worcester in 1889, and again in the volume entitled "Sewer Ventilation and Sewage Treatment," published four months thereafter. Under certain conditions gases would accumulate in this section of Marylebone sewers which would become exceedingly foul, and under certain other conditions, which must sooner or later supervene, these gases would be forced out into the street and into the houses. From the published meteorological data which govern the production and dispersion of dangerous gases, and from my previous knowledge of the sewerage of the district, I can show that the conditions, which in my view would produce an epidemic of zymotic disease, actually occurred in Marylebone, within the limit which Dr. Winter Blyth fixed, on medical grounds, as the time that "infection" must have taken place. From June 22nd to July 7th, I find that the sewage in the district kept its normal flow, the weight of the gases on the surface averaging 15gr. per cubic foot less than the weight of those in the sewers. In these circumstances, for about fourteen days there was practically no aëration of the sewer gases going on, which would thus, at the latter date, be composed of 50 per cent. of gas which bubbles from the sewage, and 50 per cent. of air from the surface, so that such gases as emanated from the gratings at this date were of a nature that must have lowered the system of anyone who inhaled them. On the 11th July rain fell in excess, causing a great outflow of this dangerous mixture by the gratings, with the result that on that day, the whole atmosphere of the district was charged with it. Dr. Winter Blyth, on medical grounds, puts the date of the "infection" between the 5th and 15th July. On sanitary grounds, and without accepting the word in its present medical sense, I confirm Dr. Blyth's date as to the "infection," but more definitely fixing the 11th, the meteorological conditions of the day, taken in connection with the previous state of the sewers, being responsible for the outbreak. On the 11th and 12th July small-pox was in the air at Marylebone, and those otherwise liable yielded to the attack. This is the simple explanation of the rapid spread of the disease. Then as to the non-recurrence of the expected "second crop" of cases. The excessive rainfall of the 11th, which had brought the bad gases out into the streets, was also to a great extent the means of temporarily freeing the district of their presence, and this fact, along with the prompt and almost universal measures adopted by the responsible authorities, produced an atmosphere in which the germs could no longer be epidemic, and hence there was no second outbreak. In my pamphlet, at page 11, in describing the ventilation of the sewers adjoining this district, I show amongst other things that the volume of air passing the gratings of a specified section of the Marylebone sewage was 97 times less than the quantity required, and that this section, which was connected with the main sewer of the London County Council, was receiving large quantities of foul gases from that source. As these sewers are of large sectional area, a considerable proportion of the gases they contained at the date of the rainfall on 11th July would probably not be thrown out on that date, and consequently further cases would naturally occur in or near this locality. The volume of sewage gas—viz., that which bubbles from the sewage in transit—is 3,000,000 cubic feet daily over the London area. This volume is supposed to be mixed with fresh air through ventilating gratings, so as to be non-injurious to health. This theory is wrong, for, as has just been stated, on the Marylebone district, where small-pox is very prevalent, we get only 1-97th the quantity of fresh air into the sewers necessary to render them non-injurious to health—and, in varying degrees, this is the state of matters over the London area generally. From daily meteorological and atmospheric observation during the last five years, epidemics in London are seen to follow the storage and discharge of sewer gases as correctly as storms follow meteorological variations. Gases of greater density are to be found in large sewers more now than in previous years, and the reason of this is that, when sewers have been ventilated through the surface of the road, the gases have thus become a nuisance, and the gratings were in many cases stopped up, and shafts erected. This removed the nuisance from the streets, but gave a worse gas in the sewers, consequently more sickness. Although it was against all laws or rules laid down for out-ventilation and the diffusion of gases, it was believed in, and advocated, simply because the complaints of nuisance in the streets ceased. A few months ago, a surveyor of a large district decided to test for himself my statements, and we measured the working of two shafts, with the result that for three-quarters of an hour not a particle of air went up or down them. Being thus convinced, two series of tests were made, on his and another district, the publication of which, when completed, will be somewhat startling, but bearing out my previously-published statements. But the question may be asked, Why should the Portland Town districts more than others be visited by the epidemic-producing gases? This is explained by the fact that gases of very strange composition are at all times floating about in our sewers, and that a volume of gas was in this district that would develop small-pox, and was discharged on July 11. For example, Mr. Parry Laws, F.I.C., in the London County Council Report, states that he found a sample of air from the London County Council sewer in the Fulham district to contain 93·10 vols. carbonic acid per 10,000 vols.; and Mr. Clayton, public analyst for Fulham, found a sample of the air from the large sewers to contain 4·5 per cent. of carbonic acid and ·07 per cent. of ammonia. But it does not come within the scope of these brief remarks to enter upon this branch of the question. My point at present is to enforce the practical sanitary lesson to be learned from the facts established—namely, that in one way or other zymotic diseases follow in the path of bad sewer ventilation, and that, conversely, perfect sewer ventilation is the only safeguard against their recurrence.

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THE PLANNING OF HOSPITALS.*

One cannot speak properly of the planning of hospitals without including much that does not strictly come within the province of the student of architecture. You will pardon me, therefore, if I open these remarks with statements and explanations bearing upon the subject which are derived from such medical authorities in hospital science as are well known to fame in this connection. What follows is not said to undervalue the work which has been done by the medical specialist, but to awaken thought in a new direction for the benefit of our own profession, to whom the business of designing all kinds of buildings legitimately belongs. One of the objects of this lecture is to suggest to the young minds before me the possibility of an improvement in hospital building, which would spring up if the architect should so fit himself by early and careful training for the special work of designing and constructing hospitals. Granted that a hospital is a machine, if you will, it seems reason that it may be and ought to be an agreeable looking machine, and that there is nothing in Nature or art to prevent the architect from understanding and producing it. Whether working with a specialist, or as a specialist, it becomes the architect, who must remain the authorised interpreter to the workmen of all drawings and specifications, to know the value of and the reason for every line and every word that they contain. Furthermore, he is often called upon to be accountable, and sometimes the accounting head, in carrying on the works. Over and above all these points, he has the artist's responsibility in the case, to give the building or group of buildings whatever of artistic character may be possible, or, under the most unfavourable circumstances, to see that the result shall not develop as a blot or an eyesore. The history of hospitals up to recent times is rather mythical; Egypt, India, Greece, and Rome are all said to have had something of the kind. While the subject is one of great interest, there is too much of uncertainty and mere conjecture surrounding it to yield much profit to the general student. You will find about all there is to be found, and more than is valuable, in Burdett's book.* The English word "hospital" has been, and still is, used in a double sense—viz., "As a place of medical treatment, and also as a retreat for the poor, the infirm, &c." ("Encyclopædia Britannica"). Burdett in his great book uses two terms—the title is "Hospitals and Asylums of the World." The late Dr. Kirkbride deviated from the English nomenclature with regard to establishments for the care of the insane: these in England are usually called "asylums." Following Dr. Kirkbride, the term "Hospital for the Insane" is generally used in this country to indicate that the institution is for the purpose of treatment of insanity as a disease with a view to its cure, and not as a mere shelter for its inmates. What I have now in mind to speak of more particularly is the hospital for the treatment of the sick and wounded. Originally the word hospital meant, as the word asylum now means, a place of shelter for the poor and helpless only; now it has the included meaning of treatment and restoration; the inmate of an asylum may or may not be a patient, the inmate of a hospital proper is always a patient, and the rich as well as the poor avail themselves of the benefits of hospital treatment. There is good reason to believe that in many cases, especially those of a surgical character, a well-organised hospital possesses great advantages over the best equipped private house. All difficult and dangerous operations can be there performed under conditions more favourable than at home. So that the hospital manager, the doctor, and the architect must work together to improve this life-saving and life-lengthening apparatus, and the best-equipped man for the work ought to be the architect. It is only within comparatively recent years that scientific progress has been made in the organisation of hospital management and the construction of hospital buildings. France appears to have taken the lead; but England and America are now well abreast, if not ahead. The old Hôtel Dieu at times during the last century held 5,000 patients. As many as six people were laid in one bed. The buildings occupied only a little over three English acres, so that each inmate of this "House of God" was allotted only about thirty square feet of the earth's surface whereon to live and breathe. You will better appreciate the extent of this crowding when told that each inhabitant of the City of Paris has 430sq.ft., and of the City of London about double this area, or over 800sq.ft. There is some satisfaction in knowing that the present Hôtel Dieu gives each patient 311sq.ft., although this is a very short allowance according to the present advanced idea of the proper ratio. The earliest record of hospital building in England states that in the 11th century two were founded by the Archbishop of Canterbury, Lanfranc by name. About fifty important hospitals were founded in England, Ireland, and Scotland during the 18th century, which shows a wonderful movement in the intentions of benevolence. The earliest hospital in North America is the Hôtel du Precieux Sang, built in 1638, and the next in order of time the Pennsylvania Hospital in Philadelphia, the east wing of which was built in 1755. Before the Revolution of 1789 the French had begun to devise special plans, but that terrible event intervened, and no tangible improvement grew out of their thought and invention, until the Lariboisière was begun in the reign of Louis Philippe. Singularly enough the Revolution of 1848 interfered with the building of that, and it was not completed until the year 1854. When the Episcopal Hospital in Philadelphia was designed in 1859, the Lariboisière was considered by its projectors as the best existing model to be followed. I may say that it was not strictly followed; but in all essential features it is probably the best hospital building which was erected at or before that period. Its benefits came into full play in our Civil War. The plans of the Johns Hopkins Hospital in Baltimore, recently published by Dr. Billings, illustrate more fully than any other yet built the thorough study of the subject which is being given in modern times. It is in effect from the medical point of view an ideal hospital. No thought, time, trouble, or expense was spared to make it so; to carry into practice the most advanced ideas of hospital design and construction. I shall refer to this frequently, as it is a convenient landmark and object lesson. There can be no objection to doing so, as the plans by their publication have become common property. If a copy of Dr. Billings's book is not already in your library, it ought to be placed there. In the Johns Hopkins Hospital, beyond the administration and pay wards, it is difficult to discover the touch of the artist. Architecture as an art seems to have been subordinated to the demands of hospital science, and any thought of architectural beauty in the treatment of the external appearance of the common wards particularly ignored. I wish to suggest the point that there are no compelling requisites of size, proportion, or detail in hospital plans that may not be softened and rounded by artistic care, so as to give token of regard for beauty. Passing by the collateral needs, all of which enter into the planning of hospitals, such as the departments for administration, for clinical teaching, for training of nurses, for out-patient service, for isolating purposes, for the pathological work, for cooking and washing, our present business will be with the arrangement and construction of a proper hospital ward, with its inseparable adjuncts. A room furnished with a bed or beds to receive patients is called a ward. For many reasons it has been found satisfactory within economic limits to place from 10 to 30 patients in one room, and this room is called the main ward, and if the hospital contains more than one they are numbered 1, 2, 3, &c. They are also spoken of by the attending physicians and nurses as medical ward, surgical ward, &c., according to the use. But it is not necessary to make this distinction in connection with planning. The needs of a surgical ward are the most exacting; if we plan properly for that, we shall cover the ground for all requirements, except for cases where special isolation is required. In the Massachusetts General the Bradlee ward is designed on isolating principles, a special ward for abdominal and cerebral cases. But I wish to confine your attention just now to that unit of a hospital which is, or should be in emergency, a complete hospital in itself, and is called, for convenience, a pavilion. This consists of two parts, the main ward and the head-house, as well separated from each other as the nature of their relations will permit. Under certain regulations it is now conceded that another ward and head-house may be superimposed, making a two-story pavilion. There has been much discussion as to the advantages and disadvantages of two-story pavilions; there was a period when the authorities told us that the one-story only could be the proper thing. The Johns Hopkins built some of each, and it may be supposed is now making a record of comparative results. We will consider now the main ward. Its floor-area should have a minimum of 100sq.ft. per bed, and it is believed that no ward ought to have over thirty beds. If we fix the clear height at 12ft., which is probably the minimum that should be allowed, we have 1,200c.ft. per patient. This is a fair standard of practice in the climate of Philadelphia, provided reasonable attention is given to the means of winter ventilation. The glass surface for the windows should not vary much from 20sq.ft. per patient, although this may be considerably decreased in more northern latitudes and on stormy exposures. The usual form of the ward is an oblong parallelogram of about 25ft. in width; this is enough when 8ft. length per bed is allowed. Some have been made of greater width. The Johns Hopkins wards are 28ft. wide, with 7ft. wall length per bed. The wards in the Episcopal Hospital are, I believe, fully 30ft. wide in the clear; but this width in a long ward is now considered excessive. Some of the modern English hospitals have very pretty circular wards with ventilating stacks in the middle, and it is a matter of some surprise that octagonal wards, such as one built in the Johns Hopkins, have not been more usually adopted. In the Massachusetts General, built in or about 1820, the wards are nearly equal-sided, with a great chimney-stack in the middle. A modification of this, except that the sides are extended and the corners are cut away to form an irregular octagon, may be seen in the new wards of the Pennsylvania Hospital. These wider wards with the central chimney, whether square, round, or octagonal, present some marked advantages in the matter of ventilation, and are especially desirable when there is a superimposed ward. Later on, I hope to recur to this. In choosing a hospital site, the quality of the soil, the facility of water-supply and drainage, should be carefully attended to. But an important care and duty of the architect is to regulate the orientation of the wards. These invariably ought to be placed on the south side of the connecting corridor, and when oblong should have the axis as nearly on the meridian as possible. Thus every day of the year in which the sun shines, at least three walls of a rectangular ward will be bathed in sunshine. This is good for the patients, good for the building, good for warmth, and good for ventilation. With the orientation just described, the interval between wards may be smaller than in any other. Thus, if a one-story ward be 14ft. from the first floor to the eaves, the space between wards may be 28ft. If there is a superimposed ward, this interval should be much greater. As the ward is the essential part of the hospital, it has claimed our attention thus far. But food, clothing, water, and drainage are important, and must be available in a hospital, as elsewhere. A section of the pavilion is isolated as nearly as possible from the ward by the cross-corridor, through which, as often and as long as possible, fresh outside air is allowed to pass. On the north side of the corridor, supposing the orientation to be regular, is placed the head-house, containing the numerous adjuncts which go to make each pavilion a complete hospital in itself. Here are placed the stairs, the service-room through which is served all food (which comes, in a large hospital, from a remote kitchen by way of the basement corridor), the clothing room, the linen room, the nurses' duty room, the bathroom, the water-closets, and, if practicable, one or more special rooms or wards for single beds. All the water fixtures are arranged for special artificial ventilation separate from the ward ventilation. Keep fairly in mind that the governing thought, difficult to put into execution in our climate, is primarily to isolate the ward, by means of air currents, from the head-house, and each pavilion from its neighbours as much as possible; and that inside of the head-house (or outside of it, as you may sometimes find it necessary) the drainage fixtures must be further isolated by a well-formed air-passage, flushed as frequently and as much as possible with fresh external air. Another help in natural ventilation is the peculiar window which has a transom at 2ft. from the top, the sash of which is hinged at bottom to open inward to admit fresh air at the top, which is thus admitted and impelled in mild weather into the room toward the ceiling, without danger of too much draught on the patient. You may find under some conditions that it will be necessary to control the ventilation, especially in winter, by fan pressure; but this should not happen in a new enterprise, where the conditions of selection of site and orientation can be controlled or regulated. But you will be called sometimes to enlarge, alter, or extend existing hospitals, and you will then be glad to draw on all resources within your reach. It will generally be found best to construct a large single ventilating flue for each ward with openings into it at floor and ceilings. This is rendered active by a coil of pipe heated with steam all the year round. Such a flue cannot be placed within the lines of the long, narrow yard, but may be placed in the head-house or lobby, as in the Johns Hopkins. It involves long ducts both under and over the ward, and places a serious difficulty in the way of a second-story ward. Owing to the great length of the horizontal ducts and branches, it would seem that the effective draught would differ much between the near and distant parts of the ward. In the wider ward having a central stack, such as the octagonal wards of the Johns Hopkins, the square wards of the Massachusetts General, and the wide Memorial Wards of the Pennsylvania, the central ventilating stack will undoubtedly perform more thorough work in a more economical manner. The steam pipes and coils are made accessible by means of a ladder from the basement to the attic. A separate flue the same description, in which steam, water, and drain pipes are placed, ventilates the water-closets; the other parts of the head-house are ventilated by flues, collected into a separate common head, having steam coils like the rest. Volumes have been written on warming in connection with the subject of ventilation. Merchants, manufacturers, doctors, lawyers, and engineers, from time to time, have burdened the world with new books. It is nearly safe to say that nobody in a northern climate has ever been thoroughly and continuously satisfied with his warming apparatus; so I will not startle you by saying that such a hospital or such a house has a thoroughly satisfactory apparatus, What is to be brought forth hereafter in electrical invention no one can safely predict. Nothing yet has appeared to supersede the appliances through which steam for fifty or sixty years past has been found clumsily effective. At the Johns Hopkins both steam and hot-water appliances are put in. This has been done to solve experimentally the question as to which is better. In the other hospitals within my knowledge steam alone is applied. Almost invariably cast-iron radiators, which now largely take the place of the old pipe coils, are placed in the basement, at the bottom of the hot-air flues. Fresh air brought from the outside at least 6ft. from the ground passes over these radiators, and, becoming warmed, is discharged through metal-lined flues into the ward or wards above. The area of these flues is reckoned for this latitude at about 100sq.in. per patient, and the area for ventilation, by the means already referred to, should not be materially different. An important feature in any method of warming is the management of the admitted air. Whether the winter weather be cold or mild, the inflow of air to the ward should be kept as nearly as possible to the same volume. This is done by a mixing damper, so placed that by a single movement the flow of hot air is diminished, the flow of cold air is increased; the two volumes thus thrown together, mixed and tempered, are delivered into the ward. By means of an actuating chain or rod, this movement of the damper is performed by the nurse without leaving the ward. With this tempering arrangement for inflow, and proper openings for outflow at floor and ceiling—those at floor are always open, those at ceiling controlled by registers, so that the air may be changed and the temperature promptly lowered on occasion—extraordinary care is not required to keep the ward at the proper temperature. I ought to mention that the inlets for warm air are better placed under the windows. The windows are the coldest points in the room, and as the greatest space between beds is opposite the windows, the danger of draughts on the beds is thus minimised. In speaking of the construction of the hospital, I will refer only to such features as are especially important in this class of building. Of course, hospital construction in most particulars may be, and usually is, the same as in other buildings of the better class. The foundations should be laid with stone and cement, and there should be a damp-proof course of asphaltum or slate at the ground line. In some soils the foundations should be drained with tiles; in those of sand or gravel this is not necessary. So far as is ascertained, there is no better material for walls than brick. All interior partition-walls ought to be brick. The weather-barriers should be formed of two 9in. walls with 2in. air-space, well bonded at all jambs and corners. An excellent alternative is an 18in. solid wall with hollow lining of terracotta, whereon the wall-plaster is laid. Either of these devices will insure dryness of the internal wall-surface. A principle to be followed as carefully as possible in hospital building is to leave as few cavities in the construction as consistent with the conditions of integrity and endurance. Every surface should be solid and smooth as practicable, and thus easily and freely cleansed and kept clean. When floors are constructed in the usual manner, the intervals between joists may be filled with mineral wool. This helps to deaden sound, leaves no harbour for rodents, or any other offensive thing. Still better, where the appropriation of funds will permit it, the floor should have bones of iron or steel filled-in with bricks. The nailings for the surface-floor will thus rest on a bed of iron and burnt clay; again the mineral wool comes into play between the nailings or sleepers. The surface-floors must be hard wood; nothing is better than the Southern yellow or pitch pine, which, when cut and dressed to show the edge-grain, makes a handsome and most serviceable floor. A good, tight, smooth, well-finished floor is most important; paraffin and soluble-glass are recommended as coatings. The joining to the wall is best with a neat wooden cove, the usual high wooden base-skirting being omitted. In fact, only such inside woodwork as is absolutely necessary is recommended in the best hospital construction. The window-jambs and heads may be rounded or chamfered in plaster, and the window-sills rubbed slate. The floors and parts of the walls of the water-rooms are lined with pottery tiles, and all angles give place to curves, concave or convex. It is best that stairs shall have iron construction, and if slate-treads come within the appropriation, they are to be preferred to wood. The plastering of the walls and ceilings should have great care betowed upon it. The surface should be left with what is known as hard-finish, composed of lime, sand, and much labour. Where laths are commonly needed, such as on ceilings, &c., stiffened wire-netting should be substituted. At all internal points, and in all materials, whether stone, brick, wood, pottery, plaster, or metal, constant attention should be given to the avoidance of open joints, sharp corners, quirks, and creases. The exclusion from the interior of the ward of all architectural decoration may be a part of the reason why in recent times there has been a disposition to exclude the architect himself. If I have seemed to take up much time in dwelling on what might be called the peculiarities of hospital building, I assure you I have done so with the general purpose of outlining the subject, as it were, by simply touching on some of the details in a way that may attract your attention, with the thought that some of you might in the future take up the designing of hospitals as a speciality. Be assured that the subject is a large one; thousands of volumes have been written upon it; new discoveries in medical and surgical science are modifying the older theories, so that one needs to keep abreast with daily progress. For those who have a certain combination of mechanical with artistic genius, it would certainly prove exceedingly interesting, and possibly profitable in fame and money. The increase of material wealth of the people of this country, the inevitable poverty and suffering which travel on foot alongside of the chariot of wealth, are the two factors which will more and more conduce to the founding of institutions for the charitable care of the sick and suffering. Then, as science prospers, and proves what it is capable of in healing and minimising pain, the rich and well-to-do will patronise such establishments in which they can be better relieved and cured than in their own homes, and will add liberally to the means of supporting them. I am the more moved to speak as I do, because some of the medical advisers have strongly intimated their disregard for architectual beauty, as if it were not worth an effort. I plead that the skill of the architect can modify the appearance of almost anything having walls, windows, and roof, so as to render it a thing inoffensive, and with perhaps a slight addition to the expense, a thing of beauty. M. Tollet, a French writer on hospitals, thinks that the Ogival or Gothic form of architecture was adopted in the Middle Ages as much for sanitary as for architectural reasons. Whether he be correct or not (it appears to be a conjecture only), this writer sees no objection to its use, except that it does not seem to lend itself so readily to the rigid conditions imposed by modern sanitary science. But there is one point worth noting in regard to this. Doctors, for a wonder, do not differ in their recommendations for top ventilation; in one-story wards this easily becomes what is termed ridge ventilation. In all wards it is very desirable to slope the ceiling upwards from the sides to the middle. So that we have in the ceiling of any ward, especially in the one-story ward, a hint of Gothic which might well be followed in the external architecture of the building. If one were requested to design a hospital group in the Gothic style, he should not seriously resist the pressure to do so; it is possible to do it without trespassing the code of hospital science so far as I know it. One should be allowed and should take much freedom in such an instance; he would be glad, of course, if the state of the treasury would admit of stone as a material for external walls. But if you ask what type of architecture appears best suited or most adaptable to beautifying the hospital, I am obliged to answer—a modified Renaissance or some derivative of Classic; that is, so far as detail is concerned. There can scarcely be such a thing as perfectly regular or symmetrical handling of the voids and solids, as is necessary to give the best developed results in Renaissance. You are obliged to submit to certain irregularities of plans and arrangement of openings, because the wants of the interior are dominant, and interfere with the symmetry required in the perfection of the Renaissance. The combination in the same view of the wards, which are large, with the rooms of the head-house, which are small in plan, but for working reasons must be high in story, adds to the difficulty of designing a building to show the regular and symmetrical beauties of Renaissance work. The solution of the question as to what is best can perhaps be nearly reached by recognising the difficulty fairly, and approaching it in the most direct way. In a hospital group there are some parts, notably the Administration building and the pay wards, the requirements of which do not suffer by compromise with the demands of external symmetry. These and certain portions of the wards and head-houses may have regularity of design. (It seems unfortunate that the most satisfactory story heights for sick wards are not sufficient to permit mezzanines in the head-houses.) For the rest you perforate the walls at such points as you must, and rely on horizontal courses and minor details of the cornices and windows for such effects as will make harmony with the richer parts of the design. It does not seem good judgment to leave the walls of the wards and head-houses so bare and devoid of architectural interest as those of the Johns Hopkins are, especially as they front and are seen from a beautiful park, and every ward is visible from its neighbour. It seems to me that the patients and nurses should have something more interesting to look at than naked walls, which might be, for any external sign that they give, those of a warehouse, and chimneys which might be those of a chemical laboratory. But I must close. I feel that I have only hinted at the thoughts and things which enter into this very interesting sort of building. But if I have awakened in some of you the desire to know more of the subject, I have accomplished all that could be expected within the allotted hour. I will name three books (I might name ten or twenty; but naming the three, you will have a guide to all the others), in which you can find the book knowledge upon which you can start the structure of your equipment for hospital work:—Burdett's "Hospitals and Asylums of the World," "Encyclopædia Britannica," "The Johns Hopkins Hospital." The Middle Ages were the cathedral-building centuries. The 19th century is the era of railroads and high buildings. The 20th century, with the growing tendency of the strong to help the weak and unfortunate, coupled with the ability to help them, may prove to be the age of scientific healing, and more universal, enlightened, benevolent, and charitable work than has ever before been seen in the world. Along with this will undoubtedly grow the love of all beautiful things in nature and art. I can think of no nobler work for you to engage in, those of you who may feel drawn in this direction, than that of preparing to take a part in bringing about this great consummation. If any of you do, I trust it will be with high aims, and with the feeling that this is something better than a railroad building, shall I say better than the Crusades or cathedral building, or any other demonstration of enthusiastic building, that ever took place for the good of man or the glory of God? Every work that is done, in the spirit that is now abroad, for the amelioration and relief of human pain, is a step towards the Millennium. The hospital, which was once a pest-house, and, in a measure, a curse, although founded on the best instincts of humanity, will, in the course of the future become without doubt an unmitigated blessing, a veritable Hôtel Dieu, a "house or hostelry of God."

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* A lecture delivered before the Architectural Department of the University of Pennsylvania, by Addison Hutton, architect.

* Hospitals and Asylums of the World. By H. C. Burdett. London: J. and A. Churchill.

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PROPOSED ROMAN CATHOLIC CATHEDRAL FOR WESTMINSTER.

MR. J. F. BENTLEY, as we announced several weeks since, has been intrusted with the preparation of the plans for the new Roman Catholic cathedral which is to be erected at Westminster. Both in the matter of splendour and size the new cathedral is to be the most important ecclesiastical edifice erected in England since St. Paul's was built. The style of architecture to be adopted is one almost unknown in this country. The proposed building will, moreover, be the first in England since the Reformation in which the full Roman Catholic cathedral service will be daily celebrated in all its splendour.

It was at a public meeting held in 1865, upon the occasion of the death of Cardinal Wiseman, that it was decided to perpetuate the memory of his services to his church by the erection of a Roman Catholic cathedral for the Metropolitan See Subscriptions and donations flowing in, Cardinal Manning was ultimately able to purchase for £55,000, as a site for the cathedral, a valuable freehold property of 4½ acres, formerly occupied by the Bridewell House of Correction, Westminster, and close to Victoria-street. The property has since increased in value to £300,000, and is now entirely free from debt. Cardinal Manning did much towards the project; if he did not do more, it is to be attributed to his zeal for the poor. Cathedrals are costly structures; and the good Cardinal could not find it in his heart to appeal for money to lavish on elaborate architecture when there was so loud a call to minister to the physical wants of the poor and needy, and the industrially oppressed. In addition to the price paid for the site, the new cathedral is estimated to require at least £250,000 to build.

The next feast of St. Peter and St. Paul—June 29, 1895—is expected to witness the foundation laid. Meanwhile the project has sufficiently advanced to justify the employment of an architect to prepare the plans, and as there is no architect in England—or, perhaps, anywhere else—now living who has planned a church in the style decided upon, the selection of an architect was not a simple matter, especially as it is part of the plan to employ, as far as possible, only Roman Catholic natives of the three kingdoms. Mr. J. F. Bentley fulfilled the two conditions, and is well known in Roman Catholic circles as the architect of the Church of the Holy Rood, Watford; of Corpus Christi, Brixton; St. Mary's, Kensal; the Redemption Church and Monastery, Clapham; St. Thomas's Seminary, Hammersmith; Beaumont College, Old Windsor, &c., and on him the choice fell. Partly in order that the new cathedral shall not appear as an attempt to rival the neighbouring Abbey of Westminster; partly in order that the decorations may be concentrated upon the interior, so that they can be added to from time to time as means permit, and need not necessarily be completed with the building; and partly because the building itself can be erected for less money than if any other style were chosen, it has been decided to adopt the primitive form of Christian architecture—namely, the ancient Basilican style, taking Constantine's Church of St. Peter in Rome as the model, but without slavishly copying its defects; and it is suggested that the architect should "be guided in all details by the earliest known style of Christian ornamentation—viz., the Byzantine, modified, developed, and perhaps improved by its successor, the Lombardo-Romanesque." The exterior ornamentation will probably be almost exclusively confined to the façade. The concentration of decorations on the interior, besides permitting of the building being finished before they are, will have the further advantage of protecting them from the effects of the climate.

For the purpose of studying the ancient basilica churches of St. Peter, St. Paul, and St. Lorenzo, the architect, Mr. Bentley, is starting for Rome. He will also visit the basilica churches at Ravenna, Florence, and Constantinople, and will altogether be absent from England for some months before commencing his plans, which are to be ready next June. Until they are ready, it is impossible to say more exactly what the new cathedral will be like, except that internally it is to be 350ft. long by 170ft. wide—about the dimensions of Chester Cathedral—sufficient land being kept to extend the length by 100ft. more, if necessary, at some future time. The internal roof—which, it is hoped, will not be flat—will be 100ft. high. The cathedral will hold 10,000 people and seat 8,000, and attached to the cathedral is to be a lecture-hall seating 2,000. The Benedictine monks, who for centuries served Westminster Abbey, are to be invited to return and hold daily choral service in the new cathedral, close to which a monastery to accommodate thirty of them and forty-five lay brothers will be built; also a new house for the archbishop, provided sufficient funds be forthcoming. If the archbishop's present house were sold, its site is so large and valuable that, it may be suggested, the proceeds should be enough to pay for a new one, if not to build the monastery as well. After all this building has been done on the cathedral land, there will still be enough left which, if let on building leases, would yield sufficient endowment for all expenses connected with the cathedral.

Towards the building a single subscriber has given nearly £20,000, and sufficient funds have come in to enable a start to be made, but many thousands are still needed. The names of people giving £1,000 and upwards will be inscribed on the cathedral as its founders. It is proposed to address a circular letter in Latin to every Roman Catholic bishop throughout the globe, setting forth why, from the Catholic point of view, "the means to restore the beauty of holiness, religion, faith, and worship are lacking to the financially poverty-stricken Catholic Church in England." Whether this proposal will be adopted by Cardinal Vaughan is doubtful, as it is expected that the Roman Catholics in America and the colonies, who have not yet been applied to, will subscribe liberally.

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THE GAMBLE INSTITUTE, ST. HELEN'S.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THE committee appointed to carry out this scheme received about thirty sets of plans from various eminent firms of architects in the country, and Messrs. Briggs and Wolstenholme, of Blackburn, were ultimately selected as architects to the committee. Their original plans showed a building four stories high, in addition to basement, but it was found that the erection of such a building would cost considerably more than the £20,000 which Colonel Gamble had placed in the bank to the credit of the committee. The architects thereupon prepared new plans for a three-story building, with basement, as shown in the sketch. The following is their description:—The main entrance to the building is from Hardshaw-street. The free library will occupy the whole of the ground floor, and be raised about 7ft. from the street level. The entrance will communicate with a spacious hall, behind which will be the lending department, capable of accommodating 40,000 vols., and divided from the hall by a counter 60ft. long. The whole of the frontage to Bickerstaffe-street will be occupied by the newsroom—114ft. by 32ft.; while the reference library—52ft. by 32ft., boys' reading-room—32ft. by 20ft., and girls' reading-room—32ft. by 18ft., will occupy the opposite wing; the whole being under the direct supervision of the attendants in the lending department. A private room for the librarian is placed between the reference and the lending departments. The entrance to the Technical School will also be from Hardshaw-street, and will correspond with the entrance to the Free Library, they being situated on each side of the central staircase. The technical director's office and waiting-room are arranged for on the ground-floor level, communicating directly with the Technical School staircase and the hall of the Free Library. The porter's room is arranged between the two main entrances overlooking the staircase of the Technical School and the hall of the Library. The basement floor will be devoted to the manual training room, building classroom, metallurgical laboratory on the Bickerstaffe-street side, with the plumbing classroom and engineering laboratory fronting Corporation-street; teachers' room, cloakrooms, &c., to Hardshaw-street. The centre of the basement floor will be occupied by a book store in connection with the library, and will communicate directly with the ground floor by a private staircase, and also have a small lift for books. A feature of this plan is a covered cartway in Bickerstaffe-street, through which all building material, library and other stores, and coals will be taken into the building. The rear portion of the cellar is devoted to the warming and ventilating plant, and is separated from the engineering laboratory by glazed screens. It will be lighted from the open space behind the adjoining houses, purchased by Col. Gamble for the purpose of permanently securing ample supply of light and air to this portion of the building. From the basement floor to the street level and upward to the first and second floors a spacious and well-lighted staircase is provided. Off a mezzanine landing between the ground and first floor the keeper's rooms will be placed, embracing kitchen, scullery, store, and two bedrooms, with a pleasant frontage to Hardshaw-street, and in a position in the building which will be found exceptionally convenient. On the first floor next to Bickerstaffe-street will be provided the physics laboratory, darkroom, and storeroom; the physics lecture-room, with the seating on the amphitheatre plan to accommodate 90 students; preparation-room, and two large classrooms. The wing to Corporation-street on this floor will embrace students' common room, two large classrooms, and the geometrical drawing-room. On this floor will also be placed the cookery and laundry departments, which are so designed that the whole area, 56ft. by 32ft., can be used as one room for large demonstrations. This department will be placed on the rear of the site overlooking the premises previously referred to, and will also be lighted from the large area left within the present block. A teachers' room, lavatory, &c., and the male students' cloakrooms will occupy the irregular piece of land on each side of the main stairs; by this the site, though irregular, is used to its fullest capacity, while all the working-rooms are square or symmetrical in form. A striking feature of this and the second floor landing will be an arcading dividing the same, which may be filled with glazed screens, thus providing a museum for the preservation of prize exhibits or other articles of interest relating to the work carried on in the Institute. The second floor will be entirely devoted to the chemical and art departments, the chemical laboratory (for 60 students—68ft. by 32ft.), balance and combustion rooms, the lecture theatre (to seat 90, the same as the one on the first floor), and preparation-room occupy the whole wing to Bickerstaffe-street. The modelling, painting, and art masters' room and office are placed in the north lighted wing, facing Corporation-street. The elementary art room—56ft. by 32ft.—lighted from both sides, occupies the rear position, the front being reserved for teachers' rooms, ladies' lavatory, &c. Special attention will be given to the heating and ventilation of the building, which will be carried out by a system combining the two. The interior will be lighted by electricity supplied from the Town Hall. The building will be faced externally with red pressed bricks and terracotta. The staircase and corridors will be fireproof, the latter being laid in wood blocks, and both having tile dados on the walls. There will be a lift communicating from the basement to the top floor of the building. The purchase by Colonel Gamble of the adjoining property has made it possible, by obtaining light on all four sides of the site, to provide on four floors the accommodation as at first required. With this exception the plans and elevations remain in all essentials as originally submitted. The contractors are Messrs. Robert Neill and Son of Manchester.

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL.—VII.

HAVING already determined the principal dimensions of the cross-girders to be length from out to out 36ft., depth at centre to outside of flanges 2ft. 6in., width of each flange 1ft. 3in., we may now proceed to calculate the stresses and find the thickness of metal required, and the net sectional area of both the flanges and the web, which will be of steel plate, the same as was used for the main girders. In Article V., in the Building News of July 27th last, the total weight of the combined area of the roadway and footpaths was estimated at 116 tons. As the cross-girders are to be spaced 6ft. apart, they will be ten in number, and their individual share of the live load will be 11·6 tons, to which, if we add three tons for the assumed weight of one girder, we have a total of 14·6 tons. But the cross-girders have also to carry each a share of the weight of the rolled steel joists, the platform of buckled plates, the parapet screen, and the concrete, wood, and asphalte of which the roadway and footpaths are composed. Summing up the values of the separate items, they amount to 4·2 tons for each cross-girder, which raises the total uniformly distributed load to 18·8 tons, or for the purpose of ready calculation to 20 tons. This load, however, does not include the greatest possible load for which engineers and bridge designers have to make provision, which has been previously stated to amount, as a maximum, to the weight of a pair of steam rollers, each of 20 tons, abreast of one another on the bridge, making a total exceptional, or extraordinary, load of 40 tons. The whole of this weight, however, cannot come upon any one separate cross-girder, as only the two leading or single trailing wheels of each roller can rest upon any girder at one and the same time. In steam rollers weighing 20 tons each, the distribution of the load is usually 12 tons on the large leading or front wheels, and the remaining 8 tons on the hinder wheel. It will be perceived that even under these conditions, it is quite possible to have a load of 24 tons concentrated upon each side of the central part of the cross-girder. The effect of this load upon the girder, and the stresses to which it gives rise, will be best understood by the use of a diagram and a few calculations.

In Fig. 9*a*, let A B represent a skeleton elevation of one of our cross-girders drawn to scale, and let C C be a centre line at the half-span. Allowing a distance of 3ft. to be observed between a pair of steam rollers, the position of the larger wheels of each roller carrying 12 tons of the whole weight will be shown by the four thick black lines in the drawing, placed from out to out, 8ft. apart. The load of 12 tons of each of the rollers might be considered to be fairly uniformly distributed over the transverse distance of 8ft. between the wheels; but in order to obtain the maximum effect, we will regard the weight of 12 tons to be acting at a point midway—that is, at the points indicated by the lines *d d* and *e e*, and the problem becomes reduced to determining the stresses at either of the lines *d d* and *e e*, occasioned by the joint action of the two weights there of 12 tons each. It will be sufficient to ascertain them for one of the points, as the calculation for the other will be precisely similar. Let W and W_1 be the two weights situated respectively at *d d* and *e e*, and let the segments into which these lines divide the span of the girder be x y and x_1 and y_1. We shall then have, by the nature of the problem—

$$W = W_1,\ x = x_1, \text{ and } y = y_1.$$

First of all, to ascertain the moment of stress at *d d* resulting from the weight W, which we have assumed to be concentrated at that point. Put M for the moment of stress, and let R equal the reaction of W at the support A, and R_1 that at the support B; then we have generally, making L = the span,—

$$R + R_1 = W.$$

On the principle of the lever, we have—

$$R = \frac{W \times y}{L},\ R_1 = \frac{W \times x}{L};$$

and as the moment of a force is equal to the amount of it multiplied by the perpendicular distance between it and the support, fulcrum, or other point where it is supposed to act, we have in the present instance—

$$M = R \times x = \frac{W \times x \times y}{L}.$$

It is clear that the moment of stress produced at *d d*, by the weight W_1 at *e*, is, as $W_1 = W$, the same as the moment produced at *e e*, by the weight W at *d d*. To find this, therefore, we may use the reaction of W, at the support B, which is equal to R_1. Calling M_1 this other moment, we have by similar reasoning—

$$M_1 = R_1 \times x_1 = \frac{W \times x \times x_1}{L},$$

or since $x = x_1$ we obtain—

$$M_1 = \frac{W \times x^2}{L},$$

and consequently for the total amount of the moment of stress at *d d*, resulting from the joint action of the two weights W and W_1, we find—

$$(M + M_1) = \frac{W}{L}(x \times y + x^2)$$

Substituting in our respective equations the values of the symbols which are W = 12 tons, L = 36ft., and x and y = 12·5 and 23·5ft. respectively, we obtain—

$$M = \frac{12 \times 12{\cdot}5 \times 23{\cdot}5}{36} = 97{\cdot}995 \text{ tons.}$$

Similarly for the value of M_1 we get by equivalent substitution—

$$M_1 = \frac{12 \times 12{\cdot}5 \times 12{\cdot}5}{36} = 52{\cdot}125.$$

Adding the two separate values together, we finally have—

$$(M + M_1) = 150{\cdot}12 \text{ tons.}$$

This value can, of course, be calculated from the equation given above for $(M + M_1)$; but in order to fully explain how the two separate weights affect the same point on the girder, the whole calculation is given *in extenso*, more particularly as this problem, which occurs in examples of bridge designing, has not been treated of before. It should be observed here that the reciprocal action of each weight at the point where the other is situated is due to two causes, which will not obtain under other conditions. One is, that the two weights are equal to one another; and the other, that they are located on each half-span of the girder at equal distances from the centre line C C in Fig. 9*a*. Although we have dealt with the question from a general point of view, which is the most accurate method of treating it, yet when young engineers and students have become first thoroughly acquainted with the correct principle, they will be able to save themselves both time and labour by applying especial equations and formulæ suitable for each individual case. The present instance affords so very favourable an example of our meaning, that a little further consideration of it will be of both interest and value. Instead of taking the action of each weight separately, we may regard both of them as situated at their common centre of gravity, frequently termed in more modern treatises mass centre, which occurs at the middle of the span at CC, taking the reaction at A and B, and multiplying by the leverage x or x_1. It follows, from the position of W and W_1 at equal distances from the centre of the girder, that the moment of stress of both weights at *d d* or *e e* is equal to the moment of stress of the same two weights at the centre, as can be readily shown. In the first instance we found—

FIG. 9a.

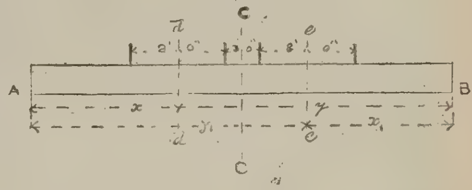


FIG. 9b

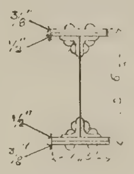


FIG. 10

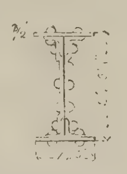


FIG. 10a

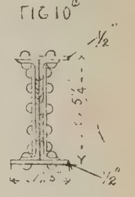
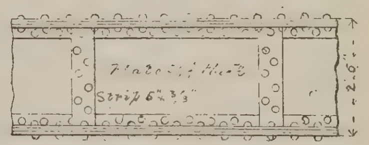


FIG. 10b.



$$(M + M_1) = \frac{W}{L}(x \times y + x^2),$$

and in the second by using the same reactions—

$$(M + M_1) = \frac{2\,W}{L}\left(x \times \frac{L}{2}\right)$$

Substituting in the first of these equations $y = (L - x)$ we obtain by equating—

$$\frac{W}{L}[x \times (L - x) + x^2]$$
$$= \frac{2\,W}{L}\left(x \times \frac{L}{2}\right) = W \times x,$$

which gives 150 tons, the same result already arrived at. If we assume these weights of 12 tons each, or 24 tons altogether, to be uniformly situated over the whole cross-girder, the moment of stress at the centre, by the formula already deduced in previous articles, will be—

$$\frac{24 \times 36}{8} = 108 \text{ tons,}$$

from which it is evident that, so far as the cross-girders of a bridge are concerned, concentrated loads cannot be regarded as equivalent to the same loads uniformly distributed. In order, however, to simplify the calculation for determining the net sectional area required, and have only one total load to deal with, the concentrated load or loads can be converted into equivalent uniformly distributed loads, and then dealt with by the ordinary rules. The case stands thus:—Given the moment of stress produced at the centre of a girder by one or more concentrated loads, find the load uniformly distributed which will produce the same moment of stress at the same point. Let W_2 equal the uniformly distributed load, then we have—

$$(M + M_1) = \frac{W_2 \times L}{8},$$

from which—

$$W_2 = \frac{(M + M_1) \times 8}{L} = \frac{150 \times 8}{36} = 33{\cdot}\dot{3} \text{ tons.}$$

It has been already ascertained that the loads uniformly distributed over each cross-girder amounts to 20 tons, so that adding to this, 33·3 tons, we obtain a total uniformly distributed load of 54 tons.

The actual stress upon the upper and lower flanges of the girders produced by this load will be equal to

$$\frac{54 \times 36}{8 \times 2{\cdot}5} = 97{\cdot}2 = 100 \text{ tons.}$$

In so small an example as the one we are considering it would not be worth while making any difference in the unit stress for the two flanges, as was done in the case of the main girders, and, therefore, they will have on equal net sectional area. It will be advisable to take the lowest unit stress, that is 6, and hence the required net sectional area of each flange of the cross-girders at the centre will be 17in., which practically will be obtained in the following manner. The breadth of the flanges is fixed at 15in., so that it is the thickness of the plates which have to be determined, and also the scantlings of the angle-irons uniting the flanges and web. It is obvious that at the centre two plates will be required, one of which can be "dropped" in the same manner as was employed in designing the main girder. The sectional area will be thus, in which two rivet-holes are deducted from the breadth of the plates and one from each angle-iron—

1 plate (15 − 1·5) $\frac{1}{2}$in. .... = 6 75
1 ditto (15 − 1·5) $\frac{3}{8}$in. .... = 5 06
2 angle-irons 2 ($3\frac{1}{2}$in. + $3\frac{1}{2}$in. − $\frac{3}{4}$in.) $\frac{1}{2}$in. = 5·75

Total net area in square inches........ 17·56

As the maximum stress upon any part of the web does not exceed 27 tons, if we make the thickness of the web-plate the same as that of the main girder—that is, $\frac{5}{16}$in.—the area so obtained will be more than that needed; but the excess is quite unavoidable, as the material cannot be "fined down" any further. The pitch and diameter of the rivets will be the same as those in the main girders, and the general cross-section at the centre is shown in Fig. 9*b*. In Figs. 10 and 10*a* the cross-sections are taken at points where the top plate, $\frac{3}{8}$in. in thickness, has been "dropped." Employing the short formula given in our last article in the Building News of August 10th, we have—

$$r = \sqrt{\left(\frac{L^2}{2} - Z\right)}$$

and inserting the proper values, we obtain r = 7ft., or, allowing 1ft. for overlap, the flange plate, $\frac{3}{8}$in. in thickness, may be dropped at 8ft. from the centre of the girder.

In plate girders of so comparatively small a depth as 2ft. 6in. it is not necessary to use vertical, angle, or tee-irons for covering the joints of the web or for stiffening it. Strips of plate 5in. wide, of the same thickness as the web plate or a little thicker, may be used as sufficient for the purpose. These are usually riveted close up to the web, and bent or cranked over the angle irons (Fig. 10). A neater method is to place vertical packing strips over the central part of the web, cover these and the vertical ribs of the longitudinal angle irons with a pair of outside strips, and rivet them all up flush together, as shown in Fig. 10*a*. The inside packing strips are represented by the hatched lines. It should be mentioned that although the Figs. 9*b*—10*a* are working sections drawn to scale, yet the thickness of the metal has been slightly exaggerated; in fact, it would have been impossible to draw them without some little distortion within the limited size of the cuts at our command. The web plate is shown by a single black line, and the rest of the figures are self-explanatory. There is no necessity for any joints in the flanges, as the plates and angle irons can all be obtained, without extra charge, in one length; but we shall in our next article analyse the joints of the plates in the main girder, and give a drawing of them. The general disposition of the riveting-up of the flange and web plates, and connecting angle irons for the cross-girder, is similar to that shown in Figs. 7 and 8 in our preceding article, and no recapitulation is needed. In Figs. 10*a* and 10*b* the method of arranging the joints in the web plates is rendered perfectly clear. A portion of the elevation of the cross-girder is given in Fig. 10*b*. To avoid confusion, the heads of the rivets on the far side of the flanges which break joint with those in the elevation in Fig. 10*b* are not shown.

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New board schools were opened at Briton Ferry last week by the Countess of Jersey. The architect is Mr. H. Francis Clarke, of Briton Ferry.

ST. NICHOLAS' CATHEDRAL, NEWCASTLE-ON-TYNE.

THE Finance Committee of the Newcastle Corporation having requested Mr. Leeson, architect, of that city, to examine the tower and lantern of St. Nicholas' Cathedral, have received an interim report from Messrs. Oliver and Leeson, architects:—

They find that the whole of the tower and lantern above the level of the lead flat is in need of immediate repair. The cement which has been plastered over the stone and ironwork, principally round the octagonal corner pinnacles, has in places become detached, leaving the joints and ironwork exposed to the weather. The moulded stringcourse below the battlements has many of its vertical joints open. In the battlements the beds of the coping-stones have in two or three places been disturbed, and where the iron ties which bind the corners of the tower together cross the battlements, some of the stones have been split by the corrosion of the iron. The small turrets and pinnacles in the centre of each side of the tower are in fair condition. The large turrets and pinnacles at the angles of the tower are, on the contrary, very much in need of repair and pointing. It is round these turrets that the iron ties used to bind the top of the tower together are fixed; the expansion and contraction of these ties, and the corrosion, have caused a good deal of dilapidation. Two of the vanes from the westernmost of the corner spires have been taken down, and some of the remainder are not in satisfactory condition. The iron ties and wood beams which have been fixed across the tower at different times to strengthen it are, especially as far as the latter are concerned, much decayed. The arches springing from the turrets and carrying the lantern appear to be in very fair condition. One of the small flying buttresses which spring from these arches to the turrets at the corners of the tower is in a defective state. It has been coated with cement and has an iron tie built in. As in other cases, the corrosion of the ironwork has thrown the cement off. In the lantern itself the most serious dilapidation is apparent. The iron saddle-bars, which have been used to tie in the mullions, have, by their corrosion, burst the mullions in two or three places. The splitting away of the stone has left the upper portion of the mullion and the tracery above in an insecure condition, and steps should be immediately taken to restore the damaged portions of the work. The whole of the lantern requires pointing and thoroughly overhauling, especially where ironwork has been built into the stone. We have not (Messrs. Oliver and Leeson add) been able to reach the upper part of the lantern and spire, but will do so when further ladders and scaffolding are erected, and will then report as to the condition of this portion of the building. The cause of a considerable amount of the present dilapidation is without doubt the expansion and contraction and the corrosion of the ironwork, which has been freely used to tie the structure together. This should have been periodically inspected, and kept in good repair. In the present condition of the lantern the ringing of the bells should be avoided, as anything in the nature of vibration must have a detrimental effect on the structure.

The following repairs should, they consider, be commenced forthwith:—The vertical joints of the string below the battlements should be carefully grouted and repointed in cement. The coping stones of the battlements where disturbed should be taken off, copper dowels inserted, and the stone reset. All stones that have been split or injured by the corrosion of the iron ties should be taken out and replaced by new ones. The small turrets and pinnacles should be pointed, and the large turrets and pinnacles should have the cement, which is peeling off, removed, and all the beds and joints grouted and pointed in cement. The two damaged vanes should be restored, and all other vanes carefully examined and put into proper condition. This would probably involve the taking down and resetting of some of the stonework. All the ironwork used in the structure should be thoroughly cleaned, and coated with the best anti-corrosive liquid. The small flying buttress between the main arch and the corner tower should be taken out and new stones put in, as has been done in the other three cases. We would advise that the whole of the mullions and transoms in the lantern be taken out, and the iron saddle-bars and straps removed; that the stonework be reused as far as possible, new stones being used to replace the damaged ones, and all the saddle-bars and ties be replaced by copper. The leads on the top of the tower also require certain repairs. We would suggest that your committee should authorise us to arrange for Mr. Walter Scott to commence the work forthwith on a schedule of prices being agreed to.

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EXCAVATION OF THE ARGIVE HERÆON.

AN interesting account of the excavation of the ancient Temple of Hera, about half a dozen miles from Argos, is given by the *Times* special correspondent in Greece. The excavations have been carried out by members of the American School of Archæology, under the superintendence of Dr. Waldstein, of Cambridge, assisted by Messrs. Washington, Norton, Hoppin, and Aldin, of the same school, as well as by Dr. Richardson, the director of the school, and were commenced in February, 1892. The workmen, who number some 250, are for the most part peasants from the neighbouring villages. The explorations on the site of the older temple, destroyed by an accidental fire in 423 B.C., have revealed large polygonal slabs, forming a pavement some 145ft. in length, by 113ft. in breadth; this covered a considerable portion of the terrace supported by the Cyclopean retaining-wall. No traces of foundations have been discovered such as might enable us to reconstruct the design of the building. Dr. Dörpfeld believes that the columns on the southern side of the peristyle rested directly on the Cyclopean wall. The only vestige of the temple which remains is a portion of the substructure of the cella. The objects found beneath this line of walling must therefore antedate the erection of the temple, and include numerous fragments of pottery, heavy, thick, and unpainted, and evidently belonging to the Primitive period of the ceramic art, together with bronzes, rudely-engraved stones, glass and bone heads, and a bronze goat. Many of the metal objects found had been melted by fire, and these, as well as a layer of black earth with pieces of charred wood and stones split by heat, afforded material confirmation of the burning of the temple.

The excavation of the second temple—supposed to have been built under the direction of the sculptor Polyclitos, by whom was fashioned the famous chryselephantine statue of Hera which stood in the temple—however, and of the surrounding precincts, was the most important portion of the work. The clearance of the site has revealed the substructure of the temple, which has been preserved throughout its entire circuit, and the general plan and outline of the building are displayed at a glance. The entire superstructure was demolished and plundered in the Middle Ages, and not a single stone of the stylobate remains. This second temple was a Doric peripteral hexastyle, with 12 columns on the flanks, and with a stereobate measuring 130ft. by 64ft.—a ratio of length to width somewhat less than in the Parthenon. The columns and entablature were of porous stone, but the triglyphs and the pediments were of black marble. The sculptures in the metopes and pediments were of Parian marble, and we know from Pausanias that the subjects which they represented were the birth of Zeus, the Gigantomachia, the expedition against Troy, and the capture of that city. The internal structure had the form of a double temple *in antis*, and the cella was adorned with two ranges of interior columns. Among the buildings which surround the later temple, the clearance of which has formed the principal task of this year's operations, are traces of dwelling-houses for the priestesses of the earlier temple, a long stoa with a range of at least 19 pillars, behind which are the bases of statues, a second stoa, an aqueduct in the mountain side, and two tombs, similar, but anterior in date, to those at Mycenæ. The excavations have yielded a harvest of works of primitive art, which almost equals in importance the discoveries of Schliemann at Tiryns, Mycenæ, and Troy. Terracotta idols, plaques, and images of animals, bronze statuettes, rings and pins, beads, scarabs, and seals of amber, glass, or porcelain, have been found in hundreds. There are numerous specimens of pottery and terracotta figurines. Important discoveries were also made of fragments of sculpture of the best period of Greek art.

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A vestry which has been added to Filey parish church, from designs by Mr. Robson, of that village, was dedicated on Friday by the Bishop of Hull.

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ILLUSTRATIONS.

"PASSMORE EDWARDS" COTTAGE HOSPITAL AT WOOD GREEN.—CHURCH EMBROIDERY.—THE GAMBLE INSTITUTE, ST. HELEN'S.—ALL SAINTS CHURCH, RINGWAY.—SOUTHWOLD CHURCH.—THE CLAREMONT PRIVATE HOTEL, HARROGATE.—AN AMERICAN BEDCHAMBER.

Our Illustrations.

THE WOOD GREEN COTTAGE HOSPITAL.

The foundation-stone of the new Wood Green Cottage Hospital was laid on Saturday last in Bounds Green-road, Wood Green, by the donor, Mr. J. Passmore Edwards. Many of the local inhabitants were present, including Col. Durrant, H.A.C., Messrs. Bradshaw, Ridgway, Pleming, H. Bond Holding, Mr. and Mrs. Washington Wilks, and others, and the bands and banners of the friendly societies enlivened the proceedings. The idea of a cottage hospital at Wood Green originated some time back with an influential committee, and it was intended, funds not being plentiful, to commence in a private house. Col. Durrant, however, was able to announce to the committee that a friend had offered to defray the whole cost of a fully-appointed cottage hospital, amounting to £2,000, and that friend turned out to be Mr. J. Passmore Edwards. The course being thus clear, Mr. Chas. Bell, F.R.I.B.A., was commissioned to prepare designs, and the result is a model cottage hospital in every respect. The hospital will be erected on a freehold site of half an acre, acquired for £300 from the Ecclesiastical Commissioners. It will contain two wards, each with four beds, for men and women, two isolation wards with one bed in each, separate operating room, nurses' bedrooms, entrance hall, nurses' rooms, kitchen, laundry, &c. The materials are stock brick, with tile hangings and rough cast facing to the upper part of the central portion. The architect has certainly produced a building in every respect suitable for its purpose at a marvellously low cost. The builder is Mr. Charles Wall, of Chelsea. At the ceremony on Saturday, Mr. W. F. Bradshaw, one of the trustees, briefly stated the objects of the hospital, and introduced Mr. Passmore Edwards, comparing him to the Good Samaritan, on account of the help he had bestowed on the sick and needy. The trowel and mallet having been handed to Mr. J. Passmore Edwards by Mr. Charles Bell, the architect, the stone was duly laid amid cheers. Prayer having been offered by the Rev. T. C. Eldon, the rector of St. Gabriel's, Wood Green, the Old Hundredth was sung. Col. Durrant then proposed a vote of thanks to Mr. J. Passmore Edwards for his presence there that day, and also for that of Mrs. Passmore Edwards. It was no mere formal vote, but with a feeling of deep gratitude, that he acknowledged the princely assistance that had enabled them to carry on the work as far as it had gone. The site was a good one, and the circumstances, so far, were auspicious. As long as all present lived all would remember Mr. Passmore Edwards. In response to the vote of thanks, which was seconded by Mr. Pleming, as the representative of the Trade Societies, Mr. Passmore Edwards said he was pleased to meet all there that day, but there was a trifling misunderstanding current. People thought he had nothing but sovereigns to fling about the world. That was a mistake. He put his pence together and his shillings, and when he had a thousand pounds to bestow he was glad to do it. The origin of his connection with the Wood Green Hospital was that, when he gave a cottage hospital to Willesden, the wish was expressed to Col. Durrant that someone would do the same for Wood Green. Col. Durrant soon wrote to him, but he thought at first that the well-to-do people of Wood Green might build one for themselves. But it was represented to him that large numbers of working men lived in the district, and it was for them he had given the hospital. Mr. Edwards hoped that Wood Green would differ from Willesden in one respect. The hospital at Willesden had been full from the opening. He hoped that at Wood Green would remain empty, and if anyone asked what good such a hospital was doing he would say, as an old friend of his used to observe who always carried a sovereign in his waistcoat pocket, it was there when they wanted it. In conclusion, Mr. Edwards said it afforded him pleasure to know that he had never seen a better-planned or more picturesque hospital than that designed by Mr. Chas. Bell, and he hoped the opening in April or May next would afford them another opportunity of meeting. Votes of thanks to Mr. Bradshaw, proposed by the treasurer, Mr. E. B. Ridgway, concluded the proceedings. Later in the evening many of the visitors adjourned to the Noel Park Football Ground, where an attractive series of sports had been organised by the United Building Trades Societies of the district, the proceeds of which are to go towards the purchase of the land on which the hospital is being built. At the conclusion of the sports Mrs. Passmore Edwards distributed the prizes to the victors, a hearty vote of thanks being tendered to her, and suitably acknowledged on her behalf by her son, Mr. H. P. Edwards, B.A.

CHURCH EMBROIDERY.—XIII.

May Morris's concluding article on this subject will be found on p. 277 *ante*.

GAMBLE INSTITUTE, ST. HELEN'S, LANCS.

(See description on p. 282.)

RINGWAY CHURCH.

This church, now in course of erection, replaces a structure of the Georgian period, and consists of nave, north aisle, chancel, transept, and vestry. The nave is divided from the aisle by oak octagonal columns, from which arched braces spring to support a longitudinal beam carrying the roof timbers. The walls are built of local bricks, and all architectural features therein are of Northwich terracotta. The west gable, porch, and spirelet are of oak. The roofs are all open-timbered, boarded on the top, felted, and covered with Ruabon brindled tiles. The floors generally are of pitch-pine wood blocks, the passages being tiled with plain tiles having encaustic borders; the sacrarium is laid with oak parquetry, and the walls are lined with panelling of fumigated oak. The church accommodates 200 persons, and the cost is being entirely defrayed by the Right Hon. Lord Egerton of Tatton. The oak-work also is constructed with timber grown upon his lordship's estates. The architects are Messrs. Preston and Vaughan, of Diocesan Chambers, Manchester, from whose designs and under whose superintendence the work is being carried out.

SOUTHWOLD CHURCH, SUFFOLK.

The church of St. Edmund the Martyr, at Southwold, is a fine and typical example of one of the most interesting phases of English architecture, the Perpendicular work of East Anglia. In common with many churches of the district, it is of a size quite out of proportion to the present population of the parish, except during the season, when the building is fully filled, thus bearing evidence of the piety and prosperity of a bygone age. The church is said, on good authority, to have been begun and finished between 1399 and 1413, though there is evidence among the documents relating to bequests for the fabric that the final completion was some 50 years later. The screen, a fine piece of woodwork, with richly-painted panels, is one of the principal objects of interest in the building; and the roof, with its angel-headed hammer-beams, sustains the special reputation of Norfolk and Suffolk for this particular feature. The interior of the church generally is remarkable for a certain grand simplicity, and for the absence of projecting members. Nearly all the mouldings are cut back from the wall face, no labels or bosses being used in the pier arches. There is a chamber above the porch, which at one time was used as an armoury, and there is much special interest to be found in the flint work, and especially in the devices worked into the panels of the external plinth. Conspicuous among them is an ingenious monogram, which contains in a simple cipher all the letters of the Virgin's name. The late Mr. G. E. Street, and more recently Mr. Arthur Street, have been concerned in the restoration of the building, which has been carried out with the greatest care and respect for the ancient features of the church. The rood staircase is in good preservation, and at the head of the stairs stands a weird wooden effigy in armour, whose present function is to announce the entrance of the clergy by striking with a battle-axe on a small bell. The above notes and the accompanying sketches have been contributed by Mr. Paul Waterhouse, M.A., to whom our thanks are due.

CLAREMONT PRIVATE HOTEL, HARROGATE.

No description of this building has reached us in response to our usual invitation.

AN AMERICAN BED-CHAMBER.

The bedstead, the chief object in the bedroom, is here one of the old four-poster type, and the illustration needs no further description.

CHIPS.

A Primitive Methodist chapel is about to be erected in Ford-street, Coventry, in replacement of one built in Grove-street in the same city in 1837. The new church will cost £2,000, and will be constructed from plans by Mr. John Wills, F.S.A., of Derby.

The foundation stones of new United Methodist Free Church chapel and school premises were laid on Wednesday in York-road, West Hartlepool. The estimated cost of the new buildings is £4,250.

An unusual number of architects and builders were candidates for Parliamentary honours in the recent electoral contest in New South Wales. Among those returned is Mr. Varney Parkes, a well-known Sydney architect, son of the veteran statesman, Sir Henry Parkes. On the other hand, Mr. U. W. Carpenter, the President of the Builders and Contractors' Association of New South Wales, was defeated.

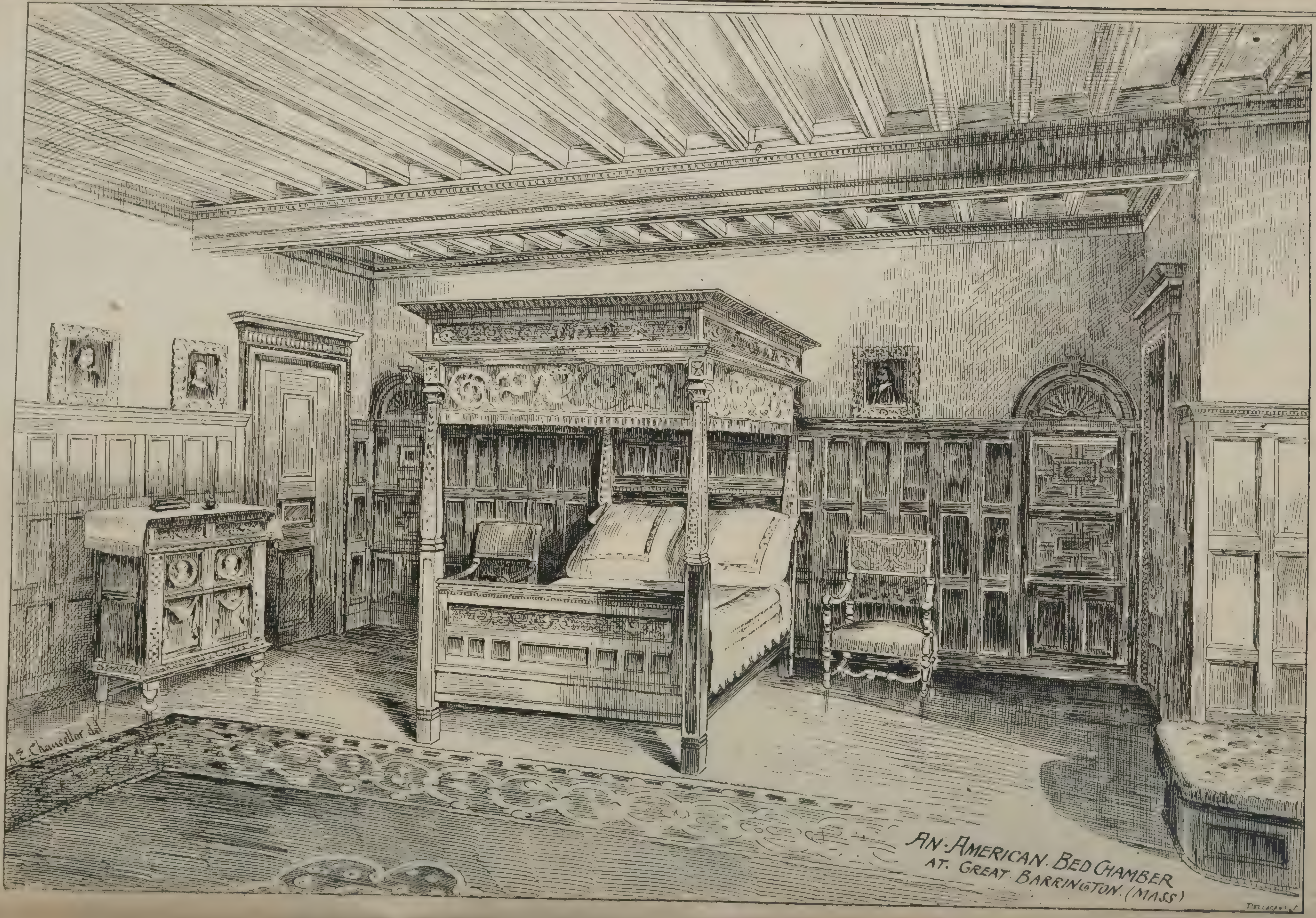
For the vacant office of clerk in the city surveyor's office at Winchester, salary 30s. a week, and duties to keep the books of the surveyor's office, help the surveyor to take levels, and draw plans, &c.; hours of work from 9 to 6 in an ordinary way, and, if necessary, to work overtime, no fewer than 163 men presented themselves as candidates, although it will be seen that the hours and wages are scarcely equal to those of a journeyman bricklayer.

A memorial in the shape of a Latin cross, 8ft. high and 3ft. broad, of roughly-hewn red Aberdeen granite, with a base and kerbing of the same material, has just been erected over the grave of Mr. Edward Askew Sothern, in Southampton cemetery. The old stone cross previously there has been removed to the eastern end of the grave. The inscription reads:—"Edward Askew Sothern, comedian, born April 1, 1826; died January 20, 1881."

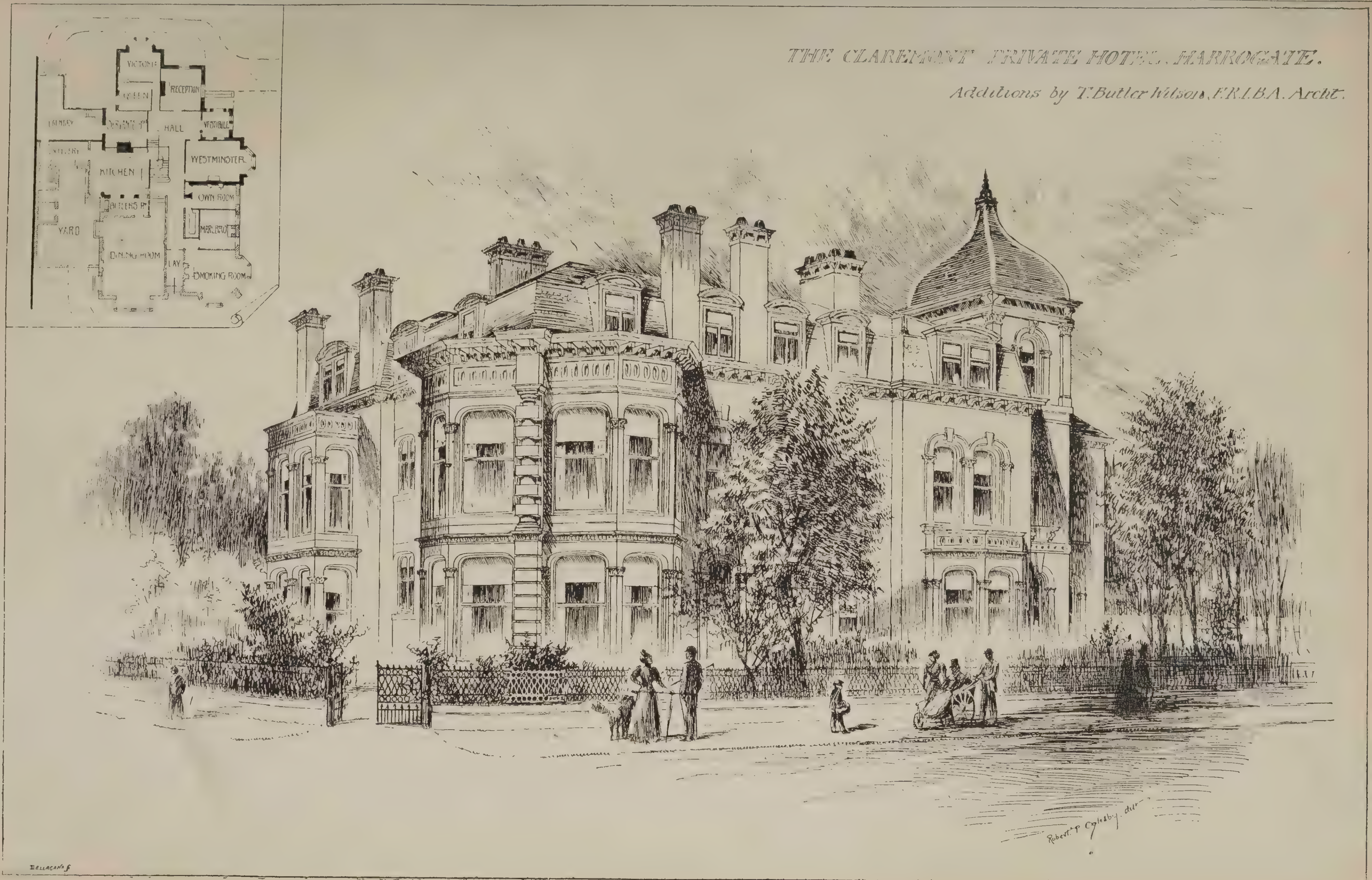
Henry Barker, building material dealer, of Skelton-lane, Leyton, was committed for trial on Saturday, on a charge of removing and concealing large quantities of his goods within four months of his adjudication as a bankrupt, with intent to defraud his creditors. The prisoner was adjudicated on June 11, and his statement showed debts amounting to £1,160, with assets about £80, and £56 book debts.

Reopening services were held in Paulton Wesleyan Chapel, Bristol, on Sunday, after enlargement and re-seating, and a new façade. The latter is of Bath stone and of white lias stone. The architect is Mr. W. F. Bird, of Midsomer Norton, and the contractor Mr. Gait, Ston Easton. The chapel will now seat 510 people. There are two new vestries. A new organ chamber has been built, allowing a lengthening of the gallery.

Sir Tatton Sykes is opening a tumulus near Wold Newton, a village five miles south of Hummanby Station, under the superintendence of Mr. J. R. Mortimer. The barrow is a very large one, and in the same valley as the Duggleby Howe, and stands a little to the south of Wold Newton. The mound consists of valley gravels, largely mixed with peat. Portions of human remains have been found, and two perfect skeletons, with the heads slightly crushed, one a man 5ft. 10in., the other an elderly female. A few flint arrows and chipped foreign flints have been found, but no pottery.


A.E. Chancellor del.

AN·AMERICAN·BED CHAMBER
AT·GREAT·BARRINGTON·(MASS)



THE CLAREMONT PRIVATE HOTEL, HARROGATE.

Additions by T. Butler Wilson, F.R.I.B.A. Archt.

Building Intelligence.

Birmingham.—The foundation-stone of the new General Hospital will be laid by the Duke of York on Saturday in next week, Sept. 8th. The building will be erected from plans by Mr. William Henman, F.R.I.B.A., of Birmingham, selected in open competition, and will occupy a parallelogram between St. Mary's-square and Steelhouse-lane, with side fronts to Loveday and Whittall-streets. The architect has chosen Steelhouse-lane as his principal front, and has disposed his blocks of pavilions in the form of wings projecting at right angles from a corridor building of three stories. The plan is an Ш, the outer of these three wings coming forward almost to the street, while the central one, or administrative block, projects rather less than half-way, so leaving a quadrangle within the entrance gates. A low covered way with an open arcade connects the centre wing with the two side ones. The central or administrative block is carried backwards nearly to St. Mary's-square. The right-hand wing is devoted upon the ground floor to out-patient work, and is flanked by single-story buildings for consulting rooms, its two upper stories being appropriated as male medical wards. The left-hand wing has board and committee rooms on the ground floor, and upon the two upper floors are female medical wards. The two main longitudinal blocks each give long surgical wards in three stories to each block. Two smaller wings to either side of the central corridor provide special wards, including one for children. A one-storied covered way will afford communication with a nurses' home of three stories and basement fronting Whittall-street. Upon the Loveday-street façade will be a semicircular projection; this will give an operating theatre on the basement and first floor, and a lecture theatre corresponding to the two floors above. Externally the treatment will be of red brick and terracotta, Gothic in character. The skyline will be broken by various turrets and by two large water-towers. The site has cost £48,000; the architect's commission will be £7,500; Messrs. Barnsley and Sons' first contract, for preparing the foundations, was £5,000; their second contract, for the actual building, is for £117,888; furniture will cost £10,000; machinery, £3,000; miscellaneous, £2,500; making altogether £206,000. Exclusive of land and fittings, but including nurses' home, it will cost for 341 beds £360 per bed.

Brecon.—The reparation of the grand old tower at St. Mary's, Brecon, which stands in the centre of the town, is now being carried out under the direction of Mr. F. R. Kempson, F.R.I.B.A. The utmost care is being taken to preserve old work. Nothing is being replaced except what has been demolished by time or which is found to be either totally decayed or dangerous. All the framing for the bells will be new, as well as the floors. Stone has been selected which harmonises with the old work. Cement is being used throughout, instead of lime, and the utmost care has been taken to make the fabric thoroughly substantial. The commencement of the work was delayed for unavoidable reasons, but every effort is being made to complete the more important parts of the work before the coming winter.

Bristol Cathedral.—The work of restoring the tower having been completed under the direction of Mr. J. L. Pearson, R.A., the architect to the Dean and Chapter, the two bays of the cloisters are about to be begun. The internal restoration is also being proceeded with by Messrs. W. Cowlin and Sons, the contractors. Already the organ has been removed from the west end and stowed away until it can be rebuilt. Search has been made for evidence of the exact position of the old screen, and an ancient foundation extending across the choir from north to south was discovered. This is supposed to indicate the position of the original reredos. Light has also been thrown upon the position of the original screens, and the contractors are engaged in examining and putting together the old stones at present in the churchyard, which it has been ascertained originally formed part of the screens in the choir. Where possible the old material will be used again. The ceiling of the choir has been cleaned, the groin cells have been distempered, the old colour-wash has been removed from the ribs of the ceiling, and the stonework cleaned and restored. The floor of the choir has been taken up, and preparations are being made for laying the new marble floor.

Edinburgh.—The foundation-stone of St. James's Parish new church, in Carson-street, Leith-walk, was laid recently. It occupies a fresh site, and will be seated for 1,000 persons. From the nature of the ground it has been found necessary to make a basement story, which has been utilised for a hall and retiring-rooms. The hall is seated for 700 people, and can be divided by a partition. The church is in Lancet Gothic, with more of decorative detail in the chief front. The galleries at the side will be lit from gabled dormers, and the east end relieved by a lofty apse and vestry, &c. The stone is coursed in Hailes rock, with red stone dressings. The estimates provide for an expenditure of £4,000; but to finish the spire, which is to be built at present only to the eaves of the church, and provide better appointments and finishings, would require about £1,000 more. Messrs. Hardy and Wight, Edinburgh, are the architects.

Felixstowe.—The foundation of a district church was laid on Friday in Tower-road, on what was till lately a portion of the Wadgate Farm, by the Hon. Mrs. Pretyman, wife of the lord of the manor. The architects are Sir Arthur W. Blomfield, A.R.A., and Sons, and the contractors are Messrs. J. Dorey and Co., of Brentford, the amount of the contract being £4,390. The building will consist of a nave 80ft. in length, and north and south aisles, with south and west porches, and a tower at the west end, ultimately to be surmounted by a spire, and 688 seatings will be provided. The building will be Early English in style, and will be constructed of red brick, locally made, with Bath-stone dressings. Light is to be provided by a series of clerestory quatrefoil windows, small and numerous, of a type frequently seen in East Anglian churches, and filled with cathedral glass. The roof will be open-timbered, the nave covered with Broseley tiles, and the aisles with lead. The floor will be of pitch-pine, and for the present chairs will be used. The entire building, when completed, will have cost between £7,000 and £8,000. The portion which will remain to be built consists of organ chamber, vestry, chancel, and chancel aisle. The church is to be opened in April next. Mr. Buxton is clerk of works, and Mr. Thos. Strong foreman.

Kirkstall Abbey.—The work of preserving the Cistercian abbey ruins at Kirkstall is, says the *Leeds Mercury*, progressing but slowly. Three years have elapsed since the masons first commenced their labours, and for another twelve months, at least, they will be busily engaged. The expenditure by the Leeds Corporation upon the abbey and grounds amount already to about £5,500. The repairing of the vaulting of the chancel and the strengthening of the tower are now engaging the attention of Mr. J. T. Micklethwaite, F.S.A., of Westminster, the architect. In 1779 the north-west pier and the north and west arches were utterly destroyed by the fall of two sides of the tower. What is left of the tower had, up to recently, nothing to support it on the north side, and an unusually violent gale might at any time have brought it down. Even now the masonry of the upper part of the tower is in a very crumbling and unstable condition. The chancel is at present filled with a network of scaffolding poles. The greatest care has to be exercised in fixing this scaffolding, the slightest touch in certain parts of the ruins being sufficient to detach large pieces of masonry. The western portion of the church has already been rendered secure. In an especially good state of preservation is the west entrance, where very little new work has been required. With the north transept, on the other hand, it has been found necessary to rebuild a considerable portion. After the preservation of the abbey itself has been completed, the architect will deal with the cloisters, which are now in a very unsatisfactory condition. Traces of the destructive effects of ivy roots are everywhere evident. The grounds around the abbey are not as picturesque as they might be, though there has been a slight improvement during the past twelve months. Walks have been laid out, a bandstand erected within 20ft. of the ruins, an embankment built along the riverside and planted with willows, and a portion of the ground banked off, to be eventually flooded and made into a lake. There has been no attempt, however, as yet at laying any part of the ground out in garden plots, or anything of that kind. Mr. Irvine is the clerk of works.

Manchester.—New Inland Revenue offices are being built for Manchester at the corner of Hardman-street and Deansgate. In the basement will be rooms for four supervisors and their officers, a stamping-room, connected with stamp office on ground-floor by a lift; strong-room, stores, cellars, and lavatories. On the ground-floor to the right of the entrance, at the corner, will be the public office for the Excise, and collector's private office, with retiring-rooms and stores. To the left will be the public office for the sale of stamps, &c., and rooms for the controller and for probate business. There will be a private entrance at the back for the clerks and caretaker. A central staircase opposite the entrance will lead up to the first and second floors. On the first-floor offices will be provided for the surveyors of taxes and their clerks, waiting-room, stores, lavatories, &c. On the second floor will be rooms for the caretaker and spare rooms. The building will be faced with stone from the Warwick quarries, near Hudddersfield. The plinth, architrave, and columns to the main entrance, also columns to the windows, will be polished grey Aberdeen granite. The floors will be of concrete, with wood block, tile, and stone paving. The public offices and corridors will be probably lighted throughout by electricity. The architect is Mr. Henry Tanner, Her Majesty's Office of Works, London; the builders are Messrs. Robert Neill and Sons, of Manchester; and the clerk of works is Mr. Searchfield.

CHIPS.

The 80th birthday of Professor Ernst Curtius, the celebrated Greek scholar, the 11th September, will be observed at the Museum of Olympia by the inauguration, in presence of many distinguished persons, of a marble bust, in commemoration of the services rendered by the German *savant* to Greek history and archæology, especially in initiating and inducing the German Government to undertake the excavations at Olympia.

The thirty-fifth congress of members of the Association of German Engineers was opened in Berlin on Monday morning.

The Edinburgh town council have just carried out an important street improvement by widening Salisbury-place, a thoroughfare traversed by the tramway, from 29ft. to 42ft., at a net cost of £4,000.

The Earl of Carlisle and Mr. T. D. L. Devitt having been authorised by the New South Wales Government to purchase pictures for the Sydney National Gallery, have secured several paintings by well-known artists. They are "Virginia di Monte San Giorgio, Perugia," by Professor Giovanni Costa; "Shorthanded," by Lionel Smythe; "The Bedouin's Home," by F. Goodall, R.A.; "Fleet Street," by Herbert Marshall; and "Gringoire," by E. R. Hughes. The two first named are in oils, and the remaining three in water colours. The pictures will be forwarded to Sydney on September 8.

Mr. Batsford will publish early in September a new edition of Meyer's "Handbook of Ornament," the first issue of which was exhausted in three months. The new edition has been carefully revised by Mr. Hugh Stannus, F.R.I.B.A., lecturer on applied art at South Kensington, and contains about 3,000 illustrations of the elements, and the application of decoration to objects.

Mr. R. Pering Bowden, surveyor, R.E. Civil Staff, has just retired after a service of 40 years, having been stationed during this period at Woolwich, Gosport, Gibraltar, Edinburgh, Inverness, and other places.

The Pearns Convalescent Home, near Plymouth, is being warmed and ventilated throughout by means of Shorland's patent Manchester stoves with descending smoke flues, and by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The Roman Catholic Cathedral of St. Barnabas, Nottingham, was reopened on Sunday last, the 26th inst., after interior restoration and decoration, the style of the work corresponding with that of the cathedral fabric—viz., Early English throughout, from designs by Mr. Thos. F. Norman, ecclesiastical decorator and artist in stained glass, St. Nicholas Church-street, Warwick.

The foundation of the new School of Science and Art for Bromsgrove was laid on Tuesday. The site is in New-road, adjoining the Institute, and the design harmonises in character with that building. On the ground floor there will be a lecture theatre, laboratory, and science classrooms, and on the floor above will be the art classrooms. Mr. John Cotton, of Birmingham, is the architect, and the contract for building has been taken at £1,515 by Mr. Brazier, of Worcester-street, Bromsgrove.

WAYSIDE NOTES.

I MENTIONED last week the approaching demolition of Sir Edwin Landseer's house in St. John's Wood. A building with kindred associations is about to share the same fate in Paris. Meissonier's house, built on his own designs, in the Place Malesherbes, in front of Gustave Doré's monument of Alexandre Dumas, is to be pulled down in order to make way for a six-story building, and the work of demolition is already begun. Meissonier's house was somewhat in the style of the Renaissance. It was unlike any modern house, and was neither eccentric nor conspicuous. It looked the abode of an artist, and a wealthy man, but not assertively so. Its windows towards the street, scarcely more than loopholes, suggested inner windows opening on a court which, judging from the exterior, must be a Renaissance cortile. This gave an impression of indifference, perhaps slightly contemptuous, of the outer world, and of a comfortable seclusion not so much of the hermit as of the satisfied bourgeois. Meissonier hoped that his house would become a museum. He wrote: "My hotel was built for a museum. This is apparent to any visitor. My descendants might live there as tenants and curators." Another time he wrote: "I hope that the treasures of art in my studio will never be sold. I hope that my son will give them to the State. I believe this is his wish, as well as my own. I am sure that he will feel too much love and respect for his father's work ever to disperse it. I trust he will turn this house into a little museum." The hope, however, was not to be fulfilled.

I am much of opinion with a correspondent of the *Morning Post*, that the traffic of the streets could be much better regulated if suitable tracks were laid down with proper smooth slabs of suitable width and gauge for the wheels of vehicles, the space between for the horses' feet being paved so as to give good foothold, and where the width of the streets would admit there might be four such tracks, two for slow and two for quick traffic. Such tracks could be laid so that vehicles might pass off and on freely, even at the crossing of the streets. The system is the old Roman road, such as may be seen in several parts of this country, especially in Chester, and as at present existing still in Rome, Milan, &c. The first cost would not be more than the present system, and the expense of repairs would be very trifling, as once well laid they would be most durable, and the present objectionable tramroads, with flanged wheels, could then be entirely dispensed with—as every road would be a tramroad, and every vehicle a tramcar. It would also be suitable for country roads, instead of expensive iron tramways, such as have been lately so much discussed by County Councils.

The bursting of the Gohna Lake has been awaited for weeks, and even months, with no little anxiety. The history of the disaster is of interest to the civil engineer. About eleven months ago a little stream running into a tributary of the Ganges was blocked near the village of Gohna by a succession of landslips. The summit of a hill rising 4,000ft. above the river's bank fell across the water-way, forming an immense rampart some 800ft. high. At length the gorge was found to be dammed by a mass of rock and clay. When the spot was examined it was seen that in course of time, as the snows melted, the waters pent up in the valley would gradually rise to within a few feet of the top of the dam, and would then find a way over and through. The difficulty was to foretell precisely how and when the end would come. The water might percolate through the lower sections of the dam, which was about a couple of thousand feet long, across at its top; or it might find no outlet till it reached the valley-shaped depression midway between the hills on either side. Inch by inch, foot by foot, the waters rose; but the authorities had not been idle. The plan of drawing off the surplus water by an artificial channel had been abandoned, because the operation would have cost a prohibitive sum, and also because, owing to the difficulty of procuring labour, it might never have been completed in time. But a special line of telegraph was constructed, so that the villagers living in the probable track of the flood could be warned at the first sign of danger, and the rise was narrowly watched. These precautions, so far as the protection of life is concerned, have proved sufficient. The destruction of property that has actually taken place will most likely turn out to have been inevitable.

I see the old controversy about the necessity of reviving the canal system is being resuscitated in the dailies. It is well pointed out by Mr. Henry Taylor, in the *Times*, in connection with this matter, that there is an aspect of this question which engineers leave out of consideration—the influence of canals and canalised rivers on the climate of districts permeated by them. They seem to forget that rivers are our best main drains, and that one effect of maintaining their waters at a uniformly high level by means of locks is to prevent natural drainage of the land contiguous to them, and, in some instances, to keep hundreds of acres waterlogged for a great part of the year, and so quite unfit for cultivation. This saturation of the soil produces abundant exhalations, which become visible after sunset as a more or less dense mist along the course of the canal, making the air cold and unwholesome for those who reside in its neighbourhood. In the opinion of many such deterioration of the climate by canals more than outweighs any commercial advantages that may accrue from them. India has taught us this lesson on a grand scale. For many years after the completion of the Ganges Canal large tracts of land on either side of it were converted into swamps, which became the hot-beds of malarial fever and the graves of many engineers engaged on the works. To obviate these disastrous results, the Indian Government wisely ordered a system of land drainage parallel to the canal, which now carries off the surplus water, and has restored the land to cultivation. The moral of all this is that if we are to have an improved and extended canal system we must be prepared with a scheme of land drainage side by side with the canals; otherwise, we had better be content to leave the question of railway rates to be solved by the next generation.

The latest stage of the great domestic bath question is discouraging. The magistrate at the South-Western Police-court on Monday gave his matured decision on the summons issued by a householder against the Lambeth Water Company. The householder refused to pay the extra charge for his bath on the reasonable ground that the charge for domestic supply included every use of water on the premises. The company accordingly cut off the whole supply. The magistrate held that they were justified in doing so, and dismissed the summons against them, with heavy costs. It is impossible that this matter can remain where it is. The London Water Companies cannot be permitted to discourage cleanliness and promote disease merely that they may still more largely increase their bloated dividends. The municipalisation of the water supply of London is the most vital need of the Metropolis, and the one consolation in connection with the high-handed conduct of the water monopolists is that their system of blackmail will hasten it.

Surely the opportunity offered for completing Somerset House ought not to be missed. The departments housed there are cramped for room, and the northern front of the building is meanly hidden along the greater portion. Some of the houses in the Strand, between Somerset House and Wellington-street, have been pulled down, and the sites advertised for sale. A unique opportunity is thus opened to the Government to acquire these sites, and to build thereon public offices as an extension of the front of Somerset House, along the Strand and Wellington-street, in harmony with that already existing. Such a noble building as Somerset House ought certainly to have its principal front in the Strand, whereas now it is hidden behind commonplace buildings, and has only a central entrance from the Strand. If the loss of income from the rents of these shops in the Strand be considered a very serious matter, the ground-floor of the new buildings could be utilised as shops. So long as the Strand front is built as forming part of, and strictly harmonising with, the present edifice, the Government could, at comparatively small cost, "disestablish" the shops whenever circumstances demanded, and absorb their space into the public offices.

The Board of Works are about to extend the Temperate House in Kew Gardens by adding two wings at the north and south ends, which will increase the size of the building by about half its present dimensions. The cost will amount to about £12,000. Among other improvements which are being carried out is the overhauling and re-arranging of the whole of the heating apparatus in connection with the palm-house, and the provision of additional piping, which is to be placed round the lantern in the roof. The south wing of the large conservatory, known as the No. 4 house, is also in course of reconstruction to meet modern requirements. This is the final instalment of the work taken in hand in connection with this house three years ago, and completes the reconstruction of the conservatory.

It is stated that the negotiations for acquiring the property needed for the removal of the houses in Poets' Corner and Old Palace Yard, which were condemned by the Royal Commission on Westminster Abbey, are now on the verge of completion. It was at one time hoped that H.M. Office of Works would continue their bargain before the prorogation, so that the work of demolition could be accomplished during the autumn and winter months. It appears, however, that possession of the property cannot in any circumstances be obtained before the middle of next year, which means that the public will have to wait at least another twelve months before they can form an opinion as to the effect of the addition of a brand new monumental chapel to the Abbey behind the site so opened out. As soon as the houses have been pulled down the space cleared will be turfed over and railed in, a method of procedure which will enable those interested in the Abbey to judge whether a monumental chapel ought to be erected at this point, or whether the Chapter House, having been once rescued from obscurity, ought to be again even partially hidden from sight.

One more of the many cherished beliefs of the various Christian pilgrims to the Holy Land will have to be given up—namely, the so-called "Stone of Job." The village of Saijdeh, which is situated in the neighbourhood of the Sea of Tiberias, according to the traditions of the inhabitants, was the country, or rather birthplace, of Job the Just, and a hill which is within easy distance of the village was known as the "Hill of Job." Near this hill was a stone upon which tradition says that the patriarch rested during his long term of suffering, which in our day has become almost proverbial. This stone was, until very recently, surrounded by a Moslem shrine, for it must not be forgotten that Job was a patriarch as much among the Moslems as with the Jews and Christians. Through some cause or another the shrine has fallen into decay, and the stone which it encircled has been exposed to view. A recent examination of this ancient monument has revealed a most startling fact—namely, that, instead of the stone having any connection with Job, it is really an inscription of Rameses II., the famous King of Egypt, who ruled B.C. 1333, and who is usually considered as the Pharaoh of the oppression. On the top of the tablet is the well-known representation of the winged disc of the sun, under which is the figure of the monarch in the usual Egyptian style, who is giving offering to the goddess Maat. Over the head of the king is his hieroglyphic name "Ra-user-ma-setep-en-Ra"—"The sun, powerful by truth, approved of the sun"—which was the throne name of Rameses II.

The twenty-eighth annual convention of the American Institute of Architects is to be held in New York, in the rooms of the Architectural League, on Monday, Tuesday, and Wednesday, October 15, 16, and 17. Papers have been promised from Messrs. Longfellow, Van Brunt, Sturgis, Hastings, Wight, Sullivan, Gibson, and Clark, and arrangements have been made for securing a full discussion of the papers. The matter of the relation of the chapters to the institute is to be brought up, by the offer of amendments to the by-laws, looking to the admission of all practising members of the chapter to the ranks of the institute, and putting the business of the conventions into the hands of delegates from the chapters. It is several years since a convention has been held in New York, and it is hoped that there will be a full attendance.

As I very narrowly escaped a fatal accident in passing along the Strand on Wednesday evening, it is only reasonable, in the interest of others, that I should point out in the plainest possible terms the urgent need of some protection being always insisted on by the London County Council to insure the public from falling tools or what not when hanging scaffoldings are used over the pavements of street thoroughfares. The Gaiety Restaurant is undergoing a process of rescraping from parapet to basement, and an army of workmen have been busy for the past week or two cleaning down the brickwork and masonry, the work being reached by the ordinary method of hanging platforms. In Catherine-street a cradle inclosure has been employed along the footway to keep rope and other appliances secure against removal, and besides affording some protection to the public by keeping people off the pavement immediately beneath the scaffoldings. In the Strand, however, the several entrances to the theatre and two restaurants no doubt rendered a similar inclosure out of the question, though, as a matter of fact, thousands more passers-by are exposed to danger in the main highway of the Metropolis, rendering it all the more necessary that some effective measure should be employed for their protection. A sort of projecting pent, or even a tarpaulin festooned below the platforms, might be used. As I was passing an iron scraping tool weighing not less than three or four pounds fell immediately in front of me with an alarming crash on to the pavement from a height of about 50ft., or nearly to the top cornice level where the men were at work on a swinging deck, to which no shield whatever was provided to catch falling implements. The Gaiety fireman on duty saw the circumstance, and called out to the workmen to "look out!" As it was by the merest shave that no one was killed, and so narrowly escaping myself, I feel it incumbent upon me to re-echo his words of warning, not to the artificers alone, but to those in authority, that prompt measures may be taken in this respect in the general interest in every case where similar work is in progress.

After serious damage by fire, the old red brick house at the north end of the west side of Fulwood's-rents, High Holborn, and abutting on Field-court, Gray's Inn, is about to be pulled down. This ancient building was at one time the "Court of Requests" for the recovery of small debts for the precinct, and is claimed as having been "Squire's" famous coffee-house — which was the house of entertainment referred to in many papers in the *Spectator*. It was at "Squire's" that the members of the Melbourne and Oate's Clubs met, at which time it was a place of good repute, and frequented by the best-known literary men of the period. Fulwood's, commonly known as "Fuller's," Rents, once formed the principal entrance into Gray's Inn Gardens. It is named after one Fulwood, to whom, by an order dated 1593, the Benchers paid £150 "for a parcel of ground in Holborne for building a gate out of Gray's Inn into Holborne." Pity that the slum could not be demolished, and a suitable entry made through it to the stately gardens of the Inn.

The trustees of the Manchester Corporation Art Gallery have accepted the proffered gift of "Andromeda," by William Etty, R.A.

On Monday, September 10, the twentieth annual exhibition of the Sheffield Society of Artists will be opened in the Cutlers' Hall in that city. On the opening night Professor Herkomer, R.A., will deliver a lecture, and this is to be followed by a conversazione.

On Saturday the foundation stones were laid of a new Primitive Methodist church and Sunday-school at Shotley Bridge, Co. Durham. The edifice is Gothic in style, and the church itself will provide accommodation for 450 worshippers; while the school will have room for 250 children and teachers. The cost of the buildings is estimated at £2,000. The architect is Mr. Geo. Race, Westgate, Weirdale; the contractors being Messrs. Lubbock and Sons, Blackhill.

The excavations for the new tank which is to contain the gas-holder adjoining the Sleaford Gasworks are now in progress. The tank will be 89ft. diameter by 20ft. deep, with a conical-shaped bed covered with puddled clay and bricks. The wall will consist of brickwork, surrounded by puddled clay, and will contain about a quarter of a million of bricks. The gas-holder will be 85ft. in diameter by a depth of 20ft., and will be constructed so that it can be telescoped at a future date, doubling its capacity. It will contain, when completed, 115,000c.ft. of gas. The contractors for the whole of the work are Messrs. R. and J. Dempster, Limited, Manchester.

BOOKS RECEIVED.

The Testing of Hydraulic Cements, by W. Harry Stanger, M.Inst.C.E., and Bertram Blount, F.I.C., F.C.S., is a reprint of a paper read before the London section of the Society of Chemical Industry. The authors contend that both chemical and mechanical data should be available in pronouncing on the quality of cement. The testing of cements by mechanical methods is not absolutely reliable, especially in untrained hands. The various shapes of standard bushel measures, the means of filling them, the gauging and mixing, and the application of the load are not always to be trusted. Although improved appliances are now in use, such as Matthews's automatic apparatus for applying the load to the briquette, and improved measure and hopper to insure equal treatment, there is yet more to be done to make this mode of testing perfectly reliable. The mixing of water with the cement requires knack, not always to be found, and the sieves used are unreliable. The services of the chemist are necessary to determine the composition of a cement and its main physical properties. When both are ascertained, the suitability and safety of a cement for any purpose can be accurately judged. Mr. Stanger's paper is worth reading by all practical users of cements. ——*Transactions of the American Society of Civil Engineers* for June contains Mr. William P. Craighill's address as president at the annual convention, in which allusion is made to national defences. Speaking of armour-plated vessels, he thinks the time will come when ships will be left unarmoured, and will trust to their speed and heavy guns. The first-class armoured warship has become a most unwieldly monster, as was shown by the ill-fated *Victoria*. In 1893 six other ships were lost, and only one of them in actual warfare. Naval architects do not pretend to make an impenetrable ship; the gun always has the advantage. No invulnerable armour ever will be produced. Inland canals are advocated by the president as invaluable in time of war, as that between Philadelphia and New York; he also speaks of the Ship Canal as important in any defensive system, as affording an interior line of water-way parallel to the coast-line. A canal connecting the great bays of the Chesapeake and Delaware would enable a fleet to promptly meet an enemy threatening either of these bays, and be out of danger. Another interesting paper is on "A Concrete Sewer on Piles," by Eugène Lentilhon, jun., Am.Soc.C.E.—a concrete sewer 16ft. wide by 7ft. on a foundation of piles and grillages, and 180ft. long. The sewer walls were made continuous by joints on the "tongue-and-groove" principle, these being grouted. As a sewer constructed in bad ground, the details have interest.

OBITUARY.

Mr. Henry Faija, M.Inst.C.E., died on the 21st instant, of epithelioma, a malignant disease of the throat. Mr. Faija was the son of G. Faija, the celebrated artist and miniature painter to the Queen. He was born at Alfred-place, Bedford-square, W.C., in 1844, and educated at University College School. He was articled to the firm of Westwood, Baillie, Campbell, and Co., shipbuilders, of the Isle of Dogs, E., but the firm failed before he had completed his articles. He then went North, and, for a young man, occupied important positions—first with Messrs. Hopper, of Hull, and afterwards with a firm of shipbuilders on the Tyne. After a brief partnership with a firm of engineers at Stoke-on-Trent, he came to London about 1870, and started practice as an engineer in John-street, Bedford-row. On obtaining a commission to design and erect some cement works, the rough-and-ready methods then in vogue impressed him with the vast field for improvement in that branch of industry both from an engineering and scientific point of view; from that time he made a speciality of cement works, and thus commenced his career as an expert in all matters relating to cement and cement-making materials. He has since designed and erected works for the production of cement in various parts of England and abroad, including Brazil and the United States, and has also received applications requesting him to personally undertake work in South America and other places abroad, which his professional engagements in England prevented him from accepting. About 1880 he removed to 4, Great Queen-street, Westminster, and there established a cement testing room and chemical laboratory, where cement and cement-producing materials were examined and reported upon; the steady growth of this branch of his practice was an indication of how much his opinion was valued, and in 1888 he found it necessary to remove to larger premises. Mr. Faija was a member of the principal engineering and learned societies—viz., the Institution of Civil Engineers, Institution of Mechanical Engineers (1869-1889), British Association, Royal Institute of British Architects (honorary associate), Society of Arts, and Society of Engineers, of which latter body he was vice-president at the time of his death, and but for his untimely removal would have succeeded to the chair in due course. He at various times contributed papers to all the above societies on the subject of which he had made a special study, and was awarded premiums by the Society of Engineers for papers read before that body in 1888 and 1889. The latter papers were prepared with the object of combating the "magnesia" scare which occurred at that time, owing to the Aberdeen failures, and conclusively proved that the supposed destructive effect of sea water on a properly manipulated cement concrete was a scare, and nothing more. In 1881 he wrote a treatise, entitled "Portland Cement for Users," which has since run through more than one edition, and is now included in Weale's Series of Scientific Handbooks, and he has been a frequent contributor to the leading professional papers. The work of his office and laboratory has for some time past been carried out by Mr. Butler, who for many years has worked with Mr. Faija as his chief assistant, and who, by his express desire, will continue to carry on the business for the benefit of the family.

The death is announced of Mr. Arthur Rotch, a well-known architect of Boston, Mass., who succumbed to pleurisy a fortnight since at the age of 44 years. Eleven years ago he provided, with his brothers and sisters, as a memorial of his father, the Rotch Travelling Studentship, by which American students are enabled to study and travel in Europe during a period of two years. After graduating at Harvard College with the class of '71, he studied architecture for two years at the Massachusetts Institute of Technology, and then went to Paris, and enrolled himself as a student at the Ecole des Beaux-Arts. Returning to Boston in the autumn of 1880, he disappointed his friends—who half-expected that, having ample means, he would lead the life of a mere dilettante—by forming a partnership with George T. Tilden, and entering actively on the practice of his profession. The practice of the firm has been confined mainly to dwelling-houses, of which many costly ones have been erected in Boston, Bar Harbour, Washington, and other places; but they have also built the Memorial Church of the Holy Spirit, at Mattapan, Mass.; the Church of the Messiah and Church of the Ascension, at Boston; the Art Museum for Wellesley College, and the Rindge Manual Training School at Cambridge, Mass. A director of the American Institute of Architects, Mr. Rotch was also one of the trustees of the Boston Museum of Fine Arts, and was, toward the close of the work, supervising architect of the Suffolk County Court House at Boston. The Chateau de Chenonceaux was restored under his direct and personal supervision. Last year he organised, and had thus far maintained at his own expense, a department of architecture in Harvard University, and he also paid for the furniture and fittings of the architectural library at the Massachusetts Institute of Technology, which is a model of its class.

Two new reservoirs have just been constructed at the waterworks at Wellingborough—one holding 220,000 gallons and the other 160,000—making the total storage capacity 700,000 gallons. A new 10in. service main has also been laid to supply the continually-growing population of the town.

A new organ, erected at a cost of £1,000, has just been placed in the south transept of All Saints' Church, Falmouth. The instrument has been constructed by Messrs. Hele and Co., of Plymouth, and the case is of oak; the front and west side are enriched by carving. Mr. E. Sedding, of Plymouth, was the architect.

By a fire which broke out early on Saturday morning in the Theatre Royal, Reading, the building was gutted, and the roof destroyed, only the walls being left standing. The building is supposed to have been struck by lightning. This is the second time the theatre has been burned down, the previous disaster having occurred on Sunday, the 31st July, 1870.

COMPETITIONS.

Cairo.—An international competition for a national museum of antiquities at Cairo is now open to the architects of the world, and the Egyptian Government have issued the conditions, which state that the plans are to be sent in on March 1st, 1895, to the office of works, Cairo. A premium of £600 (Egyptian) will be paid to the author of the best design, and £400 will be divided among the authors of the four next best designs. The site for the new building is surrounded on all sides by a garden in which certain massive monuments, little affected by the weather, will be exhibited. Various accessory buildings, such as a dwelling-house for the director, general workshops, and *dépôts de matérial*, will be ultimately erected. Various galleries and laboratories, a library, and administration offices are, in the first instance, to be provided, and are to be so planned as to be easily capable of enlargement as the collections increase. The question of lighting these galleries is one which will require special care, as the glare where the light is so bright as in Cairo, from the top lights used in this country, would be detrimental to the effect of an exhibition. About three-fifths of the galleries are to be on the ground floor. The construction adopted throughout is to be fireproof, and the numismatic gallery, as well as that for jewels, are to be protected by metal grilles. The fine dust, with which the air is often laden in the dry climate of Cairo, is to be provided against in the system of ventilation adopted, and the windows and skylights are not to be open except for cleaning purposes. The style of architecture to be adopted is left entirely to the competitors, but ample space for the exhibition of the objects forming the museum is of prime consideration. The building is to be marked by an imposing character, which will well befit a national emporium destined to hold the antique treasures of Old Egypt. The cost is limited to £120,000. The scale for the general drawings is about ⅛in., but French scales are stipulated. An exhibition of the drawings will be held for 10 days in Cairo before the awards are made by the jury to be appointed for the choice of the plans. Honourable mentions will be given to some of the designs; but all the premiated plans are to become the property of the Egyptian Government. Copies of the conditions can be seen at the Commercial Department of the Foreign Office, Whitehall, London, between the hours of 11 a.m. and 6 p.m. Copies of this programme may possibly be obtainable later on by those who wish to take part in the competition.

Victoria.—The unfortunate competition for the new cathedral of Christ Church, Victoria, B.C., seems destined to failure, and from all accounts to have so-far terminated, landing the selected architects in an unenviable predicament. The firm has dissolved the partnership hitherto existing. Mr. Keith, the junior partner, remains in possession of the contract for the cathedral, and Mr. Cecil C. Evers, the senior architect, has relieved himself entirely of the matter, which up to the present has been a losing concern. Building operations have not yet commenced, and the architect informs us that "absolutely nothing has been paid on the plans and specifications, which are in possession of the committee." "From the first this business has been a very unsatisfactory one, and the other competitors," says Mr. Evers, "can thank their stars that they were unsuccessful, as success in this case has cost us a good many dollars." Quantities for the work were prepared, but no tender has actually been accepted, so far as we can learn. The cost was estimated at £250,000. Sir Arthur Blomfield, A.R.A., as professional referee, selected the design.

Weston-super-Mare.—In the competition for the market buildings the second premium has been awarded to a design, under the motto "Cornucopia," submitted jointly by Mr. S. J. Wilde, of Weston-super-Mare, and Mr. H. Dare Bryan, of College Green, Bristol.

The business premises at the corner of St. Mary's-street and Castle-street, Shrewsbury, have just been reconstructed from designs by Mr. A. B. Deakin, of that town. Mr. W. Bowdler, also of Shrewsbury, was the builder.

The jury of the annual art exhibition at Munich have awarded the first medal to the English painter, Mr. Henry Scott Tuke. Medals of the second class have likewise been awarded to Mr. W. Fusse for painting, and to Mr. Alexander Koch, of London, for architecture.

Engineering Notes.

St. Helen's, Lancs.—Considerable activity is now being displayed on the site of the St. Helen's station for the Liverpool, St. Helen's, and South Lancashire Railway. The large tract of land bounded by Corporation-street, Frederick-street, Standish-street, and Birchley-street has been fenced in, and the levels taken. For the present a temporary wooden platform 450ft. long will be constructed, and in a very short time a single line will be open from St. Helen's to Lowton for mineral traffic. Little remains to be done to bring this about except throwing girders over a portion of the viaduct which abuts on the Hardshaw Fields, bridging Standish-street, which is being lowered, and levelling up the ground. Girders for the single line have already been placed in position on most of the route. The section between St. Helen's and Fazakerley, by which a junction will be made with the Cheshire Lines Railway, and a new route opened to Liverpool and Southport, will be proceeded with as soon as the first section (single line) has been opened.

CHIPS.

The Great Western Railway Company have decided to begin the construction of a line connecting the Severn Tunnel to Avonmouth Dock at Bristol.

The Devon and Somerset Stores in High-street, Exeter, suddenly collapsed on Wednesday night. An adjoining building was being rebuilt, and it is supposed that the supports given to the neighbouring premises were inadequate.

On Thursday in last week, at Messrs. Mowat's saw-mills, Broomloan-road, Govan, a two-story building and a one-story erection containing a store of valuable mahogany were burned.

New offices and printing premises are being built at Winchester for the proprietors of the *Hampshire Chronicle*. The premises, which extend from High-street to St. Clement's-street, are being built from designs by the present mayor of the city, Mr. T. Stopher, and the contractor is Mr. Shearman.

At Birkenhead, on Saturday, two new branch corporation libraries and reading rooms were opened, one at the north and the other at the south end of the borough.

The will of Mr. Alfred Williams, of 70, Bankside, Southwark, engineer, who died on the 20th ult., at 371, Coldharbour-lane, Brixton, was proved on the 15th inst., the value of the personal estate exceeding £17,000.

The first portion of the waterworks for Frodsham has just been completed. The contract for well-boring has been carried out by Messrs. E. Timmins and Sons, of Runcorn, at a cost of £2,750.

Mr. Edgar Teasdel, aged 17, eldest son of Mr. J. E. Teasdel, architect, Queen-street, Great Yarmouth, was accidentally drowned while bathing at Gorleston, last week.

The peal of bells in the tower of Sheriffhales Church, Staffordshire, has been raised from five to six. The new treble has been cast, and the old bells have been rehung and refitted by Messrs. Barwell, of Birmingham.

Among the Bills which received the Royal Assent on Saturday were the London Streets and Buildings, the London County Council (General Powers), the Housing of the Working Classes (Borrowing Powers) Acts, and the London, Walthamstow, and Epping Forest Railway Act.

The construction of works at Horfield, near Bristol, to deal with the sewage of the Ashley Down part of the urban district, and a rural portion which comprises the barracks, has been commenced, and already satisfactory progress has been made. It is undertaken by a joint committee representing the local board and the Barton Regis Rural Sanitary Authority, the contract being let to Messrs. Lloyd and Powell, a local firm. The operations will extend over nine months, and the loan sanctioned by the Local Government Board is for nearly £12,000. The system adopted is known as the International.

The programme for the forthcoming session of the Birmingham Municipal School of Art, which opens on Monday week, September 10, has just been published. M. W. H. Bidlake, M.A., A.R.I B.A., the special lecturer on architectural history and design in building, will in future teach at the school on Thursday evening, as well as on Wednesday; and Mr. William Naughtin has accepted the teachership of certain technical processes connected with the special course for house-painters and decorators. Messrs. Docker Brothers have offered prizes of the total value of £20 to students attending this course.

Correspondence.

ASSISTANT SURVEYORS, WAR OFFICE.

To the Editor of the Building News.

Sir,—If the correspondence on this subject has not already trespassed on your space, perhaps you will include this letter, as I should like to add my quota to the discussion, with whatever authority may be attached to the opinion of a commissioned officer.

I am interested in the matter because, previous to entering the service, I completed architectural articles, and am yet sufficiently related to the profession to feel myself one of the brotherhood. From the one side I can thus share the feeling of soreness with which the members of the R.E.C.S. regard the indignity and slight of their equivocal status; and from the other I can see how demarcating and real it is. Officially, they are treated by military officers with respect; privately, with scarcely so much as is accorded to a non-commissioned officer of the rank and file. It is rather galling to a gentleman to find himself snubbed, with every possible kindness, by persons of whom he is at least the social equal, and invariably the intellectual superior. Naturally the public, knowing nothing of him, treat him in the same fashion. I have known a first-class surveyor, a man of high attainments, asked if he didn't play billiards with the sergeants! You can imagine the comfort of this status at a foreign station, where the circle of gentry is three-quarter military.

Of anomalies that occur in the department in its present shape, I may instance one. We have a division, say, in which the division officer (who is commanding officer) is a captain, and in which the staff consists of a subaltern R.E., a surveyor, and some civil clerks, or foremen of works. The captain goes on leave, and instead of the surveyor, by whom the division is really administered, being appointed D.O., that office becomes one of the "Balbus's" "ornamental heads," by allocation to the subaltern R.E., who is probably as qualified to perform the work of it as his pet poodle is to discuss the artistic merits of waxworks! And this where there can be no question of military discipline, and where the surveyor is said to have the relative rank of captain!

The social question is largely the grievance, but then it is as serious as a dozen. The remedy is not for me to suggest; but if our army pay officers (who are only clerks) and our commissariat officers (who are only shopkeepers) are given non-combatant commissions, I do not see why men who, after all, follow perhaps the most ancient of all professions, should not be given them also.—I am, &c.,

A Commissioned Officer.

Sir,—As "Balbus" has not forwarded his supplement, I hope you will allow me to criticise some of his statements. He advocates the perpetuation of a misrepresentation to the public—that the officers of the Royal Engineers act as architects for War Department buildings—and accuses others of revenge when they attempt to disclose a serious waste of public funds. *Honi soit qui mal y pense.* It is not revenge which actuates, but a *sæva indignatio* at the monstrous imposture which continues to exist, and a desire to run a Works Department on a commercial basis, rather than on one where frequently the combined salaries of the staff amount to over 33 per cent. of the work done. There is no attempt to pull down an existing edifice, but to drag down the false idols, and rid an overburdened department of its drones, or, rather, as one of its military officers frankly admitted, its professional impostors. This cannot be effected except through the powerful agency of the public Press, which can not be burked.

The dreams of the J. G. F.'s salary exist in the imagination of "Balbus." Were the R.E.'s dispensed with, the surveyors could run the department more efficiently without increased salaries. There is no necessity for new taskmasters; the tax-paying public, when changes are advocated, likes to hear of economy, and not of gilded figure-heads, civilians or otherwise. The routine work and buildings up to a certain cost should be carried out by the permanent staff, and larger schemes submitted to public competition. A large sum has been kept back from the profession when we consider that £4,000,000 was voted for barrack reconstruction. Why do architects allow this?

Mr. Ingress Bell should not be designated as a *surveyor*, with a retaining fee of £750 per annum, when he does the work of an architect. It is not creditable to the profession that one of its illustrious members should be called by any other name than that of architect in order to pander to an iniquitous system, nor is it right for a Government department to allow one of its servants to interfere with the interests of private practitioners. Members of the department have been reproved for so doing; but this gentleman enjoys immunity in this respect.

Mr. Tynedale, sanitary engineer, is likewise called a surveyor. Why these *misnomers*, except to hide the incapacity of those who get the credit of the work these gentlemen do?

Tom Pinches may exist in Great George-street or Bloomsbury; but the Pecksniffs there have the merit of hunting up the work, which the R.E.'s have not, their object being rather to hunt it away by the policy of "how not to do it." Two wrongs do not make one right, and the British public would not knowingly tolerate such a scandal.

"Balbus" asks: "Show me any public department without its ornamental head?" He has not far to go—the Army Medical Department. He insinuates that the profession cannot provide men sufficiently dignified to act as heads. It's an ill bird that fouls its own nest, and certainly a very dirty microbe!

He has a diagram showing the life-history of each man;—then, he has more than actuary can give. He says retirements will average three or four per annum. Can he explain why there has been only one promotion since October, 1892, and why there will not be any more till 1895, although the numbers of the first and second classes have been reduced by two and five respectively? The first class can only be considered as seven in number, as Messrs. Ingress Bell and Tyndale figure in it. However he may theorise, surveyors cannot be worse treated, socially and legally, than the architects of the German army, who at least get the credit for the work they do.

If surveyors do not make strenuous efforts they will find themselves a vanishing quantity, and eventually stranded and deprived of their legal rights. Their only hope lies in continually placing before the public the real state of affairs. They have an excellent opportunity, as the officers of Royal Engineers are not efficient in a military sense, through the very fact of vegetating at civil work and neglecting their military duties, and the military authorities are beginning to appreciate this. It is avowedly the intention of the R.E.'s to replace surveyors with quartermasters—another misnomer. It seems strange that the officers of a scientific corps, highly trained, liberally educated gentlemen, should look to their N.C.O.'s to prop them up;—it redounds to their credit! They remind one of that Rabelaisian crew, which gained its livelihood by being pummelled.

I see, in your last issue, an extract from *Indian Engineering*, to the effect that the assistant engineers are getting into disrepute, as they are being recruited from the sailor and jockey class. The R.E.'s reign supreme there, and this is one of their old tricks conducive to the figurehead system. Whatever department they touch withers; public waste concerns them not where their own selfish interests are at stake.

I certainly wish to deter gentlemen from unconsciously offering themselves up to this human Moloch, when powerful bodies like the Institutes of "British Architects" and "Civil Engineers" continue to allow the public to be thus systematically blinded.—I am, &c.,

One Who Was In It.

HANT-ROAD BOARD SCHOOLS, HARTLEPOOL.

Sir,—My attention has been called to an error in the amount of tender of Mr. Watts, which should be £4,344 instead of £4,280, as stated. There was a deduction of £60, which, unfortunately, I have taken off twice.

Can you kindly correct this, to satisfy Mr. Watts, who has just grounds for complaint?

P.S.—I have written Mr. Watts, admitting my mistake.

Apologising for the trouble given—I am, &c.,

J. Garry, Architect.

Church-street, West Hartlepool, Aug. 28.

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The organ in the north transept of Bath Abbey has been taken down, and will be replaced by a new one, now being built by Messrs. Norman Brothers and Beard, of Norwich.

Intercommunication.

QUESTIONS.

[11202.]—**Chapel Ceiling.**—Will some of your readers kindly inform me what kind and shape of ceiling is most suitable for a chapel, and which would give the best acoustic properties?—W. S.

[11203.]—"**C.E.**"—I have a very good general knowledge of the building trade in all its branches, am a fair draughtsman, building surveyor and valuer, and land surveyor. I am anxious to know what course to pursue to entitle me to use C.E. after my name. Is it absolutely necessary that I should be articled to a civil engineer? or, if not, can I qualify by coaching by correspondence, and who would be entitled to give me a certificate, and where obtainable? I should be obliged for information as to what course to pursue to enable me to qualify for simple certificate or diploma as C.E., and what for the higher certificates or degrees.—Engineer.

[11204.]—**Weight-Bearing Capabilities of Earth.**—Can any reader give the approximate weight that firm peaty soil would bear? I may say that the gravel bed is about 6ft. from the surface of ground, and the peaty soil above is firm and dry. Is there any simple method of ascertaining how much weight the ground will bear per foot?—One in Doubt.

[11205.]—**The "Hermite" System of Treating Sewage.**—Will any reader of the Building News acquainted with sanitary questions give any information about this process and its effects on sewage? I have not been able to obtain any definite information about the system.—Sanitas.

[11206.]—**Churches in Shropshire.**—I should like to know if there are any interesting examples of old churches in Shropshire, and where they are to be found? Any particulars of them would be thankfully received.—S. S. S.

[11207.]—**Oak Sills.**—Are oak sills more durable than good yellow deal? If they are, why are the latter so much used in house building? Decay begins generally at the bottom just where the sill is placed on the stone sill, and there is more chance of the rain beating underneath. I should like to know if there is any means of checking it?—Builder.

[11208.]—**What is the Best-Shaped Room for Sound.**—The books on acoustics I have read leave one with rather confused ideas as to the best form of a hall for lectures, concerts, or entertainments. Principles are stated which cannot be followed in building. I shall be pleased if a correspondent who has erected rooms of this description will give his experience, and say what is the best proportion and shape of room in section.—Acoustics.

REPLIES.

[11200.]—**Hollow Walls.**—I have adopted a form of hollow wall lately introduced by the New Stone Company, which I consider is good in construction, impervious to damp, and not costly. It consists of an L-shaped block made of concrete, with a fine stone face, and it can be bonded with any thickness of wall, and leaving an air space in the centre.—J. T. Walford.

[11201.]—**Lightning Conductor.**—The fork ought to be higher at least 18in.; but this ought to depend on the size of the house to be protected, and the nearness of rod to ironwork. Mr. Preece stated, in a paper before the British Association, that a lightning-rod protects a conic space whose height is the length of the rod, whose base is a circle having its radius equal to the height of rod; but these and other rules are arbitrary, unreliable, and are repeatedly upset in practice. Effective protection depends on efficiency of earth connection, and other circumstances which would take pages to mention. All metal on the building to be connected, and to the earth, independently of the rod, is a good rule.—G. H. G.

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CHIPS.

A special service was held at Llanfairfechan Church on Sunday, dedicatory of the chancel gates and organ screen erected by Colonel and Mrs. Henry Platt, of Gorddinog, as a memorial to their son, Mr. Heyling Platt, who was drowned two years ago at Cashmere.

At Douglas, Isle of Man, on Friday, under instructions from the Douglas Town Commissioners, a quantity of land cleared of the old and insanitary property that formerly stood upon it was put up to auction. Twenty-six plots were sold, and realised £19,900, a considerably larger amount than was fixed as the reserve. Six of the plots sold were purchased for the erection of a new church. Only three licensed houses will be erected where eleven public-houses recently existed.

An infants' school is approaching completion at the corner of Station-street and Stoney Stanton-road, Foleshill, for the accommodation of children from the Paradise district. It will accommodate 175 scholars, and occupies an area of 56ft. square. The contractor is Mr. T. Wright, of Paradise, Foleshill, and the architects are Messrs. G. and I. Steane, of Coventry. The building will probably cost about £1,300.

The parish church of Plaxtol has recently undergone thorough renovation, a work carried out by Messrs. Allcorn and Sons, of Shipbourne. The additions consist of a chancel, which forms the Dalison Memorial, choir and choir vestry, north and south transepts, memorial east window, a stone reredos, brass eagle lectern, and special gifts of altar cloths, service cloths, &c. The Archbishop officiated at the reopening festival last week.

Legal.

NUISANCE BY REPAIRING, &c.

THERE are numerous nuisances and many annoyances in our daily life for which the law can and does afford no remedy. One of these is the repairing or rebuilding of adjoining premises. Such things are, and must be, constantly occurring; and if there was a good ground for any action for damages or an injunction on each occasion, litigation would be endless, and repairs and rebuilding would be rendered much more costly. A bold attempt to get such an injunction was made by the plaintiffs in a recent case against the Aërated Bread Company (8th August). It appeared that the plaintiffs were solicitors, carrying on business at 73 and 75, Finsbury-pavement, where they occupied the upper floors. The defendant company had lately taken the lower portion of No. 73, and were now engaged in making such alterations as were needed to fit the premises for the purposes of their business. These consisted mainly in pulling down an old matchboard ceiling just under the plaintiff's offices, and putting up one made of slabs of plaster, and also in erecting various partitions, staircases, and the like. The contract for the works was to begin 11th July, and complete 20th August. The plaintiffs had complained of the noise, &c., interfering with their business as solicitors, as no doubt it did, and they now asked for an injunction, which would practically compel the stoppage of the works between the hours of 10 and 6, during which they occupied their offices.

Mr. Justice Stirling, of course, admitted that the annoyance was great, but he said that the evidence had not proved that there was any unnecessary or unavoidable noise or disturbance. He laid down the general rule applicable to such cases as clearly being that occurrences of nuisances, if temporary and occasional only, are not grounds for the interference of the Court by injunction, except in extreme cases. As he pointed out, the ordinary user of his land and buildings by an adjoining owner may often be a very real nuisance and annoyance of a temporary and pressing kind; but if on every such occasion there was a right to an injunction as for a legal nuisance, the business of life could not be carried on at all. Every time a neighbouring house is pulled down, or even repaired, there must be noise and annoyance, and dust and disturbance; but, if reasonable skill and care are used in the work of demolition or of reparation, there can be no legal responsibility on the part of the owner. In the present case the defendant company were doing nothing that was unlawful; they were simply altering their premises, and so the action was dismissed.

Fred. Wetherfield, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Vici, B'head.—Apprentice.—The offence named would not in itself be sufficient justification for suspension such as is mentioned, and the master could not compel the apprentice to make up the time after the indentures have expired, without it is expressly provided for, nor could the employers legally refuse to pay the apprentice for the time lost.

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At a special meeting of the works committee of the town council of Tunbridge Wells, on Friday, Mr. H. Stowell, from the surveyor's office at Salford, was appointed assistant borough surveyor, out of 130 applicants.

An application of the Bootle Corporation for sanction to a loan of £7,000, for sanitary and other purposes, was heard at the Bootle Town Hall on Tuesday, by Mr. Thomas Codrington. Mr. Farmer, the town-clerk, and Mr. Crowther, surveyor, represented the case for the corporation.

The new Roman Catholic church of St. John the Baptist, which the Duke of Norfolk is erecting on the site of the old city prison at the top of St. Giles's Hill, Norwich, was consecrated on Wednesday last. The church was illustrated by a plan and interior perspective in the Building News for April 25, 1884, by an elevation of west front and cross-section in our issue of Jan. 21, 1887, and by a longitudinal section of the nave in that for March 30, 1888. Mr. George Gilbert Scott, M.A., is the architect, and Messrs. Kett, of Cambridge, are the builders The style is Early Decorated. At present only the nave and aisles, 150ft. by 60ft., are built.

LEGAL INTELLIGENCE.

In re C. Payne and Sons.—Under the failure of these debtors, who traded as builders and contractors at Barrington-road, Crouch End, accounts have been furnished showing total liabilities £8,944, of which £7,201 are stated to be fully secured, and an estimated surplus in assets of £505. The debtors have been chiefly engaged as speculative builders in the erection of houses, and they attribute their failure to pressure of creditors and inability to realise their equities of redemption. The estate is being wound up in bankruptcy.

In re F. W. Scott.—Francis William Scott, against whom a receiving order has been made, states that he commenced business in 1885 as a speculative builder at West Ham, Essex, with a capital of £400. Since then he has built 62 houses in the neighbourhood of West Ham and Leyton, being financed as the buildings progressed. The statement of affairs discloses gross liabilities £6,011, of which £749 only are unsecured, the assets, returned at £1,450, consisting as to £1,434 of estimated surplus from securities held by creditors fully secured. The debtor attributes his failure to depreciation in the value of his property, and to excessive interest on borrowed money. Creditors treated as "fully secured" (£5,246) are the mortgagees of the property built by the debtor. The Assistant Official Receiver says that it is improbable that the surplus shown in the statement of affairs will be realised. An adjudication of bankruptcy has been made, and a trustee appointed.

CHIPS.

The Hon. Mrs. Whittuck has offered to rebuild one of the aisles of the nave of Dewsbury parish church at her own cost. This gift will amount to nearly £1,600.

An altar of carved oak, executed by Mr. Gibson, of Edinburgh, from the design of Mr. Basil Champneys, has been placed in the Roman Catholic Church at North Berwick. The front of the altar is divided into five separate panels representing the Annunciation, the Nativity, and emblems of the Holy Eucharist. The sanctuary roof and walls have also been decorated.

The Roman Catholic Church, Inverness, which has just been greatly enlarged and improved, was reopened on Friday by the Right Rev. Bishop Macdonald. The nave of the old church has been considerably lengthened, and new sanctuary and sacristy have been added. A high altar in Caen stone has been erected.

The tramway system at Aberdeen has just been extended from Bloomfield to Bridge of Dee, a distance of half a mile. Messrs. McAdam were the contractors, and the extension was opened on Friday. The lines now extend from the Bridge of Dee to the Bridge of Don, *viâ* Holburn-street, Union-street, and King-street, a distance of four miles through the heart of the city.

The town council of Falmouth having made application to the Local Government Board to borrow £1,800 for the erection of municipal buildings, an inquiry into the matter was held at the Town Hall on Tuesday week by Colonel J. Ord Hasted, R.E. Mr. W. H. Tresidder, joint-architect with Mr. F. G. Bellamy, explained the plans. The total cost of the building would be, he said, about £6,000, and the cost of the municipal block would be a third of that sum. The foundation had been carried down to solid rock. It was mentioned that towards the cost the late Mr. Ferris had left £1,900, and Mr. J. Passmore Edwards had added to this a gift of £2,000. Considerable opposition was offered to the proposal.

Complaints are being made by competitors who are preparing designs to be sent in to the Bristol city council, for laying out the open space above St. Augustine's Bridge—that it transpires that the council have not made up their minds as to the amount they are prepared to expend, and that consequently those preparing plans are entirely in the dark as to whether the outlay will be £500 or £10,000.

An inquiry was held at Taunton, on Saturday, by Colonel Hasted, R E., one of the inspectors of the Local Government Board, in reference to an application from the town council for permission to borrow £5,900, for the purpose of purchasing and laying out Vivary Park and adjacent land as a public park for the borough. The town clerk mentioned that the town already possessed two recreation grounds for children and young people, and it was now desired to secure a park for visitors, invalids, and others. The borough surveyor, Mr. J. H. Smith, produced the plans of the grounds, and gave an explanation of the way in which it was proposed to lay them out.

Hope-street chapel, Liverpool, a Gothic structure built in 1849, was reopened on Sunday after improvement, the provision of new organ and vestibule, and redecoration, the latter work being carried out by Messrs. Bradley, Pass, and Co., of Liverpool.

WATER SUPPLY AND SANITARY MATTERS.

Lucknow Waterworks.—The opening of the new waterworks at Lucknow recently took place. The works are to supply 2,000,000 gallons of filtered water, pumped from the river Goomti, for a population of 200,000, at an estimated requirement of 10 gallons per head per day. The total cost in round figures has been 15 lakhs of rupees. The cantonments of Lucknow have taken advantage of the municipal undertaking, and have added no less than 23 miles of pipes, through which water is distributed all over the cantonments. The total cost of both projects has been over 30 lakhs of rupees, and the whole has been carried out by a firm of engineers and contractors, Messrs. Martin and Co., formerly of Birmingham, and completed in eighteen months.

Morley.—The formal opening of the new waterworks constructed by the corporation took place on Saturday at Queen's Park, Morley. Mr. R. B. Hopkins, town clerk, stated that the waterworks comprised a storage reservoir, called the Withens Clough Reservoir, at Withens, about 3½ miles from Mytholmroyd; two catch-water conduits, and an iron-pipe aqueduct, through which the water is conveyed from the reservoir to Morley. The supplies of water are obtained from gathering-grounds 1,200 acres in extent, and the minimum dry weather quantity is about 250,000 gallons per day of soft and pure water. The storage reservoir and works occupy an area of 80 acres, the water area of the reservoir, when full, being 65 acres. The capacity of the reservoir is 330 million gallons, and the depth of water above the drawing-off culvert is 60ft. The greatest depth of water in the reservoir is 72ft., and the centre height of the embankment above the stream level is 85ft. The level of the overflow of reservoir is 960ft. over Ordnance datum, and the level at which the water is drawn off for supply is 900ft.; and the aqueduct which conveys the water from Withens Clough to Morley is 21 miles in length, and is a line of 15in. iron pipes throughout. The sources of supply were selected, and the works have been designed, by Mr. Charles Gott, C.E., of Bradford, and the contractors for the various works were as follows:—For the reservoir works, Messrs. Fotherby and Sons, Burnley; for the making and delivery of iron pipes, the Staveley Coal and Iron Company; for laying the pipes and iron girder bridges, Mr. David Barry, Ratcliffe-on-Trent, the iron girders being supplied by Messrs. John Butler and Sons, Stanningley; and the valves, hydrants, and fittings by Messrs. J. Blakeborough and Sons, Brighouse.

West Bridgford, Nottingham.—Through a rapid increase in the population of West Bridgford, a suburb of Nottingham, the local board find it necessary to extend the sewerage system, and improve the method of sewage disposal. The local board selected in open competition a scheme prepared by Mr. W. H. Radford, C.E., of Nottingham, and engaged him as engineer for the works. It is proposed to lay a 15in. iron sewer about 15ft. below the subsoil water level, to convey the sewage to the present pumping-station. A new storage tank, about 30ft. deep, will be put in. There will be two new pumps, and a duplicate engine worked from the present boilers. The present sewage farm will be drained, and improved carriers laid down. It is proposed to apply for a loan of £5,000 for these works. In addition to these works, there will be some miles of sewers in private streets, which will be paid for by the private owners.

* * *

A new gas-holder at Rochdale, 120ft. in diameter and 136ft. high, has just been completed.

The Bismarck Monument Committee of Hamburg has requested a Berlin architect to prepare a model for a monument of the ex-Chancellor, to be erected on the Bismarckstein, a hill about 300ft. high at Blankensee, on the Elbe, a few miles below Hamburg. The monument is to be a colossal, castle-like building, with a statue of Prince Bismarck on the top.

Mr. C. F. Fraser, who was until lately Commissioner of Public Works in the Government of Sir Oliver Mowatt, died at his residence in Toronto on Friday last. Mr. Fraser, who was the most brilliant orator in the Ontario Legislature, retired from the Government quite recently on account of ill-health.

The Lord Mayor of Liverpool yesterday laid the foundation-stone of the new crematorium now being erected in Priory-road, Anfield, Liverpool. The building is being erected from plans prepared by Mr. James Rhind. The builder is Mr. Forde, of Birkenhead. The Gothic style has been adopted. The crematorium buildings consist of a chapel, 41ft. by 24ft., an ante-chamber, and a cremating chamber. In the ante-chamber a small daïs or gallery will be set apart for the use of such relatives or friends as may wish to follow the remains to the last, and a columbarium is provided in a crypt under the chapel.

Our Office Table.

The 37th annual report of the Trustees of the National Portrait Gallery states that ten donations have been received during the year, of which the most important are a marble bust of the late Lord Tennyson, copied by Miss Grant from the original sculptured from life in 1857 by Woolner, which was presented in November, 1893, by the present Lord Tennyson, for whom the copy was made, and a bust by Gibson of Sir Charles L. Eastlake. Among the eight additions by purchase is an unfinished portrait of George Romney, painted by himself, which cost £441 at Christie's in May last. The acquisitions include portraits of the father of William III., of Frederick, King of Bohemia, of the fifth Earl Stanhope, of Sir Peter Lely, of Cromwell's favourite daughter, Lady Clay-Pole; of Sir Henry Spelman, the antiquary; of William Martin, the painter of "The Fall of Babylon"; of the first Lord Paget, of the first Lord Erskine, and of Lady Callcott, the wife of the R.A.—the last by Lawrence.

The expectations of the Trustees, that the new gallery, or some portion of it, would be in working order by the spring of this year, have not been realised. In explanation of the delay, Mr. Ewan Christian, the architect, wrote to H.M. Office of Works in March last, stating that the whole of the main building could be finished in about nine months, and the south-east gallery could be finished in one month, if necessary; but it would be preferable to wait a little longer for it. The sudden death of a principal assistant had caused delay in the preparation of work which could not be safely hurried. Mr. Christian considers that the time named may be safely taken as conclusive, but that a considerable period must also elapse between the reception of the portraits from Bethnal Green and other places of temporary deposit and the thorough completion of the gallery for the admission of the public. A supplement is added, signed by Mr. George Scharf, C.B., the director, in which is described a visit paid by the Trustees to the new building last June. Mr. Christian explained the details of the structure, and the Trustees were impressed with the completeness of every portion. The walls and flooring are fireproof, the lighting in the principal galleries is excellent, and wide staircases, with lifts, have been provided. The Trustees state, in conclusion, that their valued friend and colleague, Mr. W. H. Alexander, the munificent donor of this stately edifice, may be warmly congratulated on the completeness with which his noble scheme is being carried into effect.

We mentioned in our issue of the 6th ult. that among the pictures purchased for the National Gallery from the Earl of Northbrook's collection was an "Agony in the Garden," by Andrea Mantegna, a 15th-century artist of the Paduan school This work, which has been numbered 1417, and hung on the east wall of Room VIII., Lord Northbrook has now supplemented by the gift of a page of a 16th-century illuminated manuscript, evidently copied with some modifications and in lighter tones from Mantegna's painting. The reproduction is contained within an initial letter C., surrounded by angelic figures, and is 7in. wide by 8½in. in height, being only a fourth of the size of the original picture. It is numbered 1417a, and is hung behind the door in a little-known octagon apartment between Rooms XII. and XIII, with monochromes and drawings by Rubens and others.

A scheme is on foot for the creation of a new watering-place between Filey and the Brigg on the Yorkshire coast, ten miles south of Scarborough. The site is now known as the Ravine, and is near Filey railway station. The architect to the syndicate is Mr. W. G. Penty, F.R.I.B.A., of York. The land involved in the scheme is some 300 acres, with a sea frontage of two miles. The scheme comprises the construction of a sea-wall from the Ravine to the Brigg, forming a continuation of the Filey sea-wall, completed a few months ago. There will be a parade behind the wall, and the Horndale Valley, some two or three hundred yards from the Ravine, will be transformed into public gardens and a spa, there being a mineral spring of saline and chalybeate water in the vicinity. The parade and gardens are promised to be more extensive than those of Scarborough. The accessories will include a band-stand and a concert hall. The construction of a tramway from the top of the cliff to the beach is now under consideration, and the plans will show an iron pier running into the sea some 1,700ft. In laying out the estate, a portion of the land nearest the cliff will be reserved for villas and bungalows. Behind these will be the town proper, and here the streets will be about 70ft. wide, laid out in the Continental style, with lines of trees and flower plots. Fountains are to be placed at points where the streets cross each other, and at the corners will be more flowerbeds. The plans are nearly completed, and it is expected that operations will be commenced early in the spring of next year. The first work undertaken will be the construction of a sea-wall; but it is at present proposed to proceed by sections. The carrying out of the entire scheme would entail an expenditure approaching a million sterling.

A special meeting of the Taunton town council was held on Friday to consider the report of Mr. Brereton, engineer, of Westminster, as to a proposal to lower the new bridge now in course of erection over the river Tone. Mr. Brereton stated that it would obviously be an advantage if the bridge could be altered so as to allow of a more level roadway over it. On the other hand, the question of whether such lowering would interfere with the passage of floods or with the navigation interests had to be carefully considered. As regarded the possibility of altering the bridge so as to improve the gradient over it, the form of its design and the advanced state of its construction presented considerable difficulties to making any material modifications in its construction. He was strongly of opinion that it would not be desirable or prudent to lower the level of the bridge. The roadway, when completed, would have the comparatively easy gradient of 1 in 35, as against the existing inclinations of 1 in 22 and 1 in 25, and compared favourably with the following important thoroughfares:—Blackfriars Bridge, 1 in 32; Waterloo Bridge, 1 in 31; Southwark Bridge, 1 in 26; London Bridge, 1 in 27. Councillor Wickenden moved that the bridge should be lowered at least 1ft., and said it would be a cause for everlasting regret if the structure were not lowered. Mr. Alderman Spiller, who seconded the motion, considered that there was no engineering difficulty in lowering the bridge. After a long discussion, the resolution was carried, in the teeth of the engineer's report, by fifteen to five. It was afterwards agreed to inform Mr. Brereton of the council's decision, and that the contractor should be asked to give an estimate for lowering the bridge 1ft., and say what extra time he would require for carrying out the work.

A new building material, called compoboard, is being introduced in the North Western States of America. It is made of ⅛in. strips of wood, from ¾in. to 1¼in. wide, placed between two sheets of heavy strawboard and united under heavy pressure with a strong cement. The process of manufacture is peculiar. Into the machine that moulds the board are run two sheets of the strawboard from rolls, one from above and one from below a table on to which are fed from a feeding device the strips of wood. A roller running in a tank of the liquid cement rolls upon inner surface of the sheets of strawboard, and the three layers of material run together between rolls into a powerful hydraulic press; 10ft. of the board is stopped automatically for a few seconds in the press, then run out upon a table fitted with cut-off saws, where it is sawn to the desired length. It is then run upon trucks, placed in the dry kiln, and when taken out is trimmed to 48in. in width. The strength of the board compared with its weight is said to be marvellous. The ends of an 18ft. board can be brought together without breaking or warping it. No conditions can warp it. Wall-paper is put upon the board, and the finish is as fine as upon any plastered wall. The strong points claimed for the board are? It is not more expensive than first-class plastering. It forms an absolutely airtight wall. It stiffens a building much more than any coat of mortar and lath can. It is quickly put on, and produces no dampness. It is light, thus avoiding the cracking of walls and the warping of door frames. It is asserted to form a solider, cleaner, warmer, drier wall at no more expense than is involved in the old way.

The painting of ironwork has been a fertile matter for discussion among engineers. Mr. G. Wallis, at the Association of Engineers of Virginia, recommended the first coat to be red-lead ground in raw linseed oil, used within two or three weeks after mixing, and kept mixed when in use. This coat would dry in 24 to 30 hours. For black finish the next two coats should be made from a paste composed of 65 per cent. of pigment and 35 per cent. of raw oil. The pigment should consist of 65 per cent. of sulphate of lime and 30 per cent. of lampblack, to which is added 5 per cent. of red lead as a drier, the whole thinned to a proper consistency with pure boiled oil. For red or brown finish the paste to contain 75 per cent. of pigment and 25 per cent. of pure raw oil, made up as follows:—50 per cent. of sulphate of lime, 40 per cent. lime carbonate as a drier. Lead paints were not recommended for finishing coats on account of chalking, nor zinc on account of cracking.

The Administration Report on the Railways in India for the year ending May 30th last has just been presented to the Indian Government, in the form of a bulky bluebook, by Lieut.-Col. W. S. S. Bisset, C.I.E., the Director-General of Railways. During the year 489¾ miles of new line has been opened for traffic, as against 451¾ miles the previous twelve months, the total open mileage being now exactly 18,500 miles. Of the new lines, 210¼ miles were constructed on the standard gauge and 279½ on the native gauge, the total length of either width being now 10,596¼ miles standard gauge, 7,636¾ miles mètre gauge, the other 267 miles being made up of various narrower special gauges on branch lines and in native states. In addition to these lines, there are 51¼ miles of steam tramways outside municipal limits. A table shows the progress made in the opening of railways since the commencement in 1853, when a length of 20½ miles of the Great Indian Peninsular system was constructed. The three busiest periods of construction were in 1884-85, when 1,177 miles of railway were opened; 1886-87, 1,012 miles; and 1887-88, 986 miles. During last year sanction was given to the construction of 154½ miles of additional lines. The average cost per mile of railway has been 31,627 rupees. The gross earnings of the year, as compared with 1892-3, improved by 8½ million rupees, and more than eight million more passengers were carried, while there was an improvement in receipts under each of the heads of passenger earnings, other working traffic, and goods tonnage.

The emulation between congregations to provide larger and more expensive church buildings than they can pay for or maintain has become so keen in Canada that at the last meeting of the Toronto Conference of the Methodist church, a resolution was adopted expressing the opinion that additional guarantees should be provided against the unfortunate tendency that prevails for the inception of new and the enlargement of existing church enterprises. Such a moral check is needed here, as well, in all sections of the Church and among all denominations, to prevent the initiation of schemes, which result in the erection of ambitious fragments of structures, to remain a reproach to the promoters as half-finished and make-shift buildings for a generation or two.

Trade News.

WAGES MOVEMENTS.

Glasgow.—Great activity prevails in the building trade in Glasgow. Whilst many trades are quiet and even languishing, masons and stonecutters are employed to a man. It is stated, indeed, that there is work for several hundred more men than are in the district. The present rate of wages is 8¼d. per hour.

* * *

In the case of Henry Cooper, of Crouch End, Finchley, N., builder, the discharge from bankruptcy has been suspended for two years, ending June 20, 1896.

At Cleckheaton, on Saturday, the foundation-stone was laid of a chemical laboratory, to be attached to the Mechanics' Institute and Technical School.

An estimate amounting to £5,000, for the purchase of pictures added to the National Gallery, has been presented to Parliament, making, with the original £13,368, the total £18,368 for the year, for the maintenance of the gallery.

Lady Tweedmouth laid, on the 23rd inst., the foundation-stone of a new church which is being erected for the Queen-street Free Church congregation at Inverness, on the west bank of the river Ness. The church, which is being erected from designs by Mr. J. Pond Macdonald, architect, will cost about £3,500.

Marriage.

SMITH—BROWN.—August 27, at All Saints' Church, South Lynn, by the Rev. W. Leeper, Vicar, assisted by the Rev. J. W. Caldwell, Walter Smith, of Brockley, London, to Bertha Louisa, only child of Mr. W. H. Brown, Builder, London-road, King's Lynn.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Badsey.—For new board schools at Badsey. Mr. E. H. Lingen Barker, architect:—

	£	s.	d.
Dowland, W., Abergavenny...	£1,500	0	0
Espley, A., and Co., Evesham	1,445	0	0
Taylor, H., Evesham	1,381	5	0
Gardner, F. W., Evesham*...	1,280	0	0
Panter, D. Pershore	998	15	0

* Accepted.

Barnhill, Broughty Feryy, N.B.—For building nave of the proposed Church of St. Margaret. Mr. D. Carmichael, London, architect. Quantities by Mr. W. H. Elsmore, Barnes:—

	£	s.	d.
Mason:—			
Scott, J., Broughty Ferry	£1,500	0	0
Joiner:—			
Ellis and Machar, Broughty Ferry...	487	2	11½
Slater:—			
Laburn, J., and Sons, Dundee	67	17	8
Plumber:—			
Lorimer, P., Broughty Ferry	35	11	0
Plasterer:—			
Laburn, J. Dundee	29	14	6
Glazier:—			
Parquharson, R., & Sons, Dundee...	94	5	2
Painter:—			
Norwell, W., Dundee ...	50	18	8
Total	2,365	9	11½

[Architect's estimate, £2,370.]

	£	s.	d.
Heating:—			
Boyd, J., and Sons, Paisley	40	10	0

Billingborough.—For alterations at the board schools:

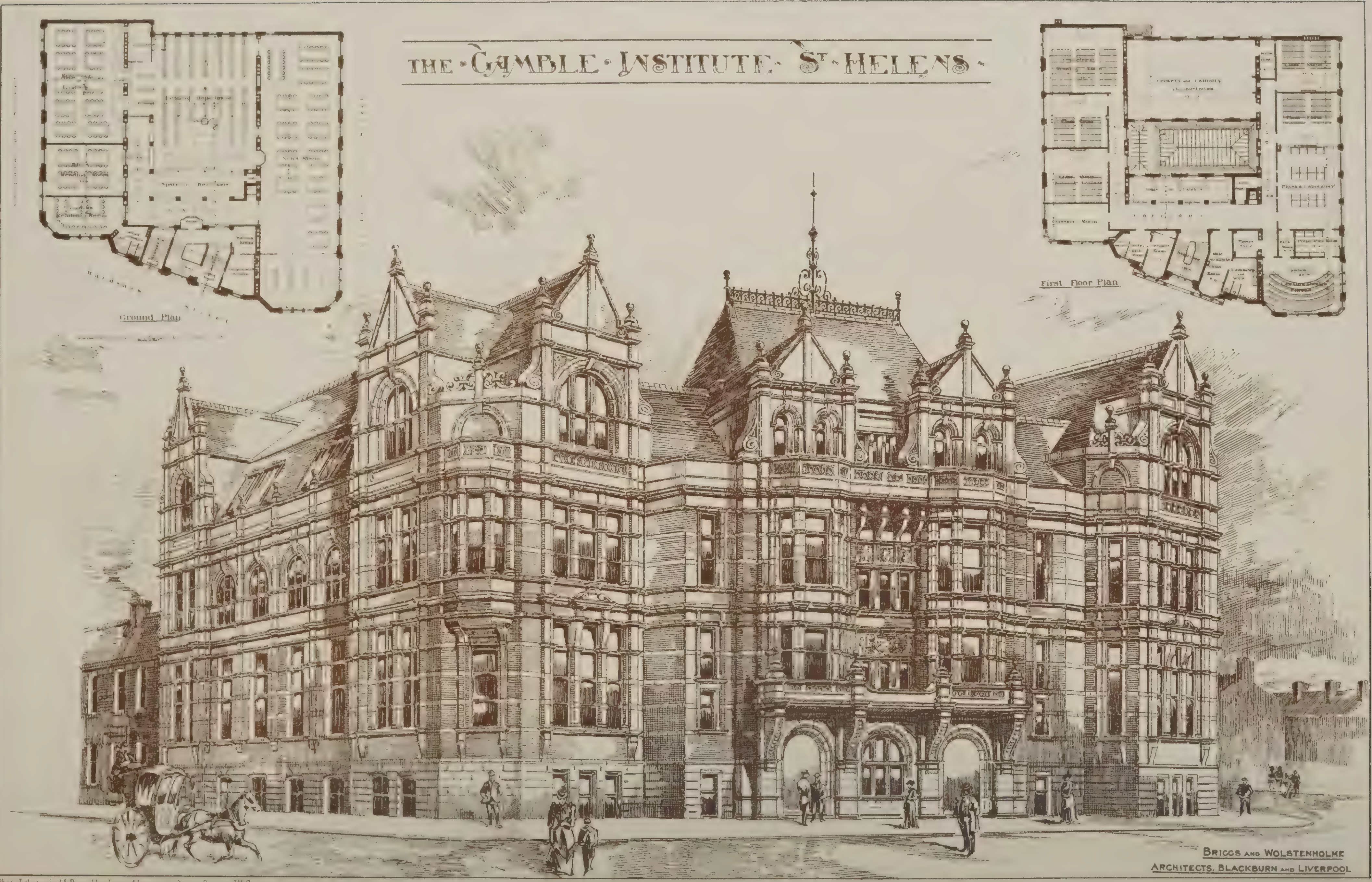
	£	s.	d.
Hotter and Glenn, Billingborough...	£490	0	10
Blood, Bourne	456	8	6
Hockley and Son, Grantham	456	0	0
Sherwin, S., Boston	439	0	0
Roberts, Stamford	430	0	0
Halliday, Stamford	397	10	0
Wadsley and Son, Horbling*	363	12	8

* Accepted.

Birmingham.—For carpentry, upholstery, and seating at the Pavilion Theatre:—
Dean, A. R., Corporation-street, Birmingham (accepted).

Birmingham.—Tor special seating of the galleries at the municipal buildings during the Duke of York's visit:—
Dean, A. R., Birmingham (accepted).

THE GAMBLE INSTITUTE, ST HELENS.



BRIGGS AND WOLSTENHOLME
ARCHITECTS, BLACKBURN AND LIVERPOOL

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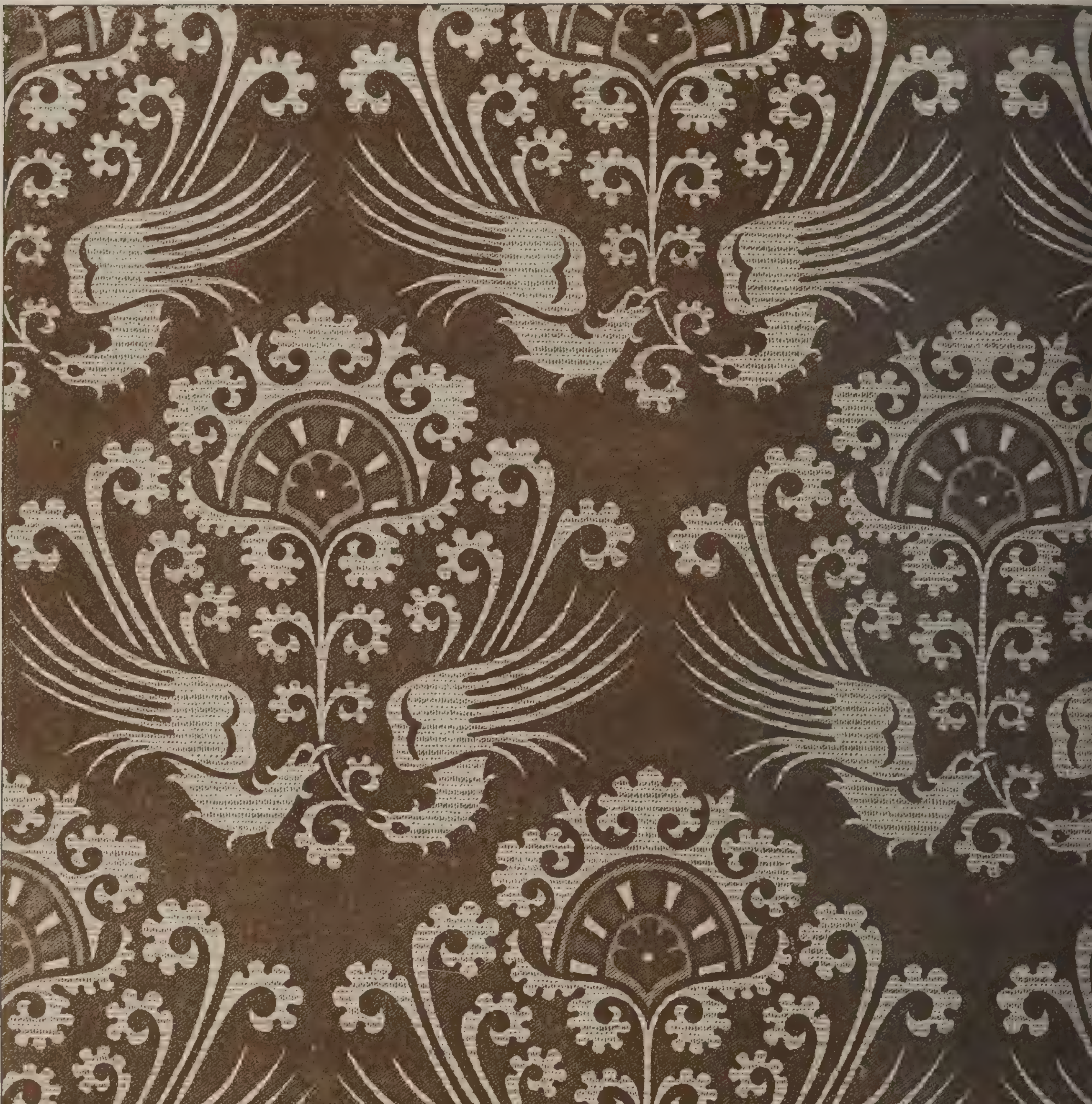
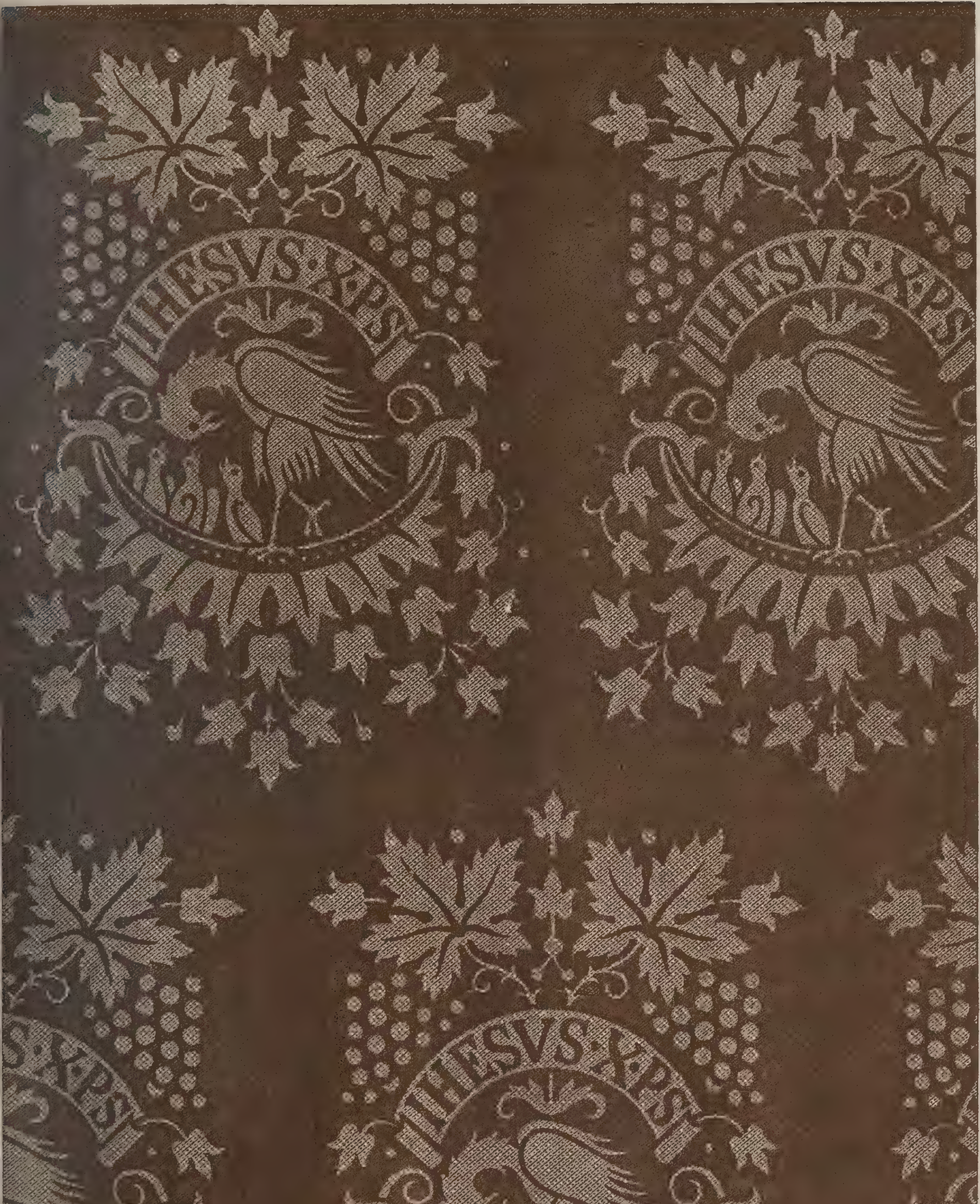


FROM·FISCHBACH'S "ORNAMENTE·DER·GEWEBE"

CHURCH · EMBROIDE

ORNAMENT·FROM



"PHOTO-TINT," by James Akerman, 6 Queen Square, London, W.C.

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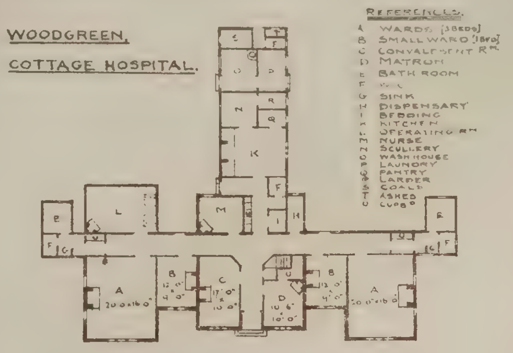
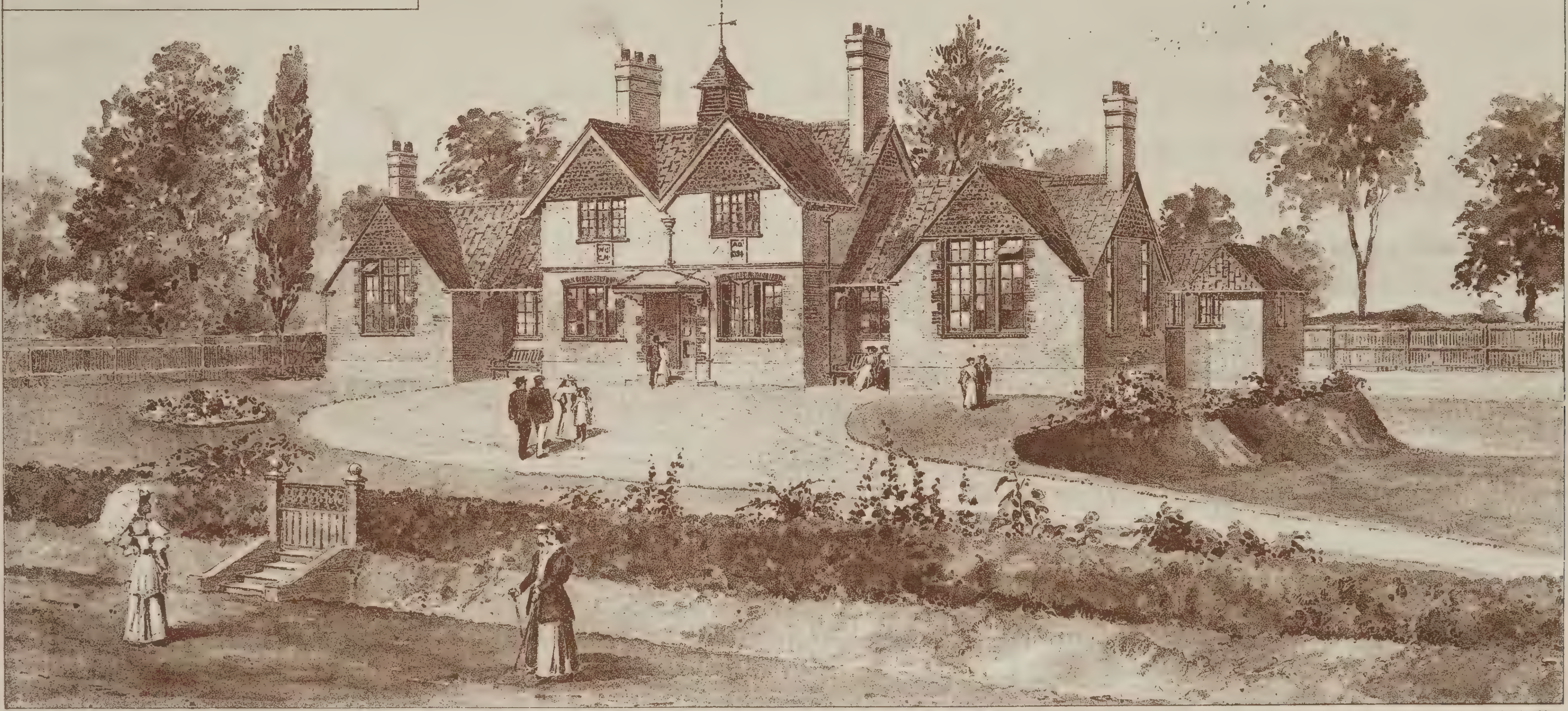
D·DUTCH·PICTURE·



THE PASSMORE EDWARDS COTTAGE HOSPITAL,
WOOD GREEN.

CHAS. BELL, F.R.I.B.A., ARCHT.



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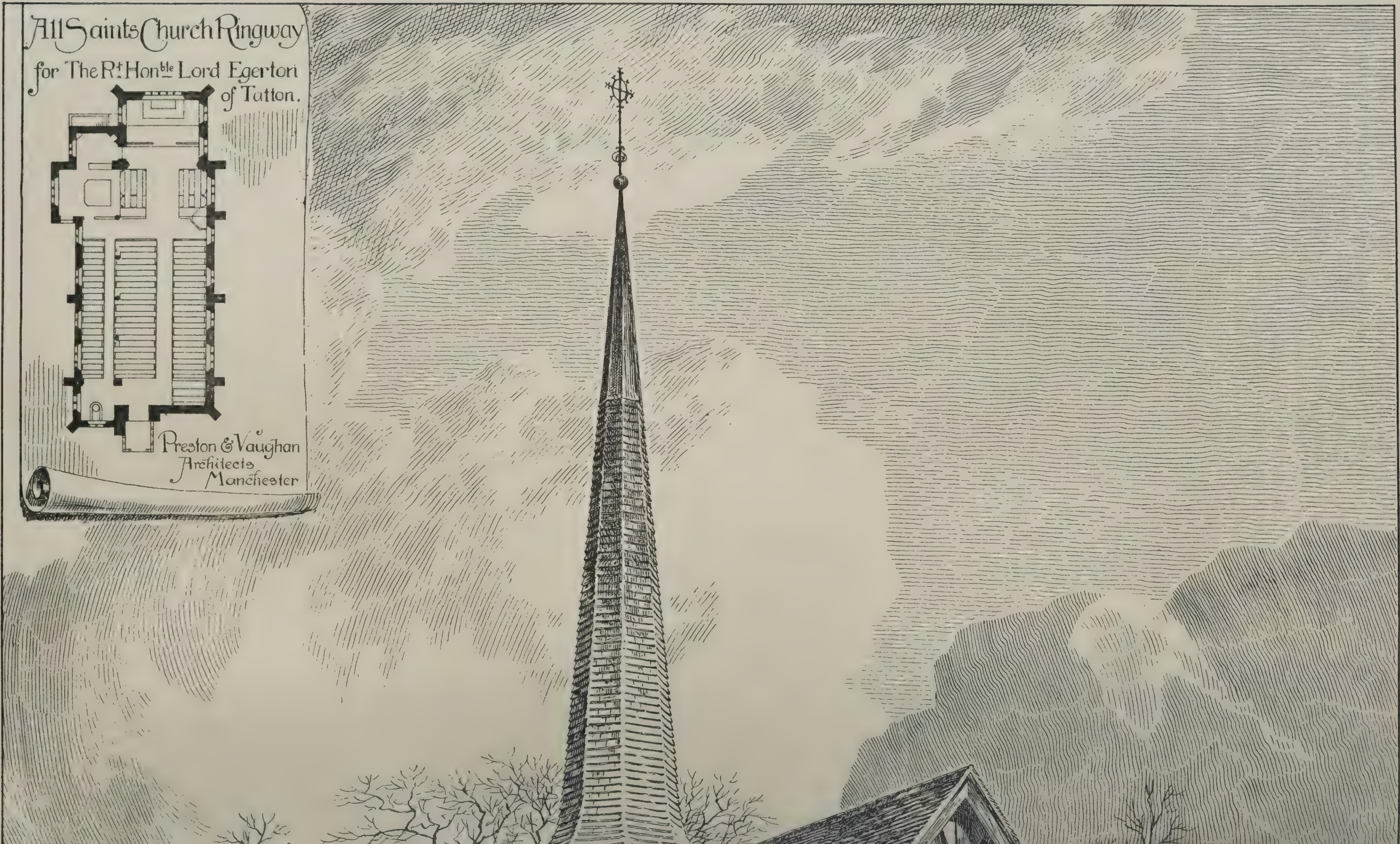
All Saints Church Ringway
for The Rt Honble Lord Egerton
of Tatton.
Preston & Vaughan
Architects
Manchester

J. Langham. del.

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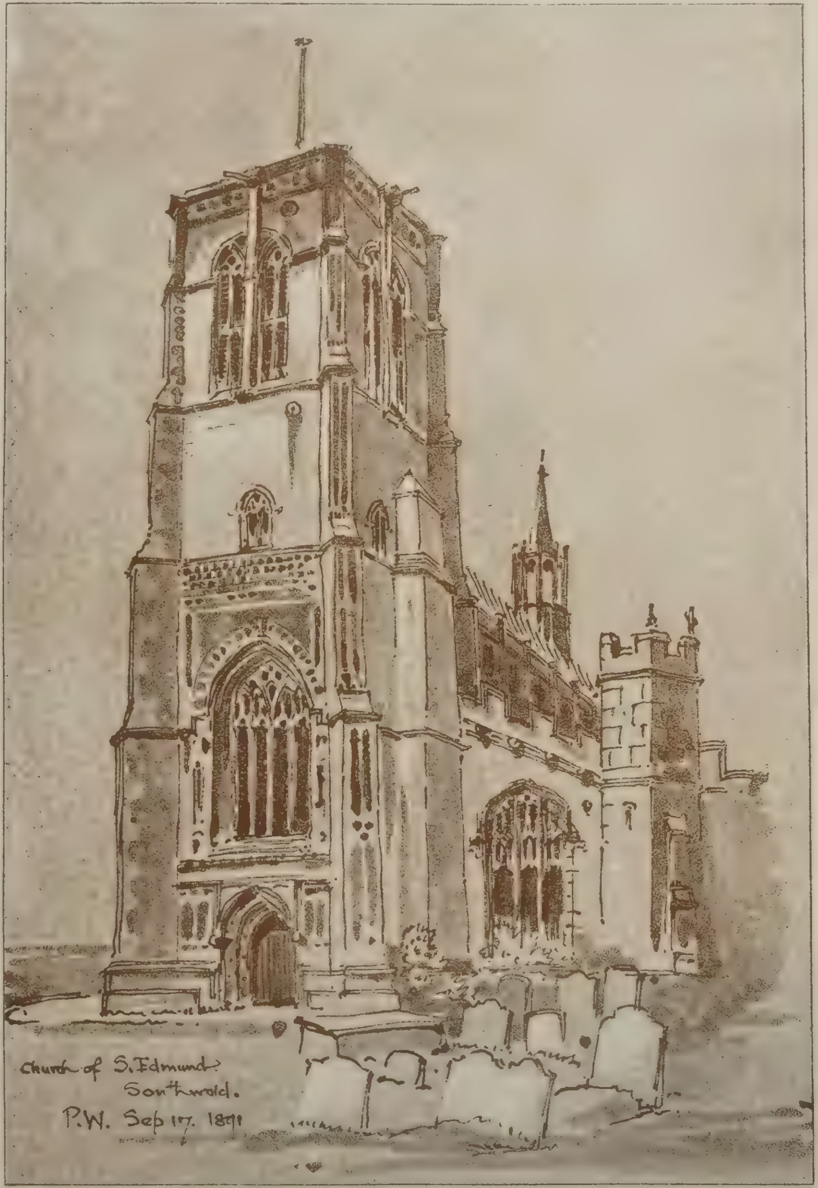
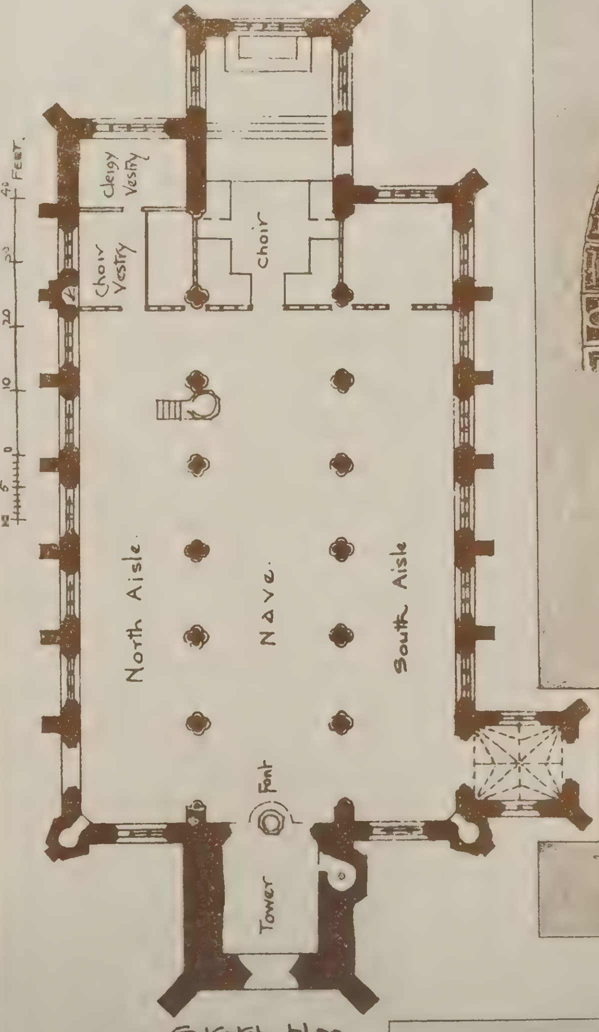
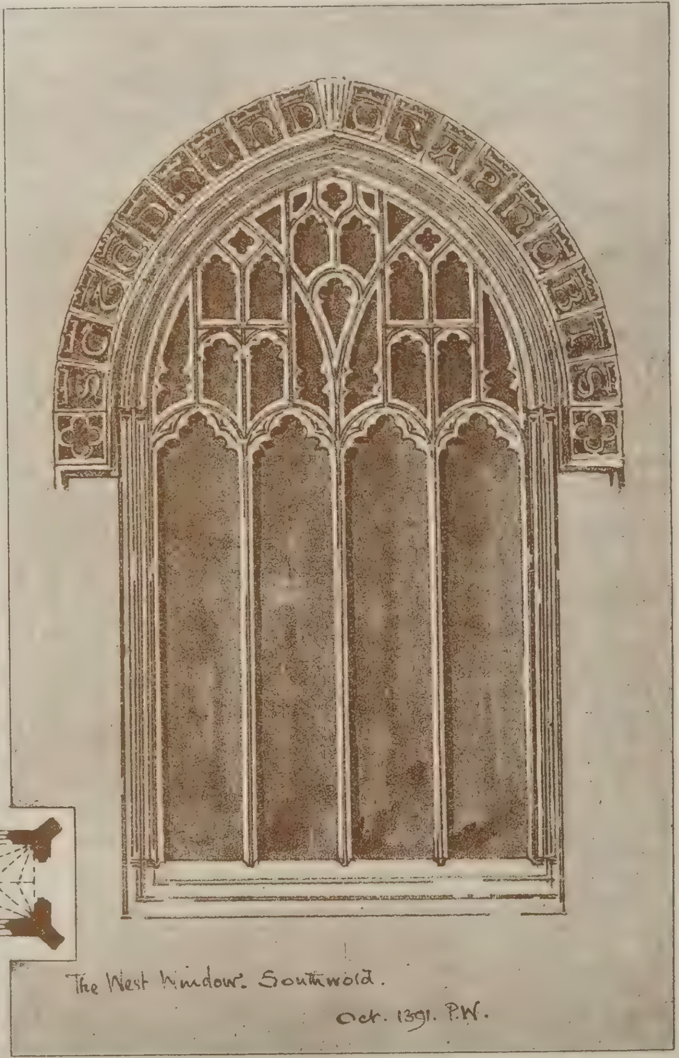


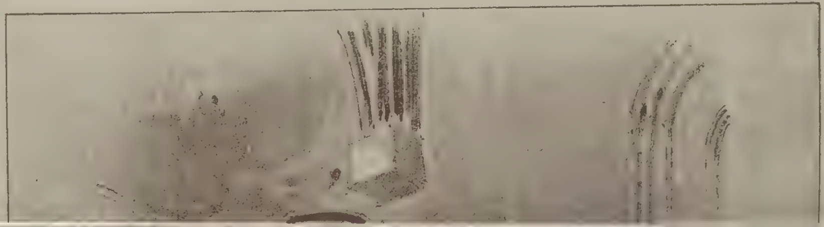
PERSPECTIVE SKETCH ·

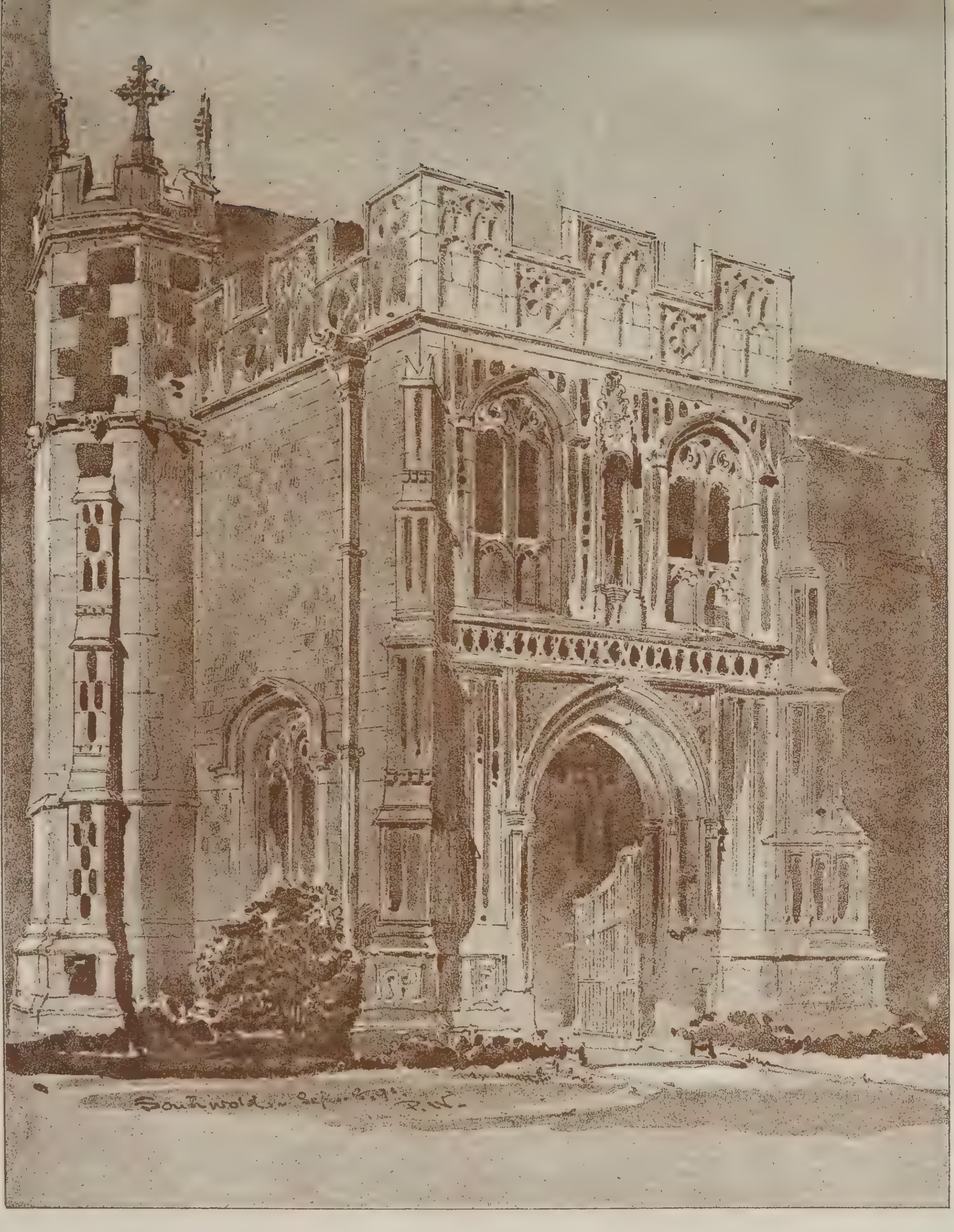


Sketch plan.

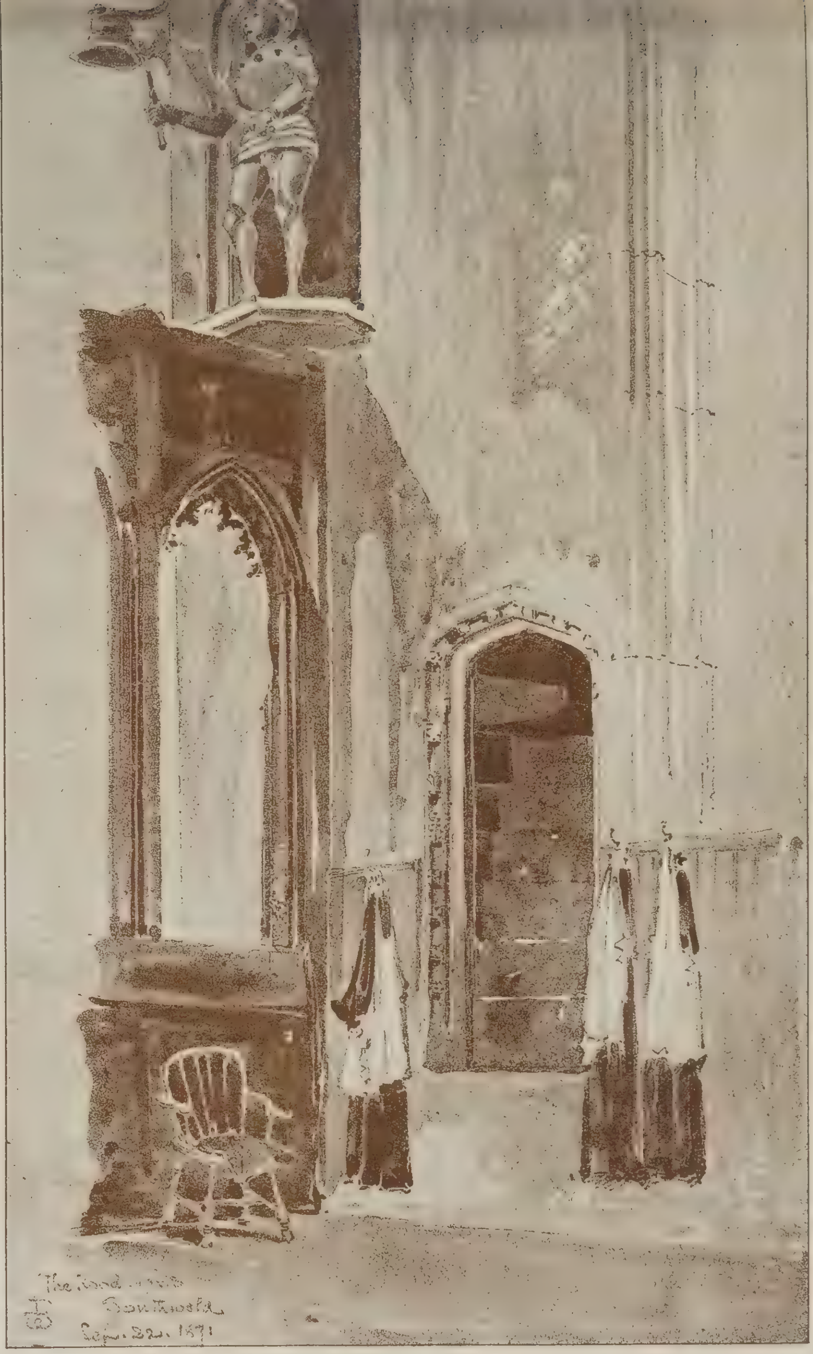

The West Window. Southwold.
Oct. 1891. P.W.

THE WEST WINDOW ·




Southwold — Sept 1891 R.W.

THE PORCH



THE·ROOD·STAIRS·

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UNIVERSITY OF ILLINOIS

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2070.

FRIDAY, SEPTEMBER 7, 1894.

UNEXECUTED DESIGNS.

WHAT becomes of unexecuted designs? Are they consigned to the limbo of forgotten rubbish or preserved in portfolios and picture-frames on the walls of the architect's office? We have never been able to account for them altogether, for we never see them amongst old prints in printsellers' shops, or on the dusty collections of the second-hand bookseller. Might they not be of some marketable value in architectural book-stores, where the speculative builder, or, mayhap, the building owner, could occasionally utilise them? At any rate, we might suggest that even for educational purposes in our technical schools and workshops many of these drawings from the offices of architects might be turned to profitable use. They would be far more instructive than half the published copies which one sees in technical schools prepared by art masters, which often have no practical value, and many members of the profession would no doubt be glad to rid themselves of this lumber of waste-paper at periodical intervals. So much by way of digression from our main purpose. Many architects cherish these old essays: some are framed; sometimes, though we think very rarely, they may be "served up" again to unwary clients. Practitioners of the Mr. Bluster kind like to make a good show of their drawings as designs that have been carried out, even if they are occasionally imaginative, and point to perspectives of town halls, churches, mansions, and hospitals as having been erected in some far-off district or country. A "show" design for a church may pass in this way for the cathedral of Montreal or Timbuctoo, instead of a design sent in for a national competition prize. The imposing Classic or Gothic perspective hanging over the mantelpiece of the principal's office, represented as some Colonial public edifice, may probably have been a Royal Academy or Institute prize drawing for a Parliament House. Academical or otherwise, these designs *in nubibus* adorn the walls of the young aspirant's offices, and give an "air" of importance and dignity in the eyes of the unsuspecting client or visitor. "It is all business," as one adept of the commercial type of architect once said to his partner, to explain his habit of littering the office floor with bundles of letters and specifications. But, after all, it is a harmless and innocent way of advertising. The "unexecuted" design has its commercial value in this way, at least: it lifts us somewhat out of the dull mediocrity of everyday life, out of the mere utilitarian rut, and enables the architect to say, at least, "This is what I intended—this the embodiment of my artistic aspirations unrestrained by parsimony, greed, and mere utilitarianism." It incites the designer to show how high he can soar in the firmament of his art, and to contrast with it the low-level of an utilitarian age; it serves, in fact, as a gauge of what he can do. Unsuccessful competition designs are not without their value in this respect; they represent a vast quantity of unpaid-for labour, not entirely valueless. They are instructive as pointing out what to avoid in the future in the way of plans, also as records of study in certain branches of design and of experience gained. What memories do they not recall of anxious, untiring study, of problems solved, of difficulties overcome The architect is none the worse for all this effort, unrequited though it be. He can reflect on how much the world has lost by not carrying out his design with all the more reason if he happen to know what disappointment the accepted design has caused. The unexecuted design is often a standing reproach to the shortsightedness of individuals and committees, for it shows what could have been done if fair play had been administered and true talent rewarded.

Then we have that numerous class of unexecuted designs which have been made on approbation, and either wholly or only partially abandoned. They are not perhaps so entirely satisfactory, for they represent what the architect intended, but could not get his clients to carry out in their integrity. They are "dreams" of better things, not altogether useless labour. First thoughts are often the best; second attempts often lose the freshness and vigour of the first sketch, and they have to be done "to order," to meet various objections. Perhaps it is the cutting down of a tower here, a bay there, to save cost; the substitution of plainer features of brick for stone. By contrast with the executed building, the abandoned design shows how false hopes may be cherished; how great the difference between a design on paper and a brick-and-mortar reality. We lose the strength of line and shadow—the solidity, frequently the effect, of the original design; the building looks flat and insipid. We can point to public edifices reared for municipal and other uses which testify to these shortcomings, how they have been shorn of features which would have given them dignity and grace. Those who have seen the original designs prepared for such buildings as the Home and Colonial Offices, Whitehall, or latterly the new Admiralty buildings, must have regretted the parsimony of the Government, who have shorn those structures of their intended proportions and features. The original designs remain as witnesses of what their authors intended. By reductions and prunings the real buildings inadequately represent what they might have been.

Unexecuted and abandoned designs have indeed an educational and an historic interest. Wren, Inigo Jones, Thorpe, Sir William Chambers, Sir John Soane, Welby Pugin, and many more have left these records of their work, which have given us glimpses of their intentions, and many of them throw side lights upon their actual labours as architects. Have we not, for example, the designs and models which Wren has left us of his first conception for St. Paul's, of his design for reconstructing the City? We believe the model is now in the South Kensington Museum. We know from his design what St. Paul's might have been—that it was a Greek cross with a central dome, and that the four arms of the cross were joined by hollow curves. Again, Inigo Jones has left us records of his unexecuted designs for the palace at Whitehall, which the Revolution prevented being carried out, except the fragment of the banqueting hall. According to this scheme, we know that the palace would have had an imposing façade towards the river and one towards the Park, besides fronts towards Charing Cross and Westminster; that it had one great central court and three separate quadrangles on each side, and that if it had been executed it would have been the most magnificent palace in Europe, equalled only by the Louvre. Fergusson, indeed, says that if it had been built Whitehall would have surpassed the Louvre and Versailles—an opinion by no means an exaggeration. Thorpe has left us examples of many interesting designs. We know also what even the great church of St. Peter at Rome was intended to be from the design and model prepared by Sangallo—a design based on the Greek cross, but wanting in much of the grandeur and simplicity of Michel Angelo's. These, and many other instances, may be mentioned to show the value as records of designs that have been abandoned. Of course, we have much that is exaggerated and imperfect in these designs. They are not always better than the realised buildings—sometimes they are worse. For example, both Wren's scheme for St. Paul's and Sangallo's abandoned design for St. Peter's are distinctly inferior, and we are better off for their abandonment. Sangallo's great pronaos and lofty steeples were out of character with the centre dome, and Wren's curved transepts would have been poor by comparison with the present edifice. In both these cases the executed design was distinctly an improvement, and the world has gained rather than lost by the rejection of the earlier designs. The authors seemed to have corrected mistakes, and to have adopted better plans, and the designs were both improved by the change. Very often, as in the case of St. Peter's, two or three schemes are prepared by different authors before the building is carried out. Rosselini, Bramante, Raphael, Peruzzi were successively employed before Michel Angelo carried out the design, and, as is well known, the latter was restricted to the plan prepared by his predecessors. Where such is the case the executed, or last, design has the benefit of one or more revisions; each artist brings with him his own resources and the afflatus of his own genius, while he has something to work upon. But revisions by the same author have not always been so happy—in fact, they often lose in process of alteration. The intention of the designer, whether the author knows the design is to be executed or not, has a great deal to do with the matter. In the academic design prepared for the Royal Academy or Art School for simply educational objects, the author is free and untrammelled, his design is simply an ideal feat, or a kind of *tour de force;* but in one prepared for competition, or with a practical object in view, the designer is more restricted, and is less tempted to indulge in exaggeration. The design intended for execution must, therefore, be placed in a different category from that intended only to exhibit the student's prowess in architecture. The responsibilities of the architect in carrying out the design have to be kept in sight in the one case, while in the other they are ignored. The relative value of the two kinds must be regarded. The dreams of the ideal designer of palatial and airy fabrics, full-blown cathedrals, and municipal halls and the like have all the soaring imagination of the aspirant, and are interesting as giving us an idea of the student's power and skill as an artist; but they are often far-fetched. The material is ignored. It may be of granite, of stone, of brick, or of anything as far as we have any indication in the drawing; there is no attempt to show the constructive joints; the hall and staircase are of imposing scale, and the lighting of the apartments and corridors is often problematical.

The legal aspect of the unexecuted design is also of interest. How often it is really paid for is doubtful; or whether the architect is in a position to make any claim. Many an abandoned design's only fault is that it is too costly; others are prepared on speculation, for the sake of inducing a client to build. The law in both these cases is not very clear. If cost is not made a condition precedent, the architect is certainly justified in charging his half-commission. A great many questions crop up which are worth attention. For example, the approval of a design is necessary if it is probationary—that is, if the architect agrees to prepare drawings for approval. Then we hear very often of designs being abandoned from various causes—the site cannot be acquired; the committee or corporation are dissolved; or another design by the same author is chosen. Upon one or other of these causes a claim for remuneration may be disputed; but probably the great majority of abandoned designs may come under the designation of "show" or "preliminary," made to induce people to build, or for the purpose of embodying the objects of company promoters.

BUILDING MISHAPS.

THE alarming collapse of a building in Exeter, though unattended with any serious consequences, affords a fitting text to draw attention to many dangers connected with building operations and pulling down. Metropolitan improvements which entail extensive demolitions are often beset with dangers; but owing to the enforcement of the rules relating to Dangerous Structures and dilapidated and neglected buildings, we hear, comparatively speaking, of a very small percentage of accidents. Shoring and other safeguards are speedily resorted to, and notices are given to owners and occupiers, requiring them, within a specified time, to take down, secure, or repair the premises. In many provincial towns the machinery of the Public Health Act is apparently inadequate to cope with emergencies, or there is some laxity in the administration of the law. The Towns Improvement Clauses Act, which deals with the matter, requires the surveyor to cause a proper hoard or fence to be put up for the protection of passengers, a precaution which is seldom taken in time, and to give notice in writing to the owner or occupier, requiring him to "take down, secure, or repair" within three days. In case no action is taken, the commissioners have power to carry out the necessary demolition or repair. But as a rule there is much delay in issuing the notices, or in seeing them duly prepared and served in compliance with sections 266, &c., of the Public Health Act, and so it comes to pass that, while the surveyor or the town clerk is thinking over the matter before issuing the notices, an accident happens. The surveyor has to make his report, he has to consult the legal adviser, and then there is a delay in the proper service of the notice. Very often a sub-committee is appointed by the Works Committee to inspect the ruined and dangerous structure, and its advice and opinion are often acted on. The only way of dealing with urgent cases of this kind is to give the surveyor *carte blanche* to do as he thinks fit—that is, to empower him to act immediately on his own discretion, and on his own responsibility. The time taken to write a certificate to present it before the committee, or to consult the clerk, sometimes takes several days, perhaps weeks. A high wind may make all the difference between safety and danger to a wall that is unstable, or a chimney that is shaky, and while consultations are being held between the committee and clerk to the urban authority as to whether the case comes within the section of the Act, the mischief may actually happen. We have very often found accidents to have taken place owing to these delays due to hesitation in giving the surveyor power to act. In small towns the surveyor does not like to offend persons interested with properties of this kind, or, at least, he does not like to incur displeasure or offence by acting without being armed with the necessary authority. These are the reasons why the Act does not work so effectively in many towns. The alarm that was caused in the picturesque old High-street of Exeter by the fall of the Devon and Somerset Stores may draw attention to the absolute necessity of immediate action. The reports speak of the whole of the front of these stores having fallen into the street, at the great risk of life, blocking the thoroughfare, yet, happily, owing to the late hour, not attended with loss of life. The building was five stories high, of considerable depth; the side walls of brick, resting on a stone foundation; but the front was of lath and plaster, crowned by a heavy, overhanging gable. A local description says the building in front was apparently old, although the back portion had been rebuilt about 14 years ago, when adjoining premises were taken in. According to this account, the premises were doubtless in a not very sound condition, for plans had been prepared and approved by the city council for erecting a new building on the site of the Apothecaries' Hall, and for converting the front of the stores, and the work was begun some months ago. The Apothecaries' Hall was taken down, and portions of the adjoining premises shored up. The new building was being erected on the rear portion of this site; the stores were also being dealt with when the accident happened. "A section of the upper portion of the side walls had been taken out," and it is said that the front derived its support mainly from its attachment to the adjacent premises; "the front also hung from the roof." From these rather vague descriptions it is impossible to understand the precise cause of the disaster, or whether the removal of part of the side walls had anything to do with the matter. It is enough to know that the old front received support from the adjoining premises, and that these were being removed. The front, in fact, was probably like a great many more old timber structures, and the weight of the "overhanging gable" made it a rather ticklish thing to deal with, as it would naturally have a tendency to fall outwards when its connection with the adjoining walls was severed. No reference is made to the shoring up of the front, which ought certainly to have been done. We have here another warning of the danger of pulling down the rear portion of a building and leaving the front standing, even although, from the newspaper accounts, indications of impending danger were noticed. A crack in the front next its junction with the adjoining premises had been seen by passers-by, and an ominous remark on the danger of the premises had been made.

The cutting away of connections with an old wall is invariably attended with danger, especially when the structure overhangs or exhibits any bulging. A large number of the fronts and walls of houses obtain their support from side and cross walls and ties, and if these are cut away there is little strength left. As many of these old fronts have been cut about for breastsummers and the insertion of shop-fronts, the walls are in anything but a stable condition; if of brick, settlements occur, and the brickwork loses its original cohesiveness, the load being shifted. Instead of a distributed load along the girder, a large part of the centre load receives its support directly by it. The roof also affords a substantial support to a gable, and when the timbers are removed the stability of the structure depends almost entirely on the equilibrium of the wall. If it overhangs or bulges outwards, it can possess no security when it loses its lateral support or tie. In many of the brick buildings in London the timbers of the floors run from front to back, and their ends materially stiffen the front wall. When these floors are removed for alterations or rebuilding behind, the front is seriously weakened, and unless it receives support from shores outside it becomes dangerous. There are five main causes of danger in buildings—(1) bad foundations, (2) excavation or undermining near foundations, (3) want of support below, (4) want of lateral support, (5) want of tie. It is easy to mention under each of these heads examples of failure. In not a few cases two or more of these causes are combined, as in the cases of Nos. 4 and 5, as when a wall has become weak by the cutting away of cross-walls and beams, or an arch or roof thrusts out its supporting walls. Shoring in both the last cases supplies the corrective, as underpinning and needling does for the first three causes.

A LONDON BASILICA.

ARCHITECTS will watch with interest the development of the scheme just announced for building a great Roman Catholic Basilica at Westminster. The type is not exactly new to England, for we have an example of it, fifty or sixty years old, at Wilton, and a much more recent one, by Sir A. Blomfield, at Oxford; but it has never been really naturalised here, and, to all appearance, is never likely to be so. One reason for this is, that it scarcely suits our climate. Architecture has been influenced more by considerations of heat and cold than most of us realise. Why, for instance, are the principal churches of Russia so small? It is not for want of money, since the sums lavished on some of them have been enormous. It is not because the population near them is scanty, for they stand in the midst of crowded cities. It is not for lack of ambition, for, in certain features, they seek to equal or surpass everything in Western Europe. The reason, when one first hears it, sounds appallingly prosaic: it is simply that in a Russian winter large and lofty interiors cannot be kept warm. Now, if a Russian winter induces the architect to diminish the air-space in his churches, an Italian summer tempts him to enlarge it; and here we have, in one of their aspects, an explanation of the vast basilicas of Rome. From the same practical and material point of view, we can see why the chief English churches are less spacious than these, even if they surpass them in the length of their naves and the height of their towers. The Southern European judges of buildings by his feelings in hot weather; the Englishman thinks how they will strike him when it is cold. He does not like the walls or the roofs too far away from him. He is always on the watch for draughts, and his severest criticism is "chilly and comfortless."

No doubt there is a good deal of fancy in all this, and the decision which seems to have been arrived at as to style may do something, in the case of the Westminster Cathedral, to neutralise the fancy. The intention, it appears, is not to produce a Classic or even a Renaissance building, but rather a Byzantine or Romanesque one. The Byzantine style has, of course, been generally associated with the Eastern Church; but there are well-known examples of it, both at St. Mark's, Venice, and elsewhere in Italy. According to Gibbon, the Emperor Theodoric, at the close of the 5th century, erected important buildings in this style, not only at Ravenna, where they still remain, but at Pavia, Spoleto, Naples, and many other places. It is a style that depends mainly for effect on mosaics and surface ornament. It is these, in fact, which redeem the otherwise bare, formal, and mechanical regularity of the basilican type. For what, in fact, is it which goes by the name of a Christian basilica? It is only a vast oblong hall, divided into three, or sometimes into five, avenues, by longitudinal rows of columns and arches. The columns are generally round, and of Classic types. They are very numerous, very tall, and very near each other. The arches which connect them are circular. There are usually no transepts, and no choir; the nave ends, eastward, in a shallow apse. Thus almost the whole space is available for the congregation, and though the multitude of columns would render much of it unfit for Anglican uses, it adapts itself well to the ritual of the Roman Church. The nave is lighted by a kind of clerestory. It has commonly a wooden roof of low pitch, and there are similar half-span roofs to the aisles.

This type, in different examples, is more or less modified. At the very Early basilica of St. Clement, Rome, the long nave arcades are each interrupted in the centre by a wide pier or strip of walling, perhaps designed to strengthen them. At San Miniato, Florence, a well-known church of Later date, the nave is divided by four piers supporting transverse arches, into three lengths of three bays each —a graceful and satisfactory scheme. Sometimes, again, there are narrow transepts at the east end, but no choir, so that the church forms a cross almost of the T shape. But, whatever may be done by such variations as these, the nave arcades and their columns remain the great architectural features of the interior. In English and French churches the architecture becomes richer as it rises. Comparatively plain nave-arches support an ornamental triforium; and above comes all that art can do in window tracery, groined ceilings, or carved roofs. The basilica reverses all this. It begins with lofty marble columns and arches; it goes on with a flat wall, pierced with windows, which often seem designed much more for utility than for beauty; and it ends, overhead, with something which does not differ greatly from a king-post roof. Nothing but its mosaics or its wall-decoration save it from showing a sad falling-off as it rises; but in such interiors as San Apollinare, Ravenna, they do save it, and save it effectually.

If, then, there is to be a basilica in London, on anything like the scale of those at Rome, its success or non-success will depend almost entirely on the matter of decoration. And decoration fit for such a place is a costly thing. It is not likely to be completed in one generation, nor, perhaps, in several; and, if it ever is complete, we may doubt whether the sort of treatment which is satisfactory under an Italian sky will prove equally telling in the murky air of London. Possibly the skilful architect who is intrusted with the work may think well to get rid of some of the blank wall-space by putting upper aisles above the lower ones, an arrangement not unprecedented in the basilican type. How to deal with the exterior of so wide and unbroken a building is, again, no easy problem. By nature it will tend to show itself—after the manner of Cannon-street Station, as seen from the river —immense and intolerable. Here, again, Southern examples seek to fall back on surface ornament and surface architecture, and very often do not get even as far as this. There are still plenty of brick fronts left, which were meant to be overlaid with marble, and plenty of vast churches on which it might be written, "These men began to build, but were not able to finish."

SANITARY PLUMBING.*

A GREAT deal has been written and said of the terrible havoc made from time to time through the agency of defective plumbing work in Great Britain and America, and in most cases the cause has been attributed to the plumber without proper inquiry, forgetting or ignoring the fact that he (the plumber) was entirely guided by the specifications, which, in the majority of cases, were framed on false economy, and very often in ignorance of the subject by the architect. I am now speaking of what I know from experience. As a sample, an architect specified (where the owner would willingly pay for good work) a 4½in. cast-iron rainwater-pipe with red-lead joints for vertical soil-pipe from three water-closets, and, to make matters worse, had it fixed in a recess in wall. When remonstrated with, he said: "Carry out the work as specified, and I will accept all responsibility." I merely mention this as an instance of how the plumber is blamed for defective work when the specifications distinctly give him material to use which renders it impossible to make the work secure for any length of time, and then the architect is the first to fix the blame on the plumber. I sincerely trust, for the sake of all concerned, that the architects of this colony will have all fixed rules and data at their fingers' ends, so that incompetent and unscrupulous persons may be prevented from undertaking the execution of work which they do not understand. I consider every architect should be sufficiently instructed in plumbing to know the difference between good and bad work in course of construction, not after. Too little attention has been given in the past to this important (to my mind the most important) work in a building; hence the great trouble afterwards. At present there is a great diversity of opinion *re* lead *versus* iron for soil-pipes. Modern experience teaches us the great advantages of lead over iron; more especially as we can now secure solid drawn lead pipe of any weight and length suitable to our mild climate. It still holds its own as a material for soil and waste-pipes in all good work, except in America, where the extreme varying atmospheric changes and its position in buildings render it almost necessary that the soil-pipe should be of iron. Still, even in America lead soil-pipe is very extensively used. Lead possesses smoothness of surface (which is essential in soil-pipes), maximum resistance to corrosion and incrustation, can be easily bent to suit any position required, perfectly and securely jointed, branches can be easily inserted at any time, and, last but not least, when useless as a conductor will retain its marketable value as old lead. On the other hand, cast-iron pipes of the size required are never very smooth, especially when they exceed 6ft. in length. How often do we find on cutting a cast-iron pipe an absence of that smoothness (so necessary) from the internal surface, although at each end it had a perfectly smooth appearance? Again, the jointing is never so reliable, no matter how well made; and in the event of any deviation from the straight line and branches usually kept in stock, you have to get special connections, &c., made, which entails additional expense and loss of time. No doubt some will maintain you can procure any description of joint, but experience teaches us differently. Some good authorities, notably Hellyer, prefer that cast-iron pipe when used as a soil-pipe should be galvanised, and afterwards coated with Dr. Angus Smith's solution. The idea looks well on paper; but, unfortunately, in practice we all know the short life of any of the solutions used; and, again, in a great many cases, it helps to cover over defects and imperfections which might exist in the pipe. From practical experience I doubt very much the efficacy of any solution when applied to iron soil-pipes. I prefer them without, although I do not for a moment dispute its qualities as a temporary resisting medium to oxidation in iron pipes, when used as a conduit for fresh water. I am at a loss to know why such good authorities prefer that cast-iron pipe should be galvanised when used for soil-pipe. I am sure it requires no great reasoning to prove that the use of zinc in any way connected with soil or waste-pipes should be studiously avoided and condemned, and no architect or plumber should allow such to be used. Now as to incrustation. I have taken down some cast-iron soil-pipes which had been in use for about eight years. When I examined them the amount of deposit on one side of the pipes, especially at the joints, was incredible; but wherever the incrustation was greatest the pipe was perfect, although you could crush the opposite side with your fingers. No doubt the deposit formed a concrete, and protected the surface covered at the expense of the other side. I might mention it was a medium description of cast-iron pipe, ventilated but improperly. At a recent convention of the Master Plumbers of New York, a section of iron soil-pipe taken from a building was exhibited. The exhibit showed in a practical way the ravages made on iron pipe when fixed as a soil-pipe. When touched it crumbled into powder, although the drain-pipe, which was fixed at the same time, appeared to be in a fair state of preservation, with the exception of a deposit of rust. If required, I could give several instances like the foregoing, with date and place. In speaking thus of iron pipe, I do not for a moment condemn it, as I know perfectly well that it will be largely used in our coming work in Melbourne; but I lay the foregoing points before you in order to encourage a discussion, as by such means only can we arrive at a definite issue. Moreover, as a drain-pipe, I would compel it to be used in all cases when passing through or under a house, for buried in the earth it would be free from the atmospheric influences to which it would be subject when fixed as a soil-pipe; but in all cases care should be taken to avoid the use of galvanised, cast, or wrought iron for soil or waste-pipes, even when disconnected from the drain. Now as to lead soil-pipes, I have often read and heard a great deal about the incrustation on same, but in my experience I have failed to discover anything approaching the incrustation previously described as existing in the iron pipe, even when fixed under much more unfavourable conditions—viz., with no ventilation. One proof of this statement: During a building alteration in the Mercy Hospital, Cork, 1881, I had to remove a stack of 4½in. lead soil-pipe, which had been in position for over 30 years, and was not ventilated. I was astonished at the state of preservation of the lead, the only portion of which that looked suspicious was the soldered seam. I cut the seam out, left the lead to dry, and when I again examined it found no sign of deposit except a small powdered substance. But the lead traps, especially the seal chamber, and above it, when touched, actually fell asunder, being completely oxidised. Still, I do not doubt there have been such cases of incrustation in lead soil-pipes met with, but I have never seen them. One great objection to lead soil-pipe when fixed externally is the means usually adopted for fixing it—viz., soldering lead tack to the back of the pipe, or using ordinary holdfasts, both of which should be avoided, as in the usual course of expansion and contraction (no matter how slight) the lead must suffer at the rigid points where either of the above means are used. A better style, and one that would suit all purposes, is a special holdfast, consisting of the ordinary spike welded on to a bell-mouthed ring with a layer of thick felt and lead flange, which would allow the end of the soil-pipe to be tafted over, and make the ordinary flange (wiped) joint. Also, to fix astragals with strong lead lugs, two to each length of pipe, the holes in the lugs to be larger than the spikes or screws used for fastening, to allow for expansion, &c. By adopting this means you at once remove the objection mentioned above, and make a perfect job. Another objection to lead is the fear of rats, or, as they are called at home, the plumber's friend. I can safely say I have never met with a properly fixed lead soil-pipe which was touched by our friends. I have seen soil-pipes fixed in very peculiar places, where only a rat could get, and I consider he did a good service in compelling them to remove a hidden death-dealer. No doubt in time we likewise shall be asked to fix pipes in unsuitable positions, but I trust we will refuse to do so. No soil or waste-pipe should be fixed in out-of-the-way places, but always where it could be easily examined. Another objection likely to arise in Melbourne is the great heat. Well, to overcome that, I would suggest that all exposed pipes should be cased. The pipes being principally at the rear of buildings will not be an eyesore, and the results to property owners will well repay the outlay. Now, as to the use of earthenware pipes, I would strictly limit their use (in houses) to places where no great harm would result from leakage; for no matter how well laid and jointed, there is always a danger of leakage from various causes (subsidence, &c.), also carelessness of workmen. More especially is this the case in Melbourne, where they allow any handy man to lay and connect earthenware pipes, no doubt reasoning that, being buried in the ground, the water must get away somehow, little caring what damage is done to occupiers or owners of property. I presume you, Mr. Chairman and gentlemen, like myself, have come across earthenware pipe laid with the joints apparently perfect; but on closer inspection have found the bottom without any cement packing, although it was no greater trouble (when fixing) to make the joints equal all round. Recently I was sent to examine a hotel (erected about seven years) where the cellar was continually filled with water. Several inspections as to the cause had been previously made, but resulted in failure, some suggesting subsoil drainage, &c. The first point that attracted my attention was the level at which the water entered the cellar. After examining the houses on either side, I concluded the leak was from a higher level. I presume the point that deceived so many in previous inspections was a cast-iron drain-pipe fixed across the roof of the cellar, and which they naturally concluded extended the full distance under the parlour to the sink in the yard. By adopting a test, I soon found the leak was between the sink and the cellar. When I removed the bricks forming the sink the smell was unbearable; several cavities in the cement bottom contained putrid and decomposed matter, which, on being disturbed, emitted a frightful stench. When tracing, I found an earthenware pipe from sink in yard to cast-iron pipe 6in. from cellar wall, every joint of which was leaking, the end one being separated from the iron pipe, although you could see where it had been inserted in socket of iron pipe. I mention this to prove how unreliable earthenware pipes are when fixed under a building. The brick sink I have mentioned above is very often met with in buildings, with a grating over the top. Why anyone could think of fixing them I cannot understand, as they are the greatest propagators of disease in existence, and should not be countenanced by architects or builders, especially as they can easily procure a surface trap, which would answer a dual purpose—viz., prevent offensive smells and choking of drain-pipes. The bad habit of using earthenware elbows instead of bends is carried out to a great extent in Melbourne, and in a great measure is responsible for so many useless drains. Of late years the practice is to reduce the bore of the soil-pipe to a minimum size compatible with perfect working; but I think the minimum should be 3½in. for vertical soil-pipe (I would fix 4in.). The more the pipe is reduced the greater the chance of siphonic action, especially when two or more closets are connected to it. And even when the soil-pipe is extended full bore to the roof you increase the friction of the vent (the soil-pipe), which under certain conditions fails to prevent siphonage. Under these conditions it shows the absolute necessity of an independent ventilating pipe, into which you connect the branch vents near traps. Of course, no intelligent plumber would think of connecting the vents on to the crown of traps, although some maintain it is the correct place to vent from. Why? We all know that every time the closet is discharged the lighter substances are bound to strike that particular spot, and eventually close it, thereby making it perfectly useless and dangerous, as the vent being closed the trap might lose its seal through siphonage without anyone being aware of the cause. When erecting a soil-pipe, for its size we will have to be guided by the number of closets connected on to it; for two or three closets I would recommend that less than 4in. soil-pipe should not be used, the traps being 3½in. I would also recommend that the soil-pipe be extended full bore 6in. above the highest point of roof, and 6ft. or 8ft. from the nearest dormer or window, and also that a 2½in. or 3in. independent vent-pipe be taken from the point between the end of soil-pipe and surface inlet of disconnecting trap, but below the grating of same. Then fix two 2in. vents from w.c. branches into independent ventilating pipe, and extend same to a level with the soil-pipe. By adopting this system you secure the lightest standard of safety whilst also making a perfect and lasting job, which will well repay the additional cost. When men enter into the kingdom of traps, the first feature that strikes us is the great difference of opinion regarding them, each writer maintaining his is the best; in fact, what spoils some fair technical works is the continual repetition of "my trap," "my ventilator," &c., is the best, leading one to believe the work was written to advance the sale of each writer's wares, instead of advancing the cause of good plumbing, but with all their boasted improvements, the ordinary clear-way P S and horizontal trap still holds its own. The latest writers in this field are Putnam and Smeaton, the former advocating the "Sanitas" as being the only non-siphoning trap in existence and against venting wastes. Of the "Sanitas" I cannot speak, never having seen one in use; besides, as a commercial article, it is useless to plumbers, as no one but the Sanitas Co. will be allowed to fix them. I might say it is for lavatory purposes only. The latter advocates his "Eclipse" trap, which to my mind is a modification of the universally condemned D trap, not even possessing the D's one quality, resistance to siphonage and momentum when unventilated, the outgo being too easy, and the seal only one inch. Besides, it exposes too much surface above water-level, which is sure to receive the particles of fæces bound to adhere and accumulate, as no water can possibly touch a considerable portion of the top surface. To make matters worse, it is a cast-lead trap, the most treacherous of all kinds, and I consider a cast-lead trap should never be allowed to be fixed. I have known cast-lead traps in appearance as smooth and perfect as glass which had, after twelve months' use, to be removed, several defects showing then which could not be detected by the tests to which they were subjected (at least, we are led to believe every cast and machine-made trap is tested). At present we have a lot of mechanical traps on the market—"The Ball," "Flap-Valve," &c., &c., all of which we may set aside, for no matter how well they might act when experimenting, still, after a very short time in actual work they become perfectly useless and dangerous. I will cite a case. In the board-room of a large warehouse, whenever the directors met they complained of a very bad smell. An examination of the fittings revealed the cause: a badly-made trap connected direct into the sewer from a W.H. basin, which being very seldom used the trap lost its seal through evaporation. The plumber called in to rectify it suggested the advisability of fixing a ball trap, which he declared would prevent sewer-gas from entering through the trap, even though no water was in the chamber of the trap. About six months after I had to attend for the same complaint. On removing the trap screw I found human hair around the ball, which held some matches as firmly as if tied with fine twine. Some of the hair had gone over the outgo or weir of trap, and the matches held the ball out of position, thus setting up capillary action at once. I removed the ball and fixed a properly-made P trap, disconnected the waste from sewer, allowing for perfect aëration, with the result—no more complaints. This also proves the advantages of disconnection, for even if the trap lost its seal the above alteration removed the danger and decreased any unpleasantness to a minimum. Of late years a great tendency has been shown towards making traps with a very easy outgo or weir, which is, in itself, one of the main causes of loss of seal, for when a trap is made with an easy outgo its resistance to momentum is considerably reduced; whereas when properly made with the first sections parallel, and the outgo nearly a right angle, you get what to my mind is the proper standard of a trap—minimum amount of water to allow for thorough cleansing at each discharge and maximum amount of seal to resist siphonage and momentumage, of course with proper ventilation. There are other enemies which rob the trap of its seal. First, capillary attraction, caused through hairy or fibrous matter overhanging the weir of trap. Very often it is responsible for unsealing of traps, and is the last thought of. As for loss of seal through evaporation, I need scarcely dwell on that, as I am sure no w.c. will be fixed inside the house, unless for absolute use, and if they should neglect to use it for ordinary purposes, they can at least allow a discharge of water into it occasionally. The only exceptions are our large city buildings, some of which might be vacant for months. In such cases a means can be arranged to flush the traps at certain intervals. All soil-pipes should discharge into a disconnecting trap fixed at the foot of same, the trap to have an iron grating, with large iron bars, to act in a dual capacity, induct for vent and soil-pipes; also to receive the wastes from baths or lavatories. At present there seems to be a misconception about disconnection of lavatory and bath wastes from drain. I maintain you should not connect any of these wastes direct into the drain or soil-pipe any more than you would the rain-water pipe. No doubt a lot is due to misapplication of technical terms. For instance, in a recent publication, *The Decorator's Gazette*, I noticed a trap styled "The Improved Kenon Disconnecting Trap," when in reality it is an intercepting trap, or, if you like, one form of boundary trap. The intercepting trap is fixed to prevent the gas from sewer entering the house-drain, and the disconnecting trap to allow the wastes from baths and lavatories to discharge over or near trap, allowing for complete aëration of waste-pipes. In a great many cases disconnecting traps have been removed after being in use for a short time, owing to the neglect of plumbers in not fixing a vent or exhaust-pipe between the soil-pipe and grating, for when the closet is discharged the column of water in the soil-pipe displaces the air in its descent, and if the vent is not fixed as above the foul air is sent through the grating, thereby causing a disagreeable smell, especially if the trap is fixed (as it very often is) under or near a window or door. Some well-known sanitarians advocate the connecting of drain and soil-pipes direct with the sewer, depending entirely on the traps of w.c.'s and baths, &c., as being sufficient protection against the entry of sewer gas into the house, their contention being that every soil-pipe would help to ventilate the sewer and prevent the accumulation of gases therein, entirely overlooking the possibility of the traps becoming unsealed from causes beyond the householder's control. Whilst a strong advocate of direct and continuous ventilation, I would certainly choose a different means from the above to secure it. The ventilation of sewers is not the province of the householder; that portion can be safely left to the boards controlling the sewer to see after. As a proof of the strides the English system has made, the Technical Sanitary Commission of Paris in 1883, recognising the benefits of disconnection and ventilation, framed their regulations accordingly. Article 5 says all leaders shall be intercepted so as to prevent direct communication with the sewer. Article 7 says every soil-pipe and sink-waste shall be carried above roof to establish active and permanent ventilation, fully adopting the English system. As for sink-wastes, their position will have to be guided entirely by the use made of them, and in the majority of cases it will be necessary to fix a grease interceptor, from which the waste can be conveyed under the grating of disconnecting trap. No doubt some who are against disconnection will argue the dangers likely to arise from such a system, as in the event of a person suffering from infectious disease taking a bath; but with all due respect we might leave that to the doctor to safeguard against. The system is extensively carried out at home, with the most satisfactory results, and I am sure a little consideration will convince the most sceptical of its great advantages. Some writers would use and recommend a non-siphoning trap to all wastes from baths, sinks, and lavatories, depending on the flushing for removal of gaseous accumulations and aëration of wastes; but from observation my advice is to avoid them as much as possible, and go in for ventilation. You will always find, along with being non-siphoning, they are also receptacles for filth. Of course, there are times and places when you will require a special style of trap, and the plumber will be called on to devise a means to overcome that difficulty. In making any kind of non-siphoning trap it is absolutely necessary that the bottom should taper like an inverted cone, as by this means you increase its cleansing qualities without interfering with the seal. A large brass cleaning screw should be soldered on the bottom of trap. A mild sensation was lately created in sanitary circles by the announcement of Doulton's patent joint, for soldering lead to ware, the connecting of which previously was very difficult, chiefly owing to the majority of manufacturers not fixing a flange to ware traps. Whilst not doubting all that is claimed for this jointing, I would much prefer a flange-clamp joint. Its durability entitles it to a much wider scope than it now has. In Melbourne, at present, we are living in a kind of hazy, mysterious atmosphere, regarding the regulations, &c., likely to be framed by the Metropolitan Board of Works. I suppose they will have a special w.c. basin, but I sincerely trust it will not be of that antediluvian pattern (the old gun flush) lately exhibited by Mr. Thwaites, C.E., in his lectures in the suburbs. I cannot understand why a gentleman of his repute could lay before the public a description of closet-pan which would not be tolerated in any civilised part of the universe. It is the greatest retainer of filth ever put on the market, and I thought had been consigned years ago to oblivion, until its recent resuscitation at the above lectures proved otherwise. It will be far better for all concerned to produce the standard article intended for use, especially as they can be easily procured. I presume the regulation will deal with one w.c. in each dwelling. The additional w.c.'s can be of any description (compatible with regulations) the owner may wish to select. Many will maintain that the registration of plumbers under the Metropolitan Board of Works, and the appointing of competent inspectors, will prevent the possibility of bad and indifferent work, but experience teaches practical men to accept this doctrine *cum grano salis*. Some time ago the Board of Health in its wisdom called on all plumbers to register themselves. The result has been that men who do not know the A B C of plumbing (and I believe some who had no claim on the trade) were in one act transformed into fully-fledged registered plumbers. Surely such an intelligent board of "experts" should know that it requires more than the signature of a J.P., or an architect's reference, to make a man a fully qualified plumber. A plumber can be the greatest blessing or curse to humanity.

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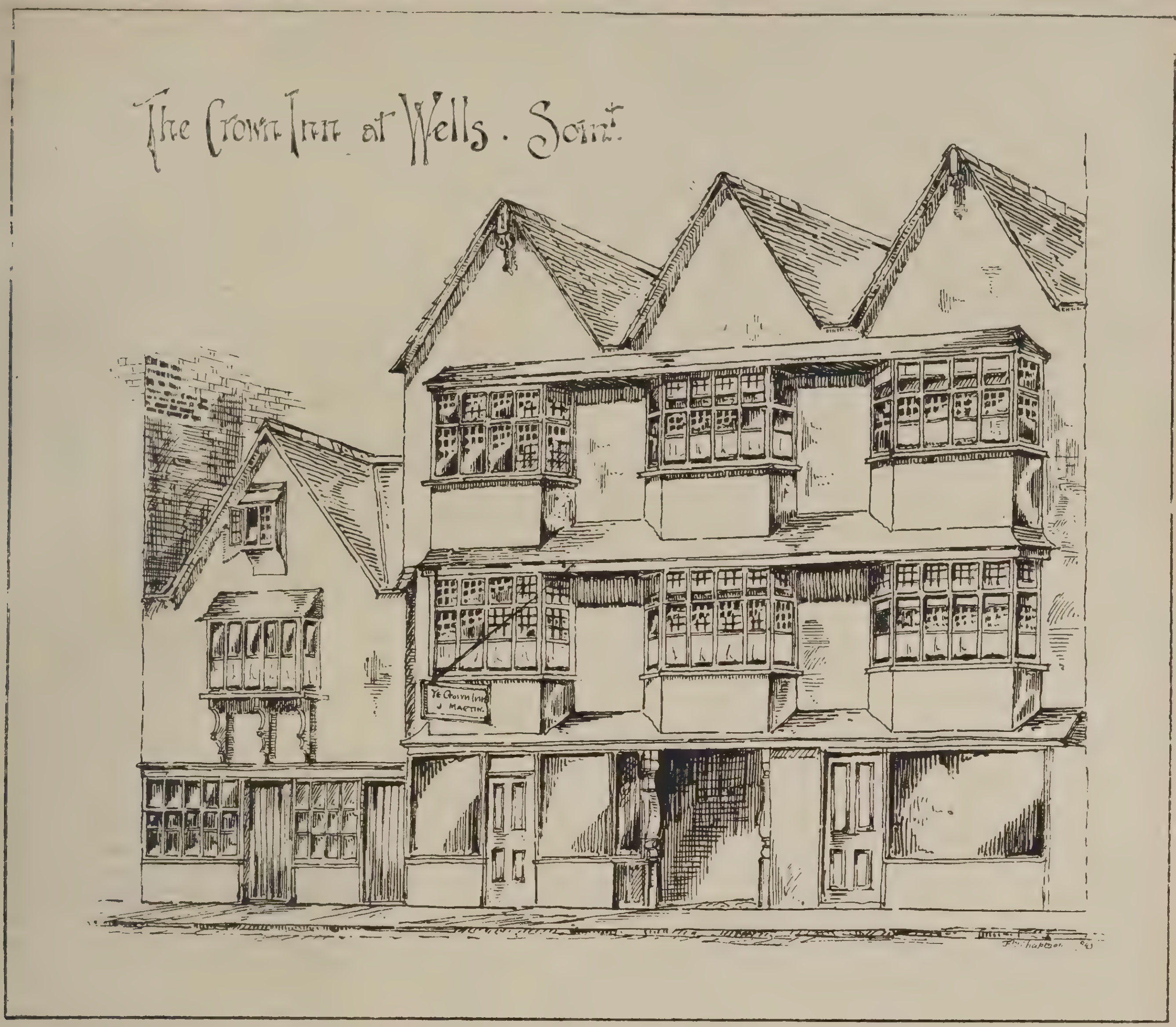
* Paper read before the Associated Master Plumbers of Victoria by Mr. F. B. Brady, Master Plumber.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Which shall it be? I sincerely trust the Board of Works will answer by adopting a standard for those who are to undertake plumbing. I fail to see why we should have quack plumbers any more than quack doctors. Prevention is better than cure. About two years ago, in a certain establishment in the City, a very bad case of typhoid fever occurred, and various reasons were assigned as to its cause. Working there at the time, I suggested that the underground drains be examined, but the manager smiled significantly and refused. A little later on I was sent for to inspect the drainage. The very first thing I discovered was the supposed cause. The overflow from a small covered full cistern (supplying range boiler) was connected directly into the house-drain. The water in boiler was largely used for domestic purposes, &c. The upper portion of overflow was like scorched paper and fell asunder when touched, but the lower portion was perfect, showing that it had been fixed recently. This will show the absolute necessity of preventing quacks from spreading disease and endangering a whole locality. Some of the members present can bear me out in the foregoing, as I showed them the pipe. Plumbing being essentially peculiar and singular in its execution, the public must depend more on the ability and honesty of the plumber than on the best inspection; recent events prove this. Hence the necessity of knowing the status of the plumber you are going to employ. I consider a good system of sanitary plumbing embraces interception with direct and continuous ventilation of soil-pipes, the induct and educt shafts providing the current, whilst the branch vents from below w.c. traps into main vent shaft prevent siphonage or momentumage. The system is the upcast venting which I consider is more in keeping with the laws that guide us. The bath and lavatory wastes are disconnected, and the upper ones are ventilated. I consider it unnecessary to vent the lower bath and basin wastes, for at each discharge from either, the waste is thoroughly aërated. An alternative plan is adopted by some authorities—viz., making the soil-pipe act as educt vent, but I am sure in our day we will not follow the blunders of the past by adopting small measures to secure great results. This plan should be avoided as much as possible, as I consider the vents when returned into soil-pipes mean fixing one to negative the results of the other. I do not recommend any particular style of cowl; I leave that to the plumber or architect. Another kind of intercepting trap might be used.

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THE CROWN INN AT WELLS.

In connection with the recent Excursion of the Architectural Association held at Wells in Somersetshire, this sketch of one of the most interesting gabled houses in the city will serve to further illustrate the buildings which give so unique a character to the town. The façade is plastered throughout with pentices connecting the oriel bays which make so marked a feature in the design, and in the centre below is a pilastered opening leading to the hostelry yard behind the premises. The sketch was furnished us by Mr. F. W. Chapman, of Sheffield.

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THE RECLAMATION OF THE ZUIDER ZEE.

The Netherlands Government have under consideration a report from the Royal Commission, appointed two and a half years since, to consider the most practicable mode of reclaiming the shallow inland lake created between 1170 and 1410 by successive inroads of the North Sea upon Friesland and North Holland, so well known as the Zuider Zee. The scheme recommended is that propounded by Mr. C. Lely, a well-known engineer, now the Minister of the Waterstraat, and may be regarded as the final outcome of forty years' proposals. Mr. Lely's scheme, as recommended by the Commission, and summarised in a special article in Tuesday's *Times*, is to form a great embankment, extending first from the mainland to the island of Wieringen, and thence right across to Friesland, this work to be followed up by the construction of four enormous polders, which will drain and utilise what are the best parts of the Zuider Zee from an agricultural point of view, and still leave the deep water channels as at present, while the Yssel and some smaller rivers will be free to run into a lake to be known as the Ysselmeer, an outlet therefrom for the surplus waters being provided by means of locks and sluices at the Wieringen end of the northern embankment. The most important modifications recommended by the Royal Commission are an increase in the width of the waterway from Amsterdam to the Ysselmeer, from 1,640 yards to 5,467 yards, and an alteration in the relative sizes of the polders. The embankment stretching right across the northern end of the Zuider Zee from North Holland to Friesland will be the most important feature of the work to be undertaken. According to the scheme recommended, the total length of this great seawall will be something like 25 miles, and it will take at least nine years to construct. Operations will be commenced by the formation of an island on the Breesand, midway between Wieringen and the Friesland coast. This island, when complete, will be provided with a harbour on each side, and the Amstel Diep, which separates the island of Wieringen from the mainland of North Holland, having been closed, the work of constructing the embankment will be carried on simultaneously from four different points—namely, from the two harbours, from Wieringen, and from Friesland. The foundations both of the island and of the embankment will consist of interwoven willow twigs, with earth, sand, mud, and stone rubbish, forming altogether a solid and substantial mass impervious to water. The total breadth of the visible embankment rising above these foundations will be 216ft., and the average height will be 17ft. 8in. above the level of the sea at Amsterdam. The sides will be protected by "facings" of stone obtained from Scotland, Norway, Germany, or elsewhere, and carried above rows of oaken piles to a height sufficient to prevent any injury from the highest tides or the severest storms. The actual summit of the embankment will have a breadth of only about 6ft. 6in., so that carts cannot be driven along it; but a little lower down, on the southern side of the embankment, there will be a level of 55ft. 9in. in breadth, along which will run not only a high carriage road, but a railway, in addition, forming a direct connecting link between North Holland and Friesland.

The locks by means of which access is to be obtained to or from the North Sea will be situated at the Wieringen end of the dyke. There will be two sets of these locks, side by side, one having a width of 32ft. 10in. and a length of 320ft., and the other (for fishing vessels only) a width of nearly 20ft. and a length of 131ft. The size of the larger locks is to be restricted to the dimensions stated, so that they may not afford to hostile war vessels a means of getting into the Yssel Lake. There will, too, be an elaborate system of sluices, provided with both flood and ebb doors. From the same precautionary motives the proposed new canal along the Friesland coast, running from Harlingen in the Yssel Lake at Piaam, is to have for its unprotected locks at the latter place a breadth of only 26ft. 3in.

The northern embankment having been completed, and the Zuider Zee converted into a lake unaffected by tides, the work of reclaiming land will be commenced. The process adopted will be, first of all, to construct, on massive foundations, powerful dykes inclosing the parts of the Zuider Zee to be dealt with. On these dykes, at certain intervals, pumping-stations will be erected, and the water will be pumped out of the inclosed space into the Ysselmeer, from which it will finally escape through the sluices into the North Sea. Each of the four polders will be divided into sections, regulated in size and form by the depth of the bottom. It is part of the scheme that agricultural or other operations may be commenced on each section as it is ready, although the remainder may still be under water. Roads and canals will intersect the polders at different levels in every direction, the water being pumped from the canals at the bottom into others higher up, from these into others still higher, and so on until it can finally run into the Ysselmeer. The drainage, in fact, is all up-hill, no attempt being made to fill up the polders. On the other hand, this canal system can be easily turned to account for irrigation purposes whenever, in dry seasons, it is desired to let water on to the land.

The total of the four polders to be reclaimed represents a superficial area of 750 square miles of argillaceous soil, forming eventually the best land for agricultural purposes to be found in any part of Holland. The proposal is that the whole work shall extend over 33 years, during which period something like 25,000 acres will be annually thrown on the Dutch land market. The total estimated cost of the work, including the construction of the embankment, the draining of the polders, compensation to fishermen, and other items will amount to from £15,750,000 to £26,250,000, while the capitalised value of the land to be reclaimed is estimated as representing a value of £27,166,666. In any case, it is believed that the cost will be covered.

ON THE HEATING POWER OF SMOKE.

IT appears to be generally understood that a large percentage of fuel is lost in the smoke which issues so abundantly from most chimneys, and random statements have been made to the effect that the loss in heating power due to this passing away of combustible matters in smoky furnace gases may reach as high as 30 per cent. of the whole. A little consideration, however, will show that the loss of any large percentage of combustible matter, and consequently of heating power, is quite out of the question. This may be proved in two ways: (1) by calculation of the two sources of heating power as shown by an analysis of coal or dross used for steam-raising, and (2) by actual analysis of the furnace gases for combustible solids and gases. In the following paper are given the results of these two methods of observation, the same dross being analysed and also employed as fuel in a works furnace, from which smoky gases were given off, which were tested for combustible matters. (1) The following is the analysis of the dross employed:—

Gas, tar, &c.	37·63
Fixed carbon	49·97
Sulphur	·40
Ash	2·72
Water	9·28
	100·00
Heating power (practical) due to gas, tar, &c.	1·16
Ditto ditto due to fixed carbon	6·49
	7·65

The points to be observed are the relative proportions of heating power (represented in the analysis by the number of pounds of water at 212° Fahr. capable of being evaporated to dryness by 1lb. of the fuel) given out respectively by the combustion of gas, tar, &c., and by fixed carbon. These are calculated according to Playfair's well-known formula, which was practically tested on coals intended for the British Navy, and which shows that while 1lb. of fixed carbon is capable, when burned, of evaporating 13lb. of water at 212° Fahr. to dryness, 1lb. of the gas, tar, &c., will only evaporate 3·1lb. From these figures it appears that in this coal or dross the gas, tar, &c., only contributes 15 per cent. of the total heat given out during the combustion, and that the fixed carbon produces the remainder, or 85 per cent. In coals with less of the former ingredients and more of the latter, which is commonly the case, the proportion given out by the volatile constituents would be considerably reduced. It is thus perfectly clear that, even though the whole of the volatile matters (which can alone be accountable for any loss of combustible material) escaped combustion, there could not possibly be a greater loss of heat than 15 per cent. of the whole, even in such an extreme case as this represents. (2) An analysis was made of the furnace gases given off during the burning of the dross of which the results are given above, with the following results:—

	Gas very smoky. Per cent. by vol.	Gases almost free from smoke. Per cent. by vol.
Carbonic acid	5·6	3·5
Carbonic oxide	None	None
Hydrocarbons	Trace	None
Nitrogen	79·9	79·9
Oxygen	15·1	16·6
	100·00	100·00

It has been asserted that carbonic oxide is given off in considerable quantity when much smoke is being produced, but it does not appear in this case; and Hempel, in his work on "Gas Analysis," comes to the conclusion that little or no combustible gases are present in furnace gases. In the volume referred to (p. 205) Hempel says: "Furnace gases usually contain only carbon dioxide, oxygen, and nitrogen. All other gases are present in but very small amounts. In oft-repeated analyses the author has always found only traces of carbon monoxide, methane, and the heavy hydrocarbons." This is in complete accord with the analyses given above, and it may be taken for granted that the presence of carbonic oxide or other combustible gases in furnace gases is a most unusual occurrence. This is quite conclusive evidence that no appreciable loss of heat, even when the furnace gases are smoky, can be attributed to the passing away of the products of imperfect combustion in the gaseous form at least. That there is loss of combustible matter in the smoke is an undoubted fact, but the quantity seems also to be greatly magnified in certain random statements. In the experiment referred to above the soot was always collected during 1½ hours with the following results:—

	Grains per 100c.ft. of furnace gases.
Carbonaceous matter	30·81
Ash or mineral matter	20·65
Total soot	51·46

It will be observed that the soot collected consisted largely of mineral or incombustible matter. In several experiments to estimate the soot in furnace gases, similar results to these were obtained, and the average would come very close to the quoted results of this special test. To find how much carbonaceous matter was actually lost as smoke, it will be necessary to know the number of cubic feet of furnace gases given off by the combustion of, say, 1 ton of the dross. If the percentage of carbonic acid in the furnace gases is taken at 5 per cent., the total volume of these given off from 1 ton dross would be about 940,000c.ft. measured at the ordinary temperature and pressure, and this would contain 41lb. of carbonaceous matter and 27lb. of mineral matter. This would represent 1·83 per cent. of the volatile matters (gas, tar, &c.), given in the analysis of the dross, and if from this is now calculated the heating power according to Playfair's formula, it will only come to 0·057. This figure, compared with the practical heating power (7·75) of the dross, goes to show that the solid combustible matter of the smoke can only account for the very small percentage of 0·74 of the total heating power which can be obtained from the coal. From the results of these experiments it is evident that the loss of combustible matters in smoke is very small indeed, and that the belief in immense loss by this cause is simply a fallacy, and is decidedly not corroborated by experiment. In adopting methods of removing the smoke nuisance it must therefore be borne in mind that there is little or no gain in burning smoke, and that other methods of dealing with the problem, such as Dulier's smoke absorption process, ought also to receive consideration.

R. R. Tatlock, F.R.S.E., F.I.C., F.C.S.
City Analyst's and Gas Examiner's Laboratory,
Glasgow, August 2.

METHODS OF TESTING HYDRAULIC MATERIALS.*

THE author subdivides the different tests into those made for research purposes, those which are necessary on the delivery of cement, and those undertaken for purposes of identification. Research experiments may comprise everything relating to the composition of cements, the phenomena observed during their burning, setting, and disintegration. These are necessarily chiefly of a chemical nature. Such work is generally undertaken to determine the relations between cause and effect, while practical tests simply record certain facts without inquiring into their cause. Tests made on the delivery of cement should be simple and rapid, their object only being to ascertain whether a given product possesses certain properties which previous laboratory research has shown to be useful, or to ascertain whether other injurious properties are absent. The chief difficulty in carrying out such tests arises from the fact that, unlike metals, hydraulic materials are in a state of continuous development, even for a number of years, and their disintegration is still more gradual. The conditions necessary for the various changes which take place are still but imperfectly known, and the value of such tests must necessarily be somewhat precarious. Having once ascertained that any kind of cement possesses the qualities required, it may be sufficient in obtaining further supplies to carry out certain tests, the only object of which would be to establish the identity of the fresh supplies with those previously examined. It is not necessary in this case that the tests should have any direct reference to the use of the cement, but it is usual to choose such methods as will throw light upon qualities required in practice. In order to secure uniform methods of testing in France a congress was held during the Exhibition of 1889, and a committee of 120 members was subsequently nominated by the Minister of Public Works and charged with the preparation of a report on this subject. Uniform methods are of great advantage both for producer and consumer, but they should not be draughted in such a way as to exclude individual research on any special subject. For the purpose of identification, unification of methods may be more advisable, but even for this purpose uniformity may in many cases be more injurious than useful. The most simple method of securing uniformity of quality in the product supplied is to superintend its production in the factory; this is now done in the case of Government supplies of materials for important works. It would not, however, be possible to have representatives of different private consumers in the factories for this purpose. One difficulty which stands in the way of a uniform specification is the possibility that any test generally accepted to-day may in a short time become obsolete. For instance, the weight of cement was formerly considered an indication of quality, but it is now known to be useless. In considering the process of setting of hydraulic mortars it is held that the phenomena of supersaturation of solutions play an important part. The property of setting in contact with water is possessed by a number of chemical compounds; the author has made some researches on the behaviour of sodium sulphate in this respect, which he considers throw some light upon the setting of hydraulic cements. The setting of hydraulic mortars is attributed to the crystallisation of hydrated compounds which have passed through a state of solution. The different chemical compounds present in hydraulic cements are discussed at some length, as also the phenomena which take place during the operation of slaking. Calcareous hydraulic materials are subdivided into artificial Portland cement, hydraulic lime, natural cements, and mixed cements. The latter include slag cement and other similar compounds. Once set, hydraulic cements are liable to disaggregation from various causes. The first of these is the insufficiency of active hydraulic substances present. Next in importance is the presence of free lime or magnesia, either of which might subsequently slake, and cause the mortar to swell or crack. Physical and chemical agencies are much more dangerous than those due to purely mechanical causes. According to the uses to which the cement is put, these agencies may be classified in three groups—viz., fresh water and damp earth, air, sea-water. Fresh water or damp earth in a state of rest do not cause any special change. The carbonic acid present in most natural waters forms carbonate of lime, and increases the hardness of the mortar. But water in rapid movement, especially when carrying gravel and sand, causes mechanical abrasion, as in the case of all rocks. When exposed to the atmosphere, mortars may suffer from the freezing of water in their pores, and in a very dry state of the air certain compounds present in them may lose their water of hydration and effloresce. Water containing sulphate of lime in solution may cause the disintegration of wall surfaces exposed to the air. In sea water the agents which cause disruption are still more numerous. The lime salts in the mortar are decomposed by the salts of magnesia, leaving a soft deposit of magnesia hydrate. The carbonic acid present in sea water tends to limit this reaction, as it forms crystalline carbonate of lime, which is not attacked by magnesia salts. With highly aluminous cements, swelling or bulging may take place owing to the formation of sulphate of lime in the mass at the expense of the sulphate of magnesia in the sea water. The author subdivides the methods of testing into practical or empirical and scientific ones. The former should assimilate as much as possible to the conditions prevailing in practice, while the latter are necessary in order to ascertain those causes which influence the results. In carrying out tensile tests the author is of opinion that variations of at least 20 per cent. between the results obtained in different laboratories are to be expected, and this difference may even amount to 40 per cent. It is, therefore, useless to draw conclusions from a series of experiments where the variations upon which such conclusions may be based are less than 20 per cent. The fineness of grinding has undoubtedly great influence upon the properties of a cement; but the nature of that influence is not exactly known at present. Coarse grains remain incompletely hydrated, and may to some extent be considered inert matter. They also give rise to cracks and scaling. On the other hand, the fine dust causes cement to set more rapidly, necessitates the use of a larger quantity of water in gauging, and diminishes the permeability of the mortar. It being at present impossible to express in figures either the advantages or disadvantages of any degree of fineness of the cement, it is difficult to base any precise specification upon such tests; upper or lower limits only can be fixed. Although chemical analysis cannot prove that a cement is of good quality, yet it may, in certain cases, demonstrate that a certain product is undoubtedly bad. For instance, a deficiency of silica or alumina will show that a cement is not sufficiently hydraulic. The chief utility of analysis, however, is to indicate the presence of injurious substances such as sulphate of lime or sulphides. The determination of the specific gravity of a cement is practically an indirect method of measuring the proportion of volatile matters present, such as water and carbonic acid, because the normal constituents of cement are so near to each other in this respect that even considerable differences in their relative proportions do not become apparent in the specific gravity. In taking the specific gravity it is of importance to use a liquid of great fluidity, because the inclosed air bubbles cannot otherwise escape. The weight of a given bulk has long been considered as an indication of quality in the case of hydraulic cements. There are other and better tests which indicate whether a cement is underburnt or not, and the weight may now be considered as a means of testing the fineness of grinding. The weight of a given volume of one and the same kind of cement may vary as much as one-fourth, according to the degree of fineness. There does not appear to be any definite relation between the time of setting of a neat cement and that of a mortar composed of 1 part of cement to 3 of sand. The rate of setting of neat cement is rarely of practical interest, that of cement-mortar is of more importance. The setting increases in rapidity with the rise in temperature; but the rate of increase is not the same with all kinds of cement. Care must therefore be exercised to keep the briquettes at a temperature as uniform as possible. When cement is be used in salt water the briquettes should be mixed with salt water. The consistency of the paste from which the briquettes are made should be uniform, and this is not difficult to attain with neat cement; but with sand mixtures uniformity cannot so easily be secured. In the latter case it is better to make the mortar rather dry and beat it into the moulds. In the case of cement-mortars it is probable that the strength depends, to a large extent, upon the compactness of the mass; in other words, the relation between the weight of the cement to the volume of the interstices between the grains of sand. Uniformity in this respect may be secured by fixing the proportion of water according to that of the cement, and beating the briquette until water appears on the surface. In testing the setting of a mortar it is better to make a crushing test than to measure the penetration of a needle, which is so much influenced by the condition of the surface. The relation of the crushing to the tensile strength of cement is not a fixed quantity; but the former is generally about ten times that of the latter. With increased age, the crushing strength becomes greater in proportion to the tensile. The crushing tests are more uniform than the tensile ones; but a difficulty may arise in getting the two surfaces which sustain the pressure perfectly parallel and plane. The author carried out a number of experiments with crusher gauges to test the accuracy of different varieties of machines, the results of which are given in detail. Hydraulic presses are unreliable, especially when the leathers are old, and have been discarded for testing metals. In lever machines the friction may falsify the results to the extent of more than 10 per cent.; but in some kinds of apparatus constructed on this principle, the figures become more reliable as the pressure increases. The author criticises hydraulic and lever machines, and describes a membrane apparatus constructed by himself, in which some of the sources of error are obviated. He is, however, of opinion that, owing to the numerous sources of error in crushing machines, it would be premature to substitute the crushing for the tensile test. It is difficult to arrive at an agreement as to the composition of the mortar to be tested, because the practical and scientific conditions are in this case almost diametrically opposed to each other. Practical considerations would lead to the use of a mortar for testing purposes similar to that in use in practice; but as the proportions of sand and water are subject to innumerable variations no uniformity could thus be secured. As regards the sand, it has been agreed in many countries to use a standard sand, thus getting rid of one of the obstacles to uniformity; but at the same time it is obvious that such a sand cannot even approximately resemble that used in practice. The proportion of water, again, is necessarily less for testing purposes, because a very wet mortar incloses so many air bubbles that the results become irregular. When too much water is used there is also a tendency for the different ingredients to separate in the moulds. By mixing the mortar very dry and beating it carefully into the moulds the same strength may be obtained with a 3 : 1 mortar as with a 2 : 1 mortar gauged of the usual consistence. A distinct connection can be traced between the compactness of a mortar and its strength. Mortars of the same degree of compactness may vary within wide limits as regards the size of the sand they contain, and yet possess the same strength. The age of the briquette at the time of testing must necessarily vary according to the class of substance to be tested. For quick-setting cements for tidal work, six hours may be sufficient; for ordinary quick-setting Portland cement, 48 hours may suffice; while seven days is the usual time for ordinary cement mortars and hydraulic limes. For mortars made with hydraulic lime, 28 days will be necessary. By increasing the temperature during the time of setting, the duration of the test may be much diminished; but the data upon this point are not yet sufficient. The destruction of cement is usually caused by a change in volume, accompanied by cracks. The causes of this change are various; among them may be mentioned the presence of expanding substances—such as lime or magnesia, the action of frost, alternations of temperature, and the action of magnesia salts contained in the sea water, The swelling, caused by the presence of lime, is much more rapid than that due to magnesia. In an experiment cited by the author, in which 5 per cent. of each substance was used in the respective tests, the action of the former commenced in three hours, while that of the latter was not perceptible until six months had elapsed. In some cases the expansion of the neat cement is greater than that of a sand mixture; but sometimes the reverse is the case. An increase of temperature causes a rapid increase in the disruption of the cement; but it appears to be an undoubted fact that some cements which are of excellent quality and have stood well in works in which they have been used, cannot withstand the heat test. The addition of calcium chloride to the water used in gauging cement accelerates the slaking of any free lime which may be present, and therefore prevents subsequent swelling due to that cause. It has therefore to some extent the same action as heating during the time of setting. For measuring the expansion of cement some use a long, straight rod, others a cake of a certain diameter which is made in a split metal mould, the opening of the split indicating the amount of the expansion. Neither for resistance to sea water nor for adhesion is the present state of knowledge sufficient to institute satisfactory tests. The author concludes with a proposed specification based upon the above considerations, and an appendix to the paper contains illustrations of some of the apparatus employed.

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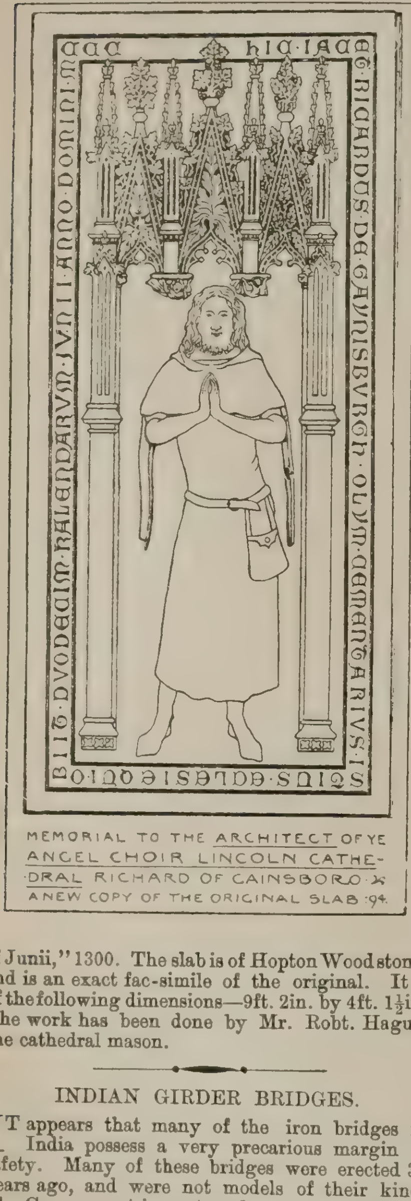
* Abstract of an article by H. Le Chatelier published in the *Annales des Mines*, Vol. IV. p. 252, and reprinted from the Foreign Abstracts of the Institution of Civil Engineers.

BOOKS RECEIVED.

Designing Ironwork. Notes, calculations, stress diagrams, and working drawings for a Steel Box Girder, by Henry Adams, M.Inst.C.E., &c., Professor of Engineering at the City of London College. (London: 60, Queen Victoria-street.)—Mr. Henry Adams, in this second series of useful handbooks in paper covers, reduces, or rather summarises, the mental process involved in designing a steel box girder, and intends to follow this up by examples of other structures in iron and steel. These handbooks are intended to instruct the draughtsman in architects' and engineers' offices in the steps required in working out practical examples of ironwork, of putting into practical form the mode of calculation given in more elaborate treatises. As the author says, it is rather difficult to reduce this kind of instruction to writing, but from a cursory glance at this book we think the author has been successful. The first series contained several useful examples among them, one on designing a wrought-iron girder, which seemed to us to give in a very concise and practical form the method of solving the problem from certain data, supplying at every step the necessary data for so doing, and working out the formulæ. In this little book the student is given a girder of 50ft. distance from centre to centre of the stanchions, and of a depth of $\frac{1}{20}$ span. The width of flanges, net load, weight of girder, effective load, stress in flanges at centre, safe stress per square inch, sectional area of flanges, rivets, depth and thickness of web, angle-bars and flange plates, deflection, &c., are all worked out in figures in the order required, the whole illustrated by a large scale drawing and details. We can fully recommend this book, which is Part I. of the second series, to all students and engineering draughtsmen. The price is 1s. 6d.

MONUMENT TO THE ARCHITECT OF THE ANGEL CHOIR, LINCOLN.

THIS illustration is taken from a photograph of an engraved slab recently placed in the south walk of the cloisters of Lincoln Cathedral. The original slab was found in a terribly mutilated condition, and a plaster cast taken of it some 18 years ago by order of Dr. Benson, who was Chancellor of the Cathedral at that time. It is in memory of Richard of Gainsborough, who was the architect of the celebrated Angel Choir in Lincoln Cathedral. He died on "the 12 Kalends of Junii," 1300. The slab is of Hopton Wood stone, and is an exact fac-simile of the original. It is of the following dimensions—9ft. 2in. by 4ft. 1½in. The work has been done by Mr. Robt. Hague, the cathedral mason.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·DRAL RICHARD OF GAINSBORO·
A NEW COPY OF THE ORIGINAL SLAB ·94·

* * *

INDIAN GIRDER BRIDGES.

IT appears that many of the iron bridges in India possess a very precarious margin of safety. Many of these bridges were erected 35 years ago, and were not models of their kind The Government inspectors have not scrupled to condemn these girder structures as too weak to carry the present loads, and to require the replacement of the girders. General Trevor, R.E., chairman of the B.B. and C.I. Railway, thinks the certificates of the inspectors too apprehensive of the safety of these bridges, and says a similar scare was entertained on the Great Indian Peninsular Railway some 25 years ago, when not only were the bridges condemned by the Government and company's officers, but actual failures had taken place. But most of those condemned bridges are still standing, and have been in constant use, and have never caused an accident. What he says is, that under the dominion of civil engineers new rules have been devised, and the old girders are weak when tested by those rules. He admits they were not first-class jobs in workmanship or design, that cracks have been found in some of the tension bars; but they are not in any appreciable degree dangerous.

We cannot express an opinion about structures we have not seen; but the admission that the workmanship and design of the bridges are both bad, that the pins are too small, and the chord bars unequally strained, is enough to convince any engineer of the unreliable condition of these structures. With the increased weight of locomotives and additional traffic, bridges erected 35 years ago with faulty workmanship can hardly be said to be very safe, or that the danger of collapse is not greater now than it has been during the last 30 years. On this and other questions there appears to be considerable ill-feeling between the civil engineers and the royal engineers. There has always been a feud between them, which has grown rather than diminished. But the safety of the Indian railway girder bridges is a question which ought not to be confused with these discords, as it is solely an engineering consideration, and the new rules prescribed to be followed are reasonable and just for present requirements.

* * *

OBITUARY.

Mr. Henry Lawrence Hammack, J.P., D.L., the head of the old-established firm of architects and surveyors practising in Norgate-buildings, Clark's-place, and formerly of 59, Bishopsgate-street Within, under the style of Hammack and Lambert, died last week while on a holiday visit to Germany, aged 67 years. He was one of the oldest members of the City Corporation, having been elected to the Court of Common Council in 1865, and annually reappointed down to this year. In 1881 he was made deputy alderman of the ward. He was one of her Majesty's lieutenants for the City and Tower Hamlets, and a justice of the peace for the County of London. Mr. Hammack's death causes a vacancy in the Common Council and in the deputyship of his ward.

Mr. Robert Grierson, architect, died on Friday at his residence, Tan-y-Vron, Bangor, after a short but severe illness. The deceased, who was comparatively young, was for some years the principal assistant with Mr. Richard Davies, architect, Bangor. Some eight years ago he commenced practice for himself, and his designs were accepted for several important works, including the North Wales Training College at Bangor (illustrated by perspective and plans in the Building News for December 30, 1892), and the proposed new schools at Llanrwst, Festiniog, and the Friary, Bangor. He was a member of the Royal Cambrian Academy of Art, and several of his architectural designs are in this year's exhibition at Plas Mawr, Conway. He leaves a widow and family.

Mr. John Cunningham Moncrieff, F.R.I.B.A., of Athenæum Chambers, Nicholas-street, Bristol, died at his residence, Clifton, Bristol, on Tuesday, at the early age of 43 years. He joined the Royal Institute of British Architects as an Associate in 1882, becoming a Fellow four years later. He was also a Fellow of the Bristol Society of Architects.

Mr. Stephen D. Hatch, a well-known New York architect, died suddenly a fortnight ago at Plainfield, N.J., where he was spending the summer. Mr. Hatch was born at Swanton, Vermont, Feb. 16, 1839, but had spent nearly all his life in New York, where for many years he was very prominent in the profession. The Boreel Building, on Broadway, and the Murray Hill Hotel are, perhaps, his most important works, but he designed a large number of costly mercantile and other structures.

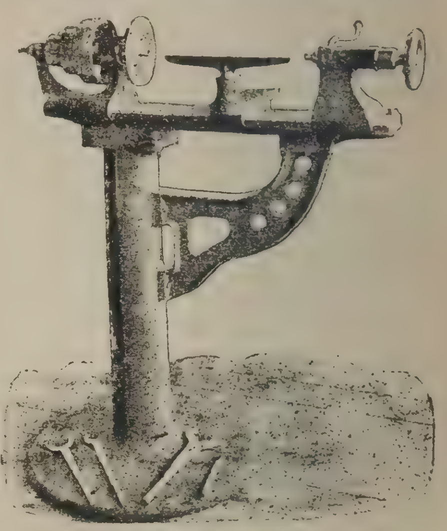
Jan Vrolyk, one of the best-known painters of Holland, has just died at The Hague, at the comparatively early age of 48, and in the height of his popularity as a painter of landscape and cattle. His representations of the green fields and pastures of the Netherlands are known throughout the world. Many distinctions were conferred upon him at the great European exhibitions. Vrolyk was a member of the Royal Dutch Committee for the assistance of young artists.

* * *

A TECHNICAL SCHOOL WOOD-TURNING LATHE.

WE present herewith a reproduction of a photograph of a lathe designed and built in the Department of Mechanical Engineering, University of Illinois. In describing the lathe, we cannot do better than print what Prof. W. H. Van Dervoort, M.E., of that institution, says about it in a letter. Prof. Van Dervoort says:—I inclose you a photograph of a novel form of wood lathe we have recently brought out and styled a "technical school wood lathe," as it has been designed specially for use in technical school shops, yet would be found highly efficient for any class of light turning.

The lathe swings 10in. over bed, and takes 18in. between centres. The cone runs on a quill, thus removing all belt tension from the spindle, which is of steel running in an accurately ground taper bearing forward, adjustable to compensate for wear. The tail spindle is ground and accurately fitted to its bearing. The face-plate is removed by means of a wrench fitting a milled hexagon on the hub. The rest is of a convenient form, being locked in both of its principal adjustments by a single screw operated by a fixed wrench at the back. The lathe is accurately constructed, and may be used to good advantage as a hand lathe for light metal turning, polishing, and drilling. All the necessary special tools and jigs for the accurate, rapid, and systematic construction of these lathes have been provided, and the lathe will constitute one of the principal articles built by our students under the direction of skilled mechanics. We shall equip our wood shop with twenty of these lathes as soon as possible, arranging them back to back in pairs, and five pairs in a row. Will drive each row of ten lathes with a single belt from the line shaft by using an auxiliary shaft carrying all the drive cones, which will be supplied with friction clutches, so that each lathe may be stopped or started at will.—*American Machinist.*



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CHIPS.

The technical school at Dewsbury is about to be extended, from plans by Mr. J. Lane Fox, of that town, at an estimated cost of £1,500.

New and extensive showrooms are now being erected for the Gloucester Waggon and Carriage Co., Limited, and special consideration has been given to the ventilation, which will be carried out on the Boyle system, the latest improved form of the patent self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

The next monthly meeting of the London and Provincial Builders' Foremen's Association will take place on Saturday, Sept. 15th, at 7 p.m., at the Memorial Hall, Farringdon-road, E.C.

Sir F. De Winton has officially informed the Mayor of Leeds that the Duke and Duchess of York will open the new buildings at the Yorkshire College, erected from the designs of Messrs. Alfred Waterhouse and Son, on Friday, October 5.

The report of Mr. Courtney's Commission on the Unification of London is neither wholly favourable to the County Council nor the Corporation. The model which the Commissioners will recommend will be similar to that of Paris—namely, that London shall be carved into eight or more divisions, or arrondissements, each with its mayor and town council. A Central Body is proposed to be organised, with the Lord Mayor as its president; but its powers will be comparatively circumscribed, since the main object to be attained is decentralisation.

During the process of demolishing the old infirmary at Derby, to make way for the new institution, an old wall suddenly collapsed on Wednesday, and, breaking through the floor beneath, buried six workmen. Four men were killed, and the other two were removed to the new wards in a critical condition.

At a special meeting of the Durham Town Council, held on Friday, the report and plans of Mr. Fowler, C.E., for taking the drainage of the town from the Wear and otherwise disposing of it was submitted to the members. The cost of the scheme is estimated to be £30,000, exclusive of the cost of land, of which some 17 acres will be required. The cost of dealing with the sewage by chemical process would be about £450 per annum. It was agreed to circulate the report amongst the members.

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ILLUSTRATIONS.

THE TOWER BRIDGE.—THE POULTRY CROSS, SALISBURY.—SCULPTURE AT THE ROYAL ACADEMY.—THE "MECHLIN" MANSIONS, BROOK GREEN, W.—BOARD SCHOOL, KINGSWOOD, SURREY.—CLV. AND CLVII. HIGH-STREET, CAMDEN TOWN.—"MOGADOR," SUTTON, SURREY.—GRAFFHAM GRANGE AND STABLES.

Our Illustrations.

THE TOWER BRIDGE, LONDON.

We have already given several sheets of details with a completed elevation and plans as well as a photographic view of this great work*, and to-day we finish our series of working drawings of it, by publishing herewith a plate of details of the mason's work to the abutment towers which span the approaches to the bridge proper. The various plans furnish sections of these abutments at their different stages, and the vertical transverse section shows the staircase arrangement. These drawings, like the others, were prepared by Mr. Geo. D. Stevenson, A.R.I.B.A., who was associated with the engineer, Mr. Wolfe Barry, C.B.

THE POULTRY CROSS, SALISBURY.

This drawing is one of those to which we awarded consolation prizes in our late competitions for "Drawings illustrating the Picturesque Treatment of Architectural Subjects." The Poultry or Butter Cross at Salisbury is said to have been built in the 14th century, and was erected as a penance by the Earl of Salisbury, in consequence of his having had a tendency to believe in the teachings of Wycliffe. It was decreed by Bishop Rulph Erghum, that he should build a cross within the city and present himself clad only in his shirt, and barefooted every Friday morning as a penance for his sins. The shields on the centre are supposed to have been inscribed with particulars of this degrading sentence. Some authorities, however, doubt this statement, as the cross is mentioned in a deed of 1335, some time after Wycliffe had begun to preach, so that while the cross was no doubt erected as a penance of some sort, the real origin of it is lost in obscurity. It was restored some 45 years ago when the present pinnacles were added to it. The drawing is by Mr. T. C. Smith. A drawing of the Cross by Mr. J. R. Hutchinson was given in the Building News for July 24, 1885, and a woodcut sketch by the late Alfred Rimmer in our issue of August 24, 1883.

SCULPTURE AT THE ROYAL ACADEMY, 1894.

We complete our series of photographic illustrations of typical specimens from the Sculpture Galleries this year at Burlington House, by the four selections which furnish the accompanying double-page plate among our lithographs to-day. Taking them in the order in which they figure on our sheet, the first is Mr. Paul R. Montford's "Spinning Girl," a chaste statue with an exquisite profile, well realising the sculptor's sense of female beauty. The second group faced the first in the Central Hall of the Royal Academy, one on either side of the central archway. It is "The Goblet of Life," by Mr. Albert Toft, illustrating Longfellow's lines:

> "Filled is Life's goblet to the brim!
> And though my eyes with tears are dim,
> I see its sparkling bubbles swim,
> And chant a melancholy hymn
> With solemn voice and slow."

There can be no question as to the grace and reserved dignity of Mr. Toft's conception of the poet's ideal. The pathetic maiden seated on a pedestal holds the bowl in her left hand, and in her right fingers is a sprig of fennel, emblematic of sorrow. The principal exhibit in the same hall was Mr. Henry C. Fehr's masterful bronze group of "Perseus Rescuing Andromeda," which was bought, it will be remembered, by the Chantrey Bequest, and it unquestionably ranks as one of the leading works of the year. The last statue is Mr. W. Goscombe John's model for a fountain figure of "St. John the Baptist," a life-size work, well worthy of its author's acknowledged capabilities and increasing repute.

THE "MECHLIN" MANSIONS, BROOK GREEN, W.

These residential flats belong to a series in the Haarlem-road, Brook-green, Hammersmith, the others being known as the "Dordrecht" and the "Utrecht" mansions, and all were built by Messrs. Leslie and Co., of Kensington, from the designs of Messrs. Lewen-Sharp and Arpin, architects, Adelphi, W.C. The fronts are faced with red bricks with Doulting stone bands and Portland stone landings. The roofs are covered with tiles. Each flat contains two sitting-rooms, two or three bedrooms, kitchen, bath, and w.c., with a coal cellar in the basement. The rentals are from £40 to £70 a year for each flat. The plan given with the view exhibits the internal arrangement on the first floor. We gave views of the other flats in the Building News for March 7th, 1890. The drawings in all cases were exhibited at the Royal Academy.

LOWER KINGSWOOD INFANT-SCHOOLS.

These schools have been built for the Banstead School Board by Mr. I. A. Murrey, of Lower Kingswood, Surrey, from the designs of the architect to the Board, Mr. H. D. Searles Wood, F.R.I.B.A., of 157, Wool Exchange, Coleman-street, E.C.

CLV. AND CLVII. HIGH-STREET, CAMDEN TOWN, N.W.

These two shops, which we illustrate, have frontages to the High-street and to a narrow side street. The aim of the design has been to get a simple and inexpensive treatment for such a site. The contract has been carried out by Messrs. Gould and Brand, of High-street, Camden Town. Mr. Edward J. Bennett, A.R.I.B.A., of Gravesend, was the architect. The illustration is from a drawing in last year's Royal Academy.

"MOGADOR," CHRISTCHURCH PARK, SUTTON, SURREY.

The treatment of the plan of this house was greatly influenced by the desire to prevent the windows of the reception rooms overlooking the garden of the adjoining house, which, owing to the levels of the site, was very exposed. Mr. H. D. Searles Wood, F.R.I.B.A., is the architect.

GRAFFHAM GRANGE, GUILDFORD.

This illustration of Graffham Grange, near Guildford, shows the south elevation, which has been regenerated from the Domestic Gothic style to a more convenient character to correspond with additions made to the residence. This portion was not pulled down owing to the fine creepers on the walls, which were desired to be retained by the owner; but the character has been altered both externally and internally as far as possible, though necessarily the outline had to be retained. The stables have been treated in a slightly different manner with red brick and stone dressings and oak half-timbered work. The whole of the buildings, including the stables, and also extensive conservatories which cover an area of about 8,000ft., are lighted with the electric light, generated by steam power on the premises. The general contractors are Messrs. Creaton and Co. of Lancaster Gate. The elaborate stone and wood carving was done by Mr. James McCulloch, and the architect for the work which has been carried out throughout the estate is Mr. A. Burnell Burnell, F.R.I.B.A., of London and Woking.

CHIPS.

The public installation of the electric light at Hampstead, which is being carried out by the vestry, will take place on October 1st.

The parish church of South Croxton, Leicestershire, is to be restored under the direction of Sir A. W. Blomfield, A.R.A., at a cost of about £1,700.

A bust of the late Earl of Derby, K.G., executed for a body of subscribers by Mr. Thomas Brock, R.A., was formally presented to the city of Liverpool on Thursday in last week. It will be placed in the town hall.

The vestry attached to the south transept of St. Alban's Cathedral is being enlarged, and the south transept window is being renovated. The works are being carried out by Messrs. Longmire and Burge, of London and St. Alban's.

New board schools at Acomb, a suburb of York, were opened last week. They have been built from designs by Messrs. Demaine and Brierley, of York, and accommodate 320 scholars. The chief room is 58ft. by 22ft., and the two wings are each 42ft. by 20ft. Messrs. Hudson, of York, were the contractors. Boyle's ventilators and Shorland Brothers' stoves are adopted.

The chairman of the Leyton local board has laid the foundation stone of new public offices and a technical institute in course of erection at Leyton. The new buildings are being erected by the local board at a cost of over £20,000, and the present town hall will in future serve as the public library.

The memorial to the late Dean Herbert, of Hereford, was originally proposed to take the form of filling-in with stained glass the windows in the south aisle of the nave of Hereford Cathedral immediately opposite the entrance from the north porch. Mr. C. E. Kempe, of London, has prepared a design for the window; but as the subscriptions have exceeded the required amount, it has been decided to fill the large south transept window instead.

A special meeting of the Dawlish Local Board was held last week to further consider the proposed harbour and pier schemes. Mr. E. J. Coombe, engineer, of Liskeard, was present to explain his plans, which were as follows:—£17,500 for a proposed harbour; £6,500 for a north arm wall, the first section of the proposed harbour scheme; £2,300 for a landing stage under Lea Mount; £3,700 for a pier and landing stage off the railway viaduct; and £300 for a landing stage off the last site. After a long discussion it was resolved to abandon all the schemes with the exception of the last, which was adjourned for future consideration.

There has just been added to the Geological Gallery of the Natural History Museum at South Kensington the cranium of a true British lion (*Felis spelæa*) from the brick-earth deposits of the Thames valley at Belvedere, near Erith. This specimen, and numerous remains of mammoth, bison, bos, and rhinoceros from the same locality, have been presented to the Museum by Mr. F. C. J. Spurrell.

Extensive alterations are being made at the entrance to Christ Church from Broad-street, Bristol, the work being carried out by Messrs. Wilkins and Son, under the supervision of Mr. Henry Williams, architect, of the same city.

There is now in course of completion another mission-hall for the Cardiff Forward Movement, and the Right Hon. Lord Tredegar laid the memorial stone on Thursday in last week. The hall stands at the corner of Clive-road and Daisy-street, Canton. It is built of stone, with white brick and freestone dressings, and has a slated roof. Messrs. Habershon and Fawckner, of Pearl-street, Cardiff, who have designed the larger halls in Carlisle-street, Splott, and Cowbridge-road, Canton, are the architects; and the contractor is Mr. C. C. Dunn, Cowbridge-road, Canton. The total cost will be £1,000.

A stained-glass memorial window has just been placed in the church of St. Peter, at Tiverton. The figures in the four compartments represent Mary the wife of Cleophas, with her sons; in the fourth, Mary of Bethany and her sister Martha, with Our Lord; while the two middle ones are occupied by figures of Mary the mother of Jesus, and St. Mary Magdalene. In the tracery are angels, with scrolls bearing the word "Allelulia," as also shields with monograms. Mr. F. Drake, of the Close, Exeter, executed the work.

Works of water supply are being carried out for the local board of East Cowes, from plans by Messrs. Hems and Blizzard, of Southampton. The contractors for the well are Messrs. Jenkins and Son, and the contract for laying water mains is being executed by Mr. Green.

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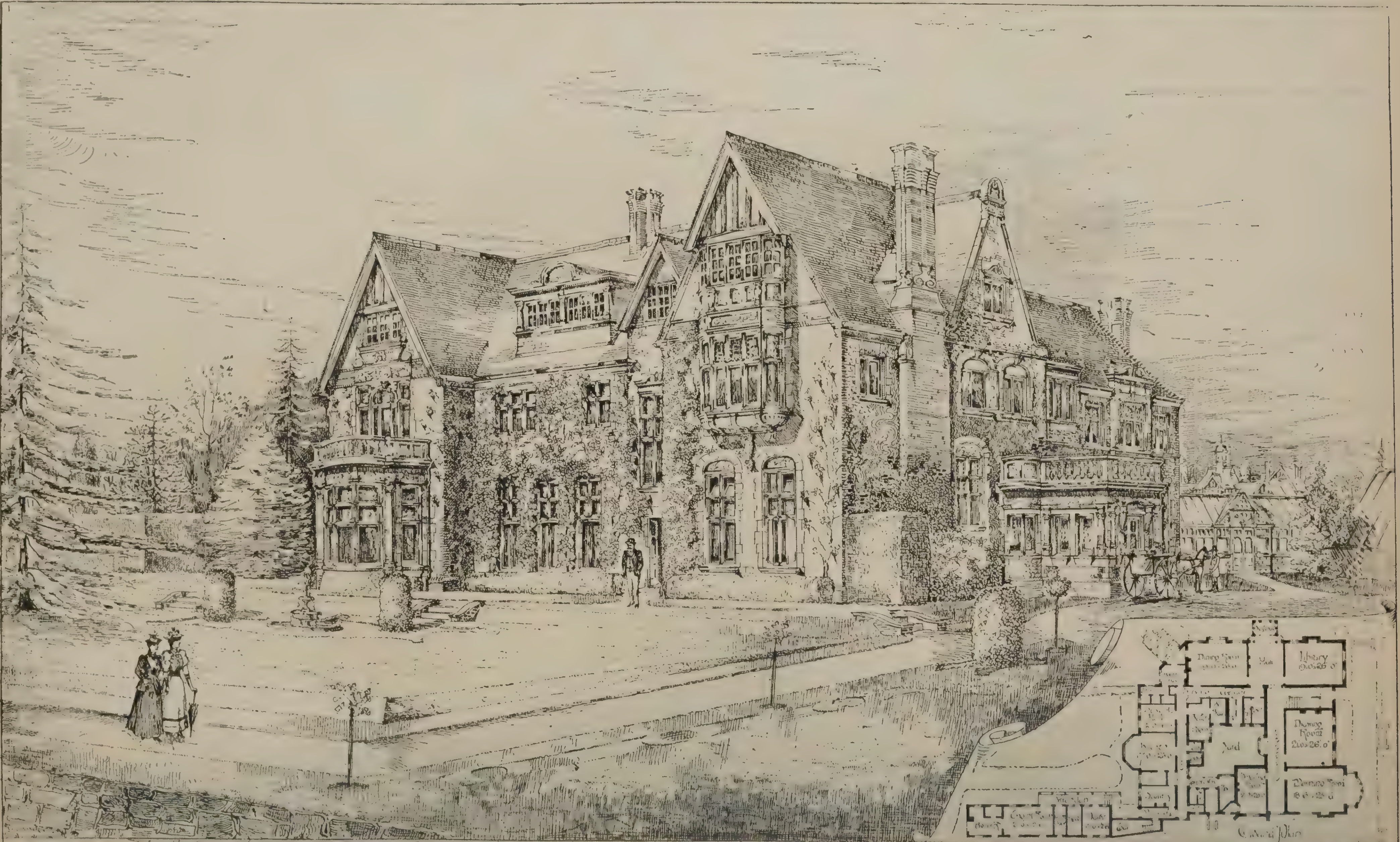
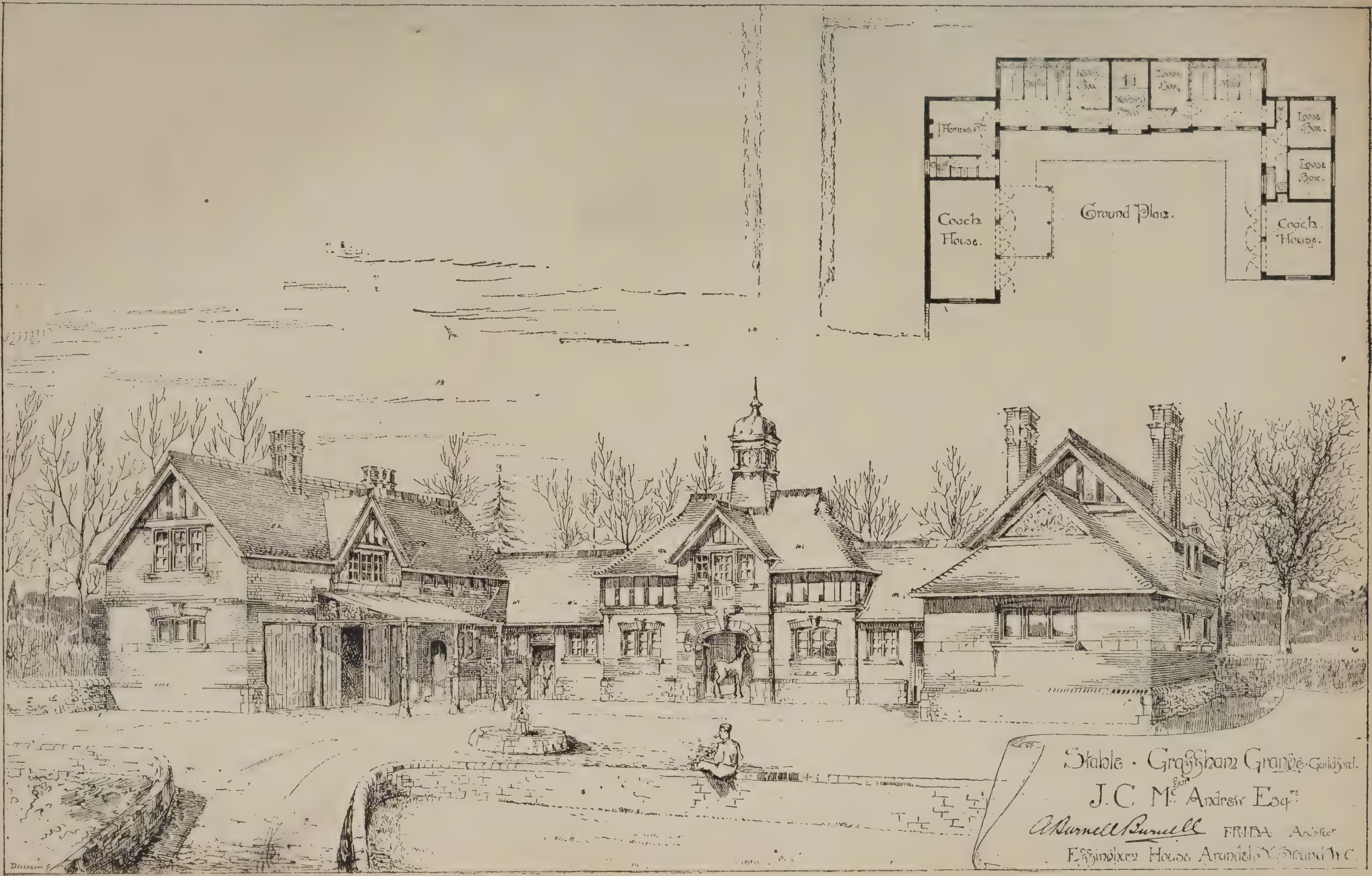
* See Building News, June 29, July 13, and July 27 this year for other drawings of the Tower Bridge.



South East View of Graffham Grange, Surrey, for J. C. Mc Andrew Esqre.

A. Burnell Burnell F.R.I.B.A. Archt Effingham House Arundel St Strand W.C.


Ground Plan.
Coach House.
Harness Rm
Stalls
Loose Box
Washing Shed
Loose Box
Stalls
Loose Box.
Loose Box.
Coach House.
Stable · Graffham Grange · Guildford.
for J. C. Mc Andrew Esqre
A Burnell Burnell F.R.I.B.A. Architect
Effingham House Arundel St Strand W.C.

WAYSIDE NOTES.

MR. FREDERIC HARRISON is raising once more the cry of a great municipal palace for London. It would be something stupendous if he could have his way, and worthy of the first city in the world. So it would, his opponents urge, if the County Council had the secret power of some of those genii of the "Arabian Nights," who could command inexhaustible riches, without needing to have recourse to the ratepayers. Mr. Harrison wants a commission of experts sent upon a roving commission across the Continent of Europe to study and report upon the municipal arrangements of the great European cities. A pleasant holiday, doubtless. Perhaps the Society of Architects could manage it if the L.C.C. would oblige with a grant, and embody their experiences in a special number of their *Transactions.* The building of a fitting municipal hall and offices is certainly one of the first of London's requirements—not merely for appearance sake, but because, as Sir John Hutton recently showed, it would save London money in the long run. The London County Council's rental increases yearly, and still its accommodation is insufficient.

A serious accusation is made by a writer in the current number of *Goodwill:* "There is not a single church and school furniture manufactory that I know of which can be termed a fair house. They all pay very low prices, and have the work mostly done on the worst possible system of lump work." Commenting on this, the writer adds: "We seem to be getting worse and worse. We now, apparently, in many cases, have the following anomalous state of things in church: A parson clothed in a 'sweated' surplice and cassock, standing in a 'sweated' pulpit, preaching about 'loving your neighbour as yourself,' and calling the workers of his congregation his 'beloved brethren,' the said congregation being clothed in 'sweated' shirts, trousers, and other garments, and seated on 'sweated' chairs, finding the text in 'sweated' Bibles, and 'about to be sweated' from Monday till Saturday when they have left the church! I wonder what Isaiah or St. James would have to say on this!" The statement is exaggerated; but there is, I think, certainly *some* foundation for it.

The directors of the Great Western Railway Company propose to create a deep-water port at Brean, a little to the south of Weston-super-Mare, for the Canadian traffic. Brean lies below a headland jutting out into deep water, and has the advantage of being only 140 miles west of London, while the sea distance to America is 250 miles less than to Southampton. It is reported that the Great Western Railway, being disappointed of the possibility of the New York steamers calling at Milford Haven, are prepared to spend millions on constructing docks and piers at Brean to secure the business of a weekly line of fast mail steamers to the Canadas.

Now that tenders have been invited for the construction of the extension of the Manchester, Sheffield, and Lincolnshire Railway to London, we may soon expect to see extensive clearances in the St. John's Wood district. The line, of which Sir Douglas Fox is engineer-in-chief, and which is 112 miles in length, is divided into seven contracts, and the total estimated cost is 6½ millions sterling. The railway starts at Annesley by a junction with the Manchester and Sheffield line to the latter town, and passes through Nottingham, Leicester, Loughborough, Lutterworth, Rugby, and Daventry, to Quainton-road, 21 miles north of London. The works are heavy in some parts, Nottingham being tunnelled through; but for this 91 miles of the line there are no great difficulties, and the cost of construction is put at 3·6 millions, or about £37,000 per mile. The quantity of steel work required is put at 4,000 tons. At Quainton-road the new line will join the Aylesbury and Buckingham extension of the Metropolitan Railway now in progress, and will finally terminate at a large passenger station, with hotel, in Edgware-road and Marylebone-road, the station covering an area of 58 acres. The part within the Metropolis will be mostly in tunnel, there being four single-arched tunnels, and partly in cut and cover, and very costly, the 4½ miles being calculated at £542,152 per mile. From this terminal station a branch line will be carried through to Baker-street. The quantity of land acquired in connection with the scheme is 1,475½ acres, of which 73½ acres are in London. This brings the total cost of the line to 6½ millions sterling. The railway passes through a populous district, the total population, excluding London, being 7½ millions. The Great Northern have running powers over some part of the line, while the new railway will have corresponding privileges in respect of the Great Northern system. As to Lord's cricket ground, the company purchase the Clergy Orphanage for the enlargement of the ground, while the contention of congested traffic in the vicinity of the new terminal station was met by a grant of money to the London County Council for street widening.

Those who propose to provide accommodation for infectious diseases for a district have an unthankful task before them. In the abstract we all agree that provision ought to be made for the isolation of fever cases, but we have the strongest possible objection to making such provision close to our our dwelling places. As soon as a site is suggested the landowners and local residents are up in arms to resent the intention of such an objectionable institution, and it is loudly asserted if the adjacent land is open that it is shameful to spoil so beautiful a district, or if built upon that such hospitals ought never to be erected in densely populated areas. We have heard vigorous shrieks of protest and disapprobation from Tooting, Hither-Green, and Tottenham of late, and now the ratepayers of South Hornsey have their turn at harrying their neighbours in persecuted Tottenham. When Mr. T. W. Thompson, of the Medical Department of the Local Government Board, held an inquiry on Monday into an application for the Department's sanction to the borrowing of £2,050 for the purchase of about three-quarters of an acre of land in St. Ann's-road, Tottenham, for the erection by the South Hornsey Local Board of an isolation hospital for infectious diseases other than small-pox, opposition was strenuously made on behalf of the inhabitants of Tottenham and South Hornsey. In support of the proposal Mr. Kurley said that the district of South Hornsey was at present without any accommodation for isolating infectious cases. The Local Government Board had insisted that some accommodation should be provided, and the South Hornsey Local Board had been fortunate in securing the privilege of buying a piece of land immediately adjoining the hospital of the Metropolitan Asylums Board at Tottenham. The chairman of the South Hornsey Local Board; Dr. T. S. H. Jackman, medical officer of the district, and Mr. M. H. Jameson, the surveyor, gave evidence in support of the proposed new hospital. It transpired that land for such a purpose in the Local Board's own district would cost £11,000 an acre. If the proposed hospital was erected accommodation would be provided for twelve beds, and all the buildings, except the "administrative cottage," would be 40ft. from any other building. On the other hand, the proposal was denounced as an unwarrantable invasion on the part of South Hornsey. Tottenham had already, at very great expense, provided for its own infectious and small-pox cases, and the district, already saddled with the great hospital of the Metropolitan Asylums Board, objected to having another similar institution planted in what in years to come would be its most populous part. Evidence was given to show that much cheaper land could be obtained elsewhere. The decision of the Local Government Board will be impatiently awaited by residents in the districts concerned; but if such pestiferous buildings must be provided, and I fear they must, common sense suggests that the least objectionable site would be found, as proposed in this case, cheek by jowl with existing institutions of the class.

The executive council of the London Building Trades Federation have advised its members, in the interests of the union, to take an active part in the forthcoming London School Board elections. They have decided to submit certain test questions on the points of fair wages and sub-contracting to every candidate who presents himself for election. The test questions are: (1) Whether the candidate is in favour of contractors supplying with each tender a schedule of wages paid to employés, and where the wages is found less than the trade union rates, that the tender be not entertained; (2) whether he is opposed to a contractor sub-contracting any portion of his contract; (3) whether he is opposed to sub-contracting without the direct sanction of the Board; (4) whether he is in favour of the enforcement of a penalty for the evasion of the Board's terms of contract; (5) does he approve of the Board doing the work direct without the intervention of a contractor; and (6) if he is in favour of practical mechanics only being appointed by the Board as clerks of works? Prior to the elections the Federation intends to issue a manifesto based upon the answers, and recommending to members and others such candidates as they deem worthy of support.

The Public Works Department of India are often taunted for their architectural designs. Our contemporary, *Indian Engineering,* not without reason, observes it is a somewhat undeserved taunt, for it points out that even in London nearly all structures designed by engineers unaided by architects are faulty from an æsthetic point of view. We agree with our contemporary in thinking better results might be attained if a more generous recognition was made of the work of Indian architects, and that Government might develop an architects' department in each province with advantage. It is not economy altogether that has spoiled the buildings, but the handing over of the design to incompetent assistants. The Tower Bridge would be infinitely worse than it is if this system of delegation of the architectural details to subordinates had been followed.

Purists are horrified at the touching-up of Decimus Burton's masterpiece, the Athenæum. The R.A.'s, who are big men even in the Academy, and are said to be members of the Athenæum Committee, have caused the delicate piece of Greek design to be painted. The stone, without including the statue of Minerva over the colonnade, they have covered with white, the handsome rooms they have treated to what one æsthetic sufferer describes as "odious stomach-turning combinations." The Classic hall is a dull yellow, the statue of Apollo gilded from crown to toes, the staircase walls sienna above, mottled brown lower, "greenery-yallery" at the bottom. In the reading-room the ceiling has turned blue with streaks of gold, while Japanese gold paper pales in contrast with the real gilding. In the dining-room, pale violet is set off with yellow. But the library gives the critics most pain, with its combinations of silver and blue, silver and canary, salmon and Scagliola yellow. The reply, of course, is that the Greeks used colour freely on their public monuments, and that the choice of tints is a matter of taste.

The façade of the Brompton Oratory is now completed all but a few finishing touches. It is in the style of the Italian Renaissance. The work is another example of the method of building great edifices by "instalments." It is several years since the "shell," as one might call it, of the Oratory was reared. Since then, year by year, the decoration of the interior has proceedsd by stages, and in the costliest style, until the artistic beauty of most of the Continental churches has been outrivalled. The Oratory has in consequence been more and more taking a prominent place as one of the great show places of the Metropolis. Unfortunately, the façade having been left to the last, and nothing but an ordinary brick front having, till lately, met the eye of the pedestrian, no one, unless specially informed, would have had his attention arrested by the place. This has caused many a visitor to South Kensington to miss the artistic pleasure of viewing Mr. Gribble's beautiful interior. One knows not, of course, what Mr. Bentley is going to do presently at Westminster; but, so far, the architect of the Brompton Oratory has written his name highest on the roll of the builders of churches for the old faith since it was driven from the abbeys and minsters of England.

The members of the Edinburgh branch of the Scottish National Federation of House and Ship Painters, along with friends, held their fifth anniversary social meeting in the Oddfellows' Hall in that city, on Friday night. In an opening address, Mr. George Greenhill, the president of the branch, drew attention to the aims and objects of the parent body, which, he said, had now a strength of about 2,000 members, the largest branch being in Glasgow. In regard to the local branch, he emphasised the importance of the technical classes as conducted at the Heriot-Watt College. The classes were largely taken advantage of, something like a hundred pupils having attended. A musical programme was then carried through.

Building Intelligence.

Berwick, Salop.—The chapel in the grounds of Berwick Park, rebuilt and consecrated in 1680, was reopened on Tuesday week, after undergoing a restoration embracing not only the renovation of the fabric, some portions of which date back probably to the 13th century, but also the addition of a new chancel and other adjuncts. Until recently the building consisted of a nave, tower (built in 1672), and porch. The additions include a new chancel, south chancel aisle, organ-chamber, clergy and choir vestries, and north and south porches. The buildings are of Grinshill stone, and the style adopted is 17th-century Renaissance. The chancel is divided from the nave by a semicircular arch, built to the full height of the nave. The roof is of semicircular vaults, panelled with moulded ribs. The east window has been filled with stained glass by Comere and Capronnier Frères, of Brussels, the subject being Christ Blessing Little Children. The other windows are in geometrical patterns by Messrs. Camm Bros., of Smethwick. The chancel is paved with encaustic tiles from Messrs. Godwin's Lugwardine Tileries, Hereford. The south chancel aisle contains oak seats for the inmates of the almshouses, and in the organ-chamber there has been erected a new instrument, with two manuals, by Messrs. Walker and Sons, of Francis-street, Tottenham Court-road. The whole of the walls of the nave and chancel have been panelled in oak, with carved cornices, the east end having emblematical carvings, by Mr. T. Catley, of Kennington, S.E. A stone font has been provided, and oak choir seats, prayer desk, and eagle lectern have been made by Messrs. Jones and Willis, from designs by the architect. The church is heated by hot-water apparatus, which, with the gas-fittings and ironwork, was supplied by Messrs. Lee, Sons, and Co., of Shrewsbury. The works have been carried out from the designs and under the superintendence of Mr. F. B. Osborn, of Birmingham; the contractors being Messrs. Bowdler and Co., of St. Julian's Friars, Shrewsbury. Mr. James Thorneloe was clerk of the works.

Bristol Cathedral.—Some interesting discoveries have been made in the choir of Bristol Cathedral, now undergoing restoration. A trench has been dug in the centre of the choir west to east, from the second to the fourth bay from the screen, with the object of unearthing portions of the Norman church. A foundation was discovered which is believed to have carried the east wall of the earlier and smaller edifice, the position of the foundation, which apparently extends across the choir, being exactly in the centre of the third bay. It is generally thought that this is part of the Norman church; but opinions are divided as to the date and object of the foundation some twelve paces further east, which some think supported the reredos or screen which divided the Lady-chapel from the choir. The modern and very unsatisfactory stone screen has been happily taken down, as well as the hideous and cumbersome carved freestone bases of the gas standards in the choir. Thirty years ago or so the old stone screen was removed. More or less beautifully carved, the remains were removed to the Cathedral close. They have now been gathered together with a view to their re-erection. The cloisters are to be restored, several munificent offers having been made for various sections of the work. When the marble flooring is laid, the stalls will be re-erected. In the mean time the groined roof is being scraped and cleaned. Mr. J. L. Pearson is the architect.—Tynedale Chapel, White Ladies-road, was reopened on Sunday after having undergone extensive alterations, the chief feature in which was the raising of the height of the tower from 37ft., as originally left, to 100ft. above the street pavement. Its style is 13th-century Gothic, somewhat French in character. It is a solid, square structure to the height of 80ft., and is surmounted by pinnacles 20ft. high. The tower is finished with an open parapet with foliated arches, and the pinnacles have carved crockets. The belfry windows are in pairs on each face of the tower, and are two-light windows with traceried heads. The structure is built of Pennant stone, with dressings of Box Ground stone. The carving has been done by Messrs. Davey and Bushell. The builder is Mr. E. Walters, of Montpelier. The clock for the tower has been supplied by Messrs. J. B. Joyce and Company, of Whitchurch, Salop. It will have two faces, and will be provided with Cambridge chimes, which will strike the quarters; the hours will be struck on a 10cwt. bell. Another improvement is the Wathen memorial pulpit. It is executed in Caen stone, the style being the early 13th century. It is supported upon a central pedestal, with isolated columns around it. The pulpit was executed by Messrs. R. Wilkins and Sons, of Surrey-street, the carving being intrusted to Messrs. Davey and Bushell. The architects of all the work were Messrs. Henry Crisp and Oatley, of Clare-street, Bristol.

Burslem Park.—On Thursday last this park was opened by the mayor, Alderman Lawton, amid general rejoicings, the town being *en fête* for the day. This park, which has been designed by T. H. Mawson, garden architect, of Windermere and Market Drayton, has been formed out of what was practically a cinder-heap and pit-banks, over 70,000 loads of soil being required to form the beds for the various plantations and lawns. The principal feature of the park is a large terrace, surrounded by a balustraded wall, into which are worked seats and covered shelters; upon the terrace are two terracotta fountains, by Doulton, of Lambeth; a band-stand, with a curved tiled roof, occupies a large octagonal bastion to the front; and a pavilion, in rough-cast and half-timber, a corresponding position at the opposite side of the terrace. On the terrace are a series of lawns, out of which are cut geometrical beds. The whole of the entrance gates are in wrought iron, by Brown and Co., of Birmingham. The superintendent's lodge, which occupies a position at the entrance nearest the town, is in rough-cast and half-timber, with tiled roofs. A small lake occupies a position at the foot of a large pit-bank, into the face of which has been worked some effective rockwork, by Pulhams, of Broxbourne, one part of which has been formed into a cascade, which is supplied by the waste water from the fountains on the terrace, and which in turn feeds the lake, a bit of effective make-believe which is very much better than the original pit-bank. The lodge and terrace walling have been erected by Mr. Nicholas Bennett, the boundary walls by Mr. J. Windsor, the pavilion by Mr. J. Allport, and the bandstand and shelters by Mr. W. Cooke, all of whom are builders in the town. The land cost £5,500, and the laying out involved an outlay of another £10,000. Mr. Mawson is the garden architect for the Cauldon-gardens, Hanley, opened in July last; and for the Bellevue Park, Newport, Mon., which is to be opened on Saturday, Sept. 8.

Felixstowe.—Sir Arthur Blomfield, A.R.A., is the architect of a new church, for which Messrs. Dorey and Co. are the builders, at Felixstowe. The site is on the cliff, and the tower will be finished with a spire as a landmark for seamen. Accommodation is to be provided for six to seven hundred sittings. Captain Pretyman, of Orwell Park, is providing a part of the necessary funds

Kirkstall Abbey.—The chairman and the members of the sub-committee of the Leeds City Council having charge of Kirkstall Abbey, visited the abbey on Monday, being met in the grounds by Mr. J. T. Micklethwaite, R.A., of Westminster, the architect under whose supervision the works necessary for the preservation of the ruins are being carried out. The committee inspected the large tower, which is about to be repointed, and Mr. Micklethwaite was instructed to prepare plans for a new lodge and entrance gates. Up to the present time £5,500 has been expended on works in connection with the abbey and recreation ground, but that sum includes more than £1,000 for adjoining land which was added to the recreation ground. Mr. Micklethwaite informed the committee that the whole of the works would be completed within the next twelve months.

Leeds.—The new central stores of the Leeds Industrial Co-operative Society, in Albion-street, were opened on Saturday. The premises face others on the opposite side of the street, built from Mr. J. W. Comyn's design in 1883, and have been erected from plans by Mr. W. S. Braithwaite, of South-parade, Leeds. They cover an area of 1,000 yards, extending back to Upper Mill-street. The ground floor and basement are arranged as a furnishing department. The first floor drapery and millinery department. The second floor is to be devoted to workrooms for dress and mantle making. The third floor is the tailors' workroom. The building is lighted throughout by electricity. The elevation to Albion-street is of stone from the Halifax district, that to Upper Mill-hill of pressed brick, and the rest of glazed brick. The floors are supported by iron columns, with English steel and iron beams and girders. The flooring is of wood blocks, and the ceilings are panelled in concrete. The total cost will be about £17,000. The several contractors were: Mr. C. Myers, stone and brickwork; Messrs. Bagshaw and Sons (Batley), iron roofs, girders, and columns; Messrs. A. and J. Wheater, concrete fireproof flooring; Mr. Thos. Moore, plasterer's work; Messrs. Watson and Worsnop, slaters; the society's own workmen, who, under the direction of Mr. Philemon Rump, the clerk of works, have done the carpenter's and joiners' work, and the plumbing, painting, and glazing. The building was illustrated in perspective in the Building News for March 25, 1892.

Small Heath, Birmingham.—The new church of St. Aidan, Herbert-road, Small Heath, was opened on Sunday. The portion erected consists of a chancel and two bays of the nave, with north and south aisles. Three more bays and a corresponding extension of the aisles, with a west porch and baptistery, are required for the completion of the church. The exterior of building is comparatively plain. The height of the chancel to the springing of the open-timber roof is 44ft., and the total height to apex of roof is 56ft. The chancel is 45ft. long and 23ft. wide. The nave is 2ft. wider, the junction being marked by a lofty arch. The total width of nave and aisles is 55ft. To the south of the chancel is a morning chapel, and the north chancel aisle is used for the organ. East of the chapel is a sacristry, or priest's vestry, which is semi-octagonal towards the road. An ambulatory connects the latter with the north aisle and clergy house. The style of the building is Perpendicular, and the wide elliptical hollows and wave mouldings characteristic of that period are adopted. The moulded columns carry a range of lofty, traceried, clerestory windows, two to each bay, which light the whole of the church, the aisle walls being solid to exclude noise from the adjacent courts. Between each window a clustered vaulting-shaft supports the hammer-beam of the timbered roof principals, which have arched ribs and wind-braces. The whole of the timber-work is left its natural colour. The interior of the chancel is built entirely of buff terracotta. The floor of the chancel is laid with encaustic tiles, and the nave and aisles with solid wood blocks. The architect is Mr. T. Fred Proud, and the builder Mr. E. J. Charles. The cost of the section now erected was £4,000.

CHIPS.

The Corporation of Liverpool have purchased the site of Kirkdale Gaol for the sum of £17,650, and will at once take possession. The site will be laid out as a recreation ground.

Christ Church schools, St. Alban's, are being enlarged and improved from plans by Mr. H. E. Hamsell, of that city. The work is being carried out by Messrs. J. and W. Savage, also of St. Alban's.

The will has been proved of Mr. Robert Cordy Baxter, of Hethersett, Reigate, architect; over £50,000. Mr. Baxter, who was articled to the late Ambrose Poynter, of Dover, and was long in practice in Abchurch-lane, E.C., was one of the senior members of the Royal Institute of British Architects, which he joined as an Associate in 1849, becoming a Fellow twenty years later.

The reparation of the grand old tower at St. Mary's, Brecon, which stands in the centre of the town, is now being carried out under the direction of Mr. F. R. Kempson, F.R.I.B.A., of Hereford. Nothing is being replaced except what has been demolished by time or which is found to be totally decayed or dangerous. All the framing for the bells will be new, as well as the floors. Stone has been selected which harmonises with the old work. Cement is being used throughout instead of lime mortar.

The memorial stone of a Free Methodist chapel was laid at Milton, Somerset, on Friday. The contractor is Mr. C. Taylor, of Weston-super-Mare.

A cottage hospital, which has been erected at the junction of Reid-street and Nethertown-street, Dunfermline, from plans prepared by Mr. Sydney Mitchell, architect, Edinburgh, was formally opened on Thursday in last week. The cost of the building has been about £4,500.

The new Post-office at South Brent was opened for public business on Tuesday. The building has been built by Messrs. R. Codd and Sons, from plans prepared by Mr. W. Barrons, Totnes.

Engineering Notes.

Bury, Lancs.—During the last few months a number of alterations have been carried out at the Bolton-street and Knowsley-street stations of the Lancashire and Yorkshire Railway Company. The work was undertaken by the company in response to an agitation promoted by the Bury town council, and the work at both stations is now practically completed. At the Bolton-street station the approach to the down platform has been widened from 9ft. 6in. wide to 14ft. 6in. wide, and considerably lengthened. There are now 30 steps with two intermediate landings, each 6ft. wide, the Hawksley-tread steps being divided into three sets of ten each. On this platform also a new waiting-room 32ft. by 11ft. has been erected, and two others altered. The alterations at this station have been carried out by Alderman C. Brierley, builder and contractor, Fishpool. At the Knowsley-street station a new subway has been formed, with an exit on the north side of the old entrance. In regard to the provision of waiting-rooms and other conveniences, an improvement has been effected. The works have been carried out by Mr. J. Kirkbride, builder and contractor, Fleetwood.

City of London College, Moorfields, E.C.—The syllabus of lectures in the Engineering Department of the City of London College, White-street, Moorfields, E.C., for the ensuing session, comprises every facility for the instruction of engineering students. Mr. Henry Adams, M.S.A., M.Inst.C.E., M.I.Mech.E., &c., is the professor of engineering, and has done good service in making the City of London College one of the foremost in the Metropolis for its thorough and practical teaching. The classes in technical drawing and construction have been in existence 20 years, and supply students with all that is necessary for their instruction in the principles and practice of drawing applied to construction. The architectural student cannot do better than avail himself of these classes during or before his pupilage. Construction in its various applications and branches is taught by a course of lectures; and the student has every opportunity of learning how to calculate the stresses in structures and materials. These classes are in connection with the Science and Art Department, and the fees are low enough as to enable artisans to avail themselves of the advantages of these classes. The lectures on "Strains in Ironwork," quantity surveying, and land surveying and levelling ought to be welcomed by a large class of students.

North Cornwall Railway Company.—The half-yearly report of the engineers of this company states that the portion of the third section between Delabole and Port Isaac-road Station, which has been completed, is a length of four miles and ten chains, leaving a little over six miles yet to be completed to the junction with the London and South-Western system near Wadebride. Of this remaining portion of the third section, the company are in possession of all the land required, and the works are well advanced. About 53 per cent. of the excavation has been done. There will be 22 bridges on this length, of which nine are finished, or nearly finished, and three are in hand. The key to the completion of the line is the tunnel at Trelill, the heading of which is now about two-thirds through, and about one-third of the tunnel has been finished and lined with masonry.

Southampton.—The graving dock in course of construction by the London and South-Western Railway Company in connection with the dock extension works at Southampton, is approaching completion. It will be the largest single graving dock in the world. Its length on the floor is 750ft., space being left south of the site for extension to 1,000ft. or more, if necessary. The width at the entrance is 87ft. 6in. at the sill level, and 91ft. at the cope. The depth on the blocks will be 29½ft. at high-water neap tides. The entrance will be fitted with a slip caisson, carrying the road and railway from the Empress Dock to the new quays now constructing on the Itchen. The walls are founded to a depth of 53ft., and the bottom of the invert is 59ft. below the cope level. The capacity of the dock will be 14½ million gallons, which will be emptied in from one and a-half to two hours by a pair of Gwynne's 48in. Invincible pumps, capable of delivering 112,000 gallons of water per minute. The discharge will be through two culverts of 8ft. by 6ft. 9in., all the valves and sluices being worked by hydraulic power. The greater portion of the site was reclaimed from the estuary by a chalk inclosing-bank, the area within which was drained, the trenches being then dug in which the walls were built. This bank was completed about twelve months ago, and in the interval some 136,000 cubic yards of excavation have been accomplished, and 55,000yds. of Portland cement put in. The guide stage reaching from the south-east head of the entrance to the Empress Dock is about 300ft. long, and is constructed of piles and timber framing, decked in, and is filled in up to low-water level with concrete. The quays, in all 3,830 lineal feet in extent, will also be chiefly constructed of timber and concrete. About 1,150ft. of the Test will be inclosed by a chalk bank, which is now being made. The whole of the extension works are being carried out by Messrs. Lucas and Aird, Messrs. Galbraith and Church, of Westminster, being the engineers, who are represented on the spot by Mr. Maurice F. G. Wilson, C.E., the contractors' representative being Mr. William Colson, C.E. The approximate number of men employed is 1,100.

CHIPS.

A receiving-order has been granted in the case of Charles Pinn, of Exeter, architect and surveyor.

The Roman Catholic Cathedral of St. George's, Southwark, will soon be ready for consecration. All the conditions for consecration are fulfilled, as the heavy mortgage on the cathedral was paid off some years ago, and it only remains to decorate the interior at an estimated cost of £1,500. The first stone of this fine Gothic church of Pugin's was laid in 1840, and in 1848 the opening took place.

The work of decorating the Lowmoor Wesleyan chapel, Leeds, has just been completed. The organ has also been rebuilt and enlarged by Messrs. Driver and Haigh, of Bradford, at a cost of over £200. Messrs. E. and B. Briggs carried out the decorative work.

The swing-bridge over the river Neath, which has been constructed by the Rhondda and Swansea Bay Railway Company, was completed last week. The swinging portion is 200ft. in span, and rests on a central cluster of nine steel cylinders. The total length of the bridge is 460ft., but only two spans are opening ones. It is the only swing-bridge of magnitude built on the skew, and has been constructed in two years. Messrs. Yockney and Son were the engineers, Messrs. E. Finch and Co. built the bridge, and the hydraulic machinery is by Sir W. G. Armstrong, Mitchell, and Co., of Elswick. Mr. George Palmer is the general contractor for the railway.

On Thursday in last week, a new Wesleyan church was opened at Wath. The cost was £4,500. The old chapel is to be converted into a Sunday-school.

Works of sewerage are being carried out for the local board of Ramsbottom, Lancs, the sewage being treated and disposed of at Eridge Bridge. Mr. Nuttall is the engineer.

The new branch premises for the Metropolitan Bank were formally opened on Wednesday week. The building, which is erected on the site of the old National Bank of Wales premises, has been built at a cost of about £2,200 by Mr. Edward Preece, contractor, Bridgend, from the designs of Messrs. Lambert and Rees, architects, Bridgend.

The fourth stone of a Wesleyan school was laid at Tutbury last week by Sir O. Moseley, the high sheriff of Derbyshire. Mr. A. Eaton, of Derby, is the architect, and Mr. Gould, of Tutbury, the contractor, for the school.

The licensing magistrates at Aberystwith granted on Friday licenses for an hotel and park, and cliff gardens and pavilion, to be erected by Mr. Grant, of London, at a cost of £20,000.

The memorial to Sir Jos. Whitworth, Bart., which has been erected at Darley by public subscription in the pleasure grounds opened three years since adjoining the institute that was presented to Darley Dale by the deceased, was unveiled on Saturday. Close by is the hospital presented by the legatees at a cost of £20,000. The obelisk is 39ft. high, and it stands on four base steps, two of which are 21ft. in length. The shaft is a monolith, weighing 15 tons, and is 16ft. 9in. high, standing on a plinth of solid stone of 8 tons weight. The stone came from the Darley Dale quarries. The obelisk, which was designed by Mr. C. E. Dawson, bears on one side a medallion portrait of the late Sir Joseph, on another a medallion of the great measuring machine with which his name is chiefly famous, and on the third side is an inscription. Between 6,000 and 7,000 people were present at the ceremony.

COMPETITIONS.

Exeter.—The Devon Volunteer Commemoration Committee met at Exeter on Friday, the mayor presiding, to further discuss the three selected designs. They bore the mottoes "Exon," "Jan Ridd," and "Fortiter." It had been arranged that one should be chosen for the memorial, and that standing second on the list of votes should be awarded a £5 premium. The design "Exon" was selected, and on the sealed envelope being opened it was found that the author of this was Mr. S. K. Greenslade, A.R.I.B.A., of University Hall, London. Mr. Greenslade inclosed, under cover, a tender from H. Hems and Sons, of Exeter, who undertook to carry out the work and erect the memorial to the satisfaction of the committee for the total sum of £200, including architect's charges. The committee resolved to adopt "Exon's" design subject to the city council assenting to its being placed on the Lower Terrace, outside the Assize Courts on Northernhay. The memorial is a pedestal raised on two steps, and surmounted by a square shaft, having a cap with the Royal Crown as a terminal. There are four panels of copper and brass. On one is the profile of Sir W. Bucknill in high relief, and on the other panels inscriptions are to be inserted. Above the panels are medallions, in which will be inserted the figures 1852, 1894, the monogram "V.R.," and the city arms. The memorial will be over 20ft. in height. The materials to be employed are Devonshire granite and Portland stone. The premium of £5 was awarded to the author of "Fortiter." This design was the work of J. Whitehead and Sons, of Aberdeen. The design represents a column surrounded by emblematic trophies and devices. The iron railing is formed by a trophy of rifles. The whole of the memorial, save where metal is shown, was to be of Devonshire granite. "Jan Ridd," whose design was regarded as too small, proposed that the memorial should be of Devonshire granite and Sicilian marble.

Weston-super-Mare.—For the three premiums offered by the local board for the best set of plans for a new market-house, the erection of which is to cost not more than £4,000, forty-two competitors sent in designs. The local board have selected that under motto "Floreat Westonia" for execution, and have awarded the first premium of £30 to its authors, Messrs. Hans Price and Wooler, of Weston; the second premium of £15 went, as we mentioned last week, to Mr. Sydney J. Wilde, also of Weston, in conjunction with his former pupil, Mr. H. D. Bryan, for their design "Cornocopia," and the third, of £10, to "Practical," Mr. Daniel Arkell, of Birmingham. The style of the selected design is Renaissance, in keeping with adjoining property in the High-street, which has been erected from plans by the same firm.

The Earl of Derby, G.C.B. will formally open the new park which he has presented to the town of Ormskirk, on Wednesday next.

A demonstration in support of the United Builders' Labourers' Union was held on Sunday afternoon at South Cray, under the presidency of Mr. Charles Shearman. Addresses on the advantages and future policy of trade unions were given by Mr. W. Stevenson, the general secretary of the union, and by Alderman H. R. Taylor, L.C.C., Messrs. Verdon, W. Beal, and others. On the same afternoon a similar meeting took place at Old Town, Southend-on-Sea, where Mr. W. Geard was the chief speaker.

On Monday week as a number of men employed by Mr. Forse, of Bristol, were engaged upon the erection of a house in St. Margaret's-terrace, Victoria-square, Weston-super-Mare, a mass of the cornice suddenly fell outwards on to a scaffolding platform some yards beneath, breaking one of the main supports. One of the masons named Henry Kidner, aged about 56 years, and residing in Palmer-street, was thrown into the roadway a distance of some 30ft. and killed. At the inquest held on the following Wednesday, evidence was given by Mr. Thomas H. Chalmers, the working foreman, and other men, and the jury in returning a verdict of "Accidental Death," stated "that the accident was due to the cornice stones falling on the scaffolding and breaking it up." The following rider was also added: "And the jury are of opinion that the cornice stones had been worked to such measurements and laid in such a way as to reach the limit of safety; and that, in future, care should be taken to 'tail' such stones further back on the wall so as to insure that there shall be no risk of the stones overbalancing."

ARCHÆOLOGICAL.

The Excavations at Delphi.—M. Homolle, Director of the Ecole Française of Athens, on the excavations at Delphi, has just reported to the French Government on the results of the excavations made at the Temple of Apollo, at the Treasury of the Athenians, and at the Treasury of Hellenico respectively. The area now excavated at the Temple of Apollo comprises the whole of the terrace which surrounds and supports the polygonal wall, that is to say, the temple itself and the space surrounding it on the east, south, and west sides, from 48ft. to 60ft. wide on the two former sides, and about 40ft. on the third side. On the northern side the two corners have been reached, and outside the wall a portion of the Sacred Way, 64ft. long and 32ft. wide, has been excavated at the north-east corner. But, notwithstanding the extent of these excavations, neither the fragment of a frieze nor any portion of a sculptured figure having belonged to the pediment has been discovered. This is regarded by M. Homolle as remarkable, and the complete absence of even fragments of decorative sculpture must be regarded as discouraging for the future. He conjectures that the Roman emperors posterior to Pausianas had the two groups of figures taken down very carefully piece by piece. The metopæ are supposed to have shared the same fate. M. Homolle seeks to give a description of the temple as it formerly existed. He says: "Raised on a stylobate composed of three high steps, the temple had the form of a periptera. In accordance with the custom of the 6th century, it had only six columns on the front, and was a very long building. To determine the number of columns on the side is a calculation which cannot be undertaken without a plan. To give one we must await the completion of the excavation, and we prefer to make no suppositions before having cleared away the ground from the fourth side of the temple." M. Homolle adds: "The discovery of the temple, the excavation of the Sacred Way intact throughout, the discovery of the monuments still standing beside it, and the considerable number of pieces of sculpture and inscriptions enable us to say our efforts have been rewarded." With regard to the Treasury of the Athenians, the discoveries since May have been important, and have, according to M. Homolle, had the double advantage of giving a firm basis for the interpretation of the subjects and for the order of distribution of the metopæ. Those discoveries now enable him to affirm that all the four sides of the building were decorated. About 30 slabs or portions of slabs, all the metopæ, have been brought to light, and the monument is now complete with its decorations. The work of excavation will be pushed on actively till winter.

The death of Mr. W. Varney occurred at his residence, Belgrave House, Lower Fant-road, Maidstone, on Friday morning. The deceased, who had reached the ripe old age of 94, was a director of the Burham Brick, Lime, and Cement Company, and for many years was the managing director of the works.

A largely attended vestry meeting was held at St. Peter's Church, Colchester, on Tuesday week, to consider the question of restoring the church. The vicar produced the amended plans of Messrs. King and Lister, which showed complete restoration in the Perpendicular style, the whole of the existing old work and the tower being retained. The cost of carrying out the entire scheme was estimated at £4,000, including the architects' fees. The plans were adopted.

On Thursday in last week, the Archdeacon of Northumberland laid the foundation-stone of a mission church at Lowgate, near Hexham. It is to be known as St. Mary's, and will form a chapel-of-ease to the Abbey Church of St. Andrew. Mr. Foster, of Newcastle-on-Tyne, is the architect.

At the Guildhall, Rochester, Major-General C. P. Carey, one of the inspectors of the Local Government Board, held an inquiry last week as to the memorial of the town council to be permitted to borrow £1,500 for making a corporation depot and stabling depot. The city surveyor, Mr. William Banks, produced plans of the depot, and explained the proposals of the corporation. The site was in Blue Boar-lane, conveniently near to the High-street.

Mr. W. J. B. Clerk, Local Government Board inspector, held an inquiry in the Congregational Schools, Heath Town, Wolverhampton, on Friday, into an application by the Heath Town Local Board for power to borrow £2,000, for purposes of sewage-disposal, private street improvements, and the formation of a new road to be called James-street.

Correspondence.

SHOULD ARCHITECTS ADVERTISE?

To the Editor of the Building News.

Sir,—How far may an architect go in the direction of advertising his profession? Those who are lucky enough to commence practice with plenty of capital to tide them over the first few years of waiting for clients assert that the beginner ought to be restricted to a big, boldly lettered brass plate on his door. Others adopt other tactics, so far as I can see or hear without protest from the professional societies, or loss of dignity with the public. Some take corner premises in suburban streets and flaunt large boards, describing themselves as architects, surveyors, estate and house agents, and I know not what besides. Others who have been intrusted with commissions rear above the hoardings of the works in progress signposts stating their name, address, and profession; or, if the estate is to be developed by them in conjunction with a solicitor, invite the attention of Mr. Buggins and his co-workers by gigantic boards. If he is successful in getting a commission for business premises or a mission chapel, this class of architects does not deem it derogatory to his professional status to incise his name as architect on the plinth or, better still, foundation or memorial stone. Yet another class without compunction advertise in the general newspapers. Here is a sample which I came across in the *Leicester Post*, and as to which I should like the opinion of your readers as to its legitimacy or otherwise. I will omit the name and address of the advertiser, as I do not see why you should be asked to give him a free notice, but I am told he has been in practice as an architect and surveyor in Leicester for many years, and therefore may be presumed to know the unwritten rules of professional etiquette. He was at one period a member of the Leicester and Leicestershire Society of Architects, but resigned his membership a long time ago. Doubtless when we have an Architects' Registration Act in force, such matters will be considered and dealt with by the General Council, but until this consummation, so devoutly to be wished for, is attained, every man will do that which seems right in his own eyes. Here is the advertisement I alluded to—what do your readers think of it?

MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE RAILWAY EXTENSION (LEICESTER). Valuations and Claims made for Property, Business, &c., required for the above Railway, in the Parishes of St. Mary's, St. Leonard's, St. Nicholas, All Saints', and the Abbey by the Parochial Surveyor and Assessor. Terms on Application. Consultations Free.

—I am, &c., Registrationist.

NEW ASYLUM AT WINWICK.

Sir,—The proceedings in connection with this competition have been so extraordinary that a few facts, I think, will interest your readers. When the necessity for the provision of further asylum accommodation was decided upon, an open competition was instituted, and the Lancashire Asylums Board drew up and issued instructions to intending competitors, and also appointed an assessor to decide for them which was the best plan, having regard to the instructions sent to competitors. In response to the board's invitation, about 25 architects sent in, and the assessor made his award, giving the first premium to a firm who have designed and carried out more asylums than any other firm of architects, the second to a gentleman also celebrated for his asylums, and the third to a firm not totally unacquainted with this class of work. So far so good. But to the surprise of every one, the authors of the designs placed first and second are passed over, and the design placed third recommended for adoption by the committee. And the only explanation that is offered is that the medical superintendents of the other county asylums preferred this plan. The doctors, forsooth! However much they may know the defects in the working of their own asylums, they are no more competent to gauge the merits of a plan than an architect is to deal with an intricate medical case. If the doctors can design an asylum why should the county be put to the expense of a competition? They might employ a draughtsman to put their ideas on paper, and then, in conjunction with a firm of architects, carry out the work to completion. Is it possible that this has been done in this case? Since the decision of the committee has been published, a notice has appeared that the name of Mr. Skinner should have appeared in conjunction with those of the authors of the recommended design. Who is Mr. Skinner! His name cannot be found in any list of architects. Is he the "ghost" who prepared the plans, or is he someone inspired with more information than the other competitors? In any case, on the face of it, it is obvious to any practical man that this design could not have been prepared from the instructions issued to architects by anyone who understood this special class of work. It is a design for an *acute* asylum on a very expensive plan (in fact, the most expensive of all the 25 sets sent in), suitable for the reception of all classes of patients, with a full complement of single rooms and small wards, all very nice from a doctor's point of view, but very different from what the board advertised for. Their instructions asked for an asylum for the reception of chronic lunatics and imbeciles, and laid special stress on the economy to be observed, pointing at the same time to the chronic asylums of Caterham and Leavesden as examples. The committee's decision is at direct variance. Now, sir, I ask why Lancashire is to lose all the money it has spent on this competition, the fee paid to the assessor, and the benefit of his opinion, the premiums paid, and why the county should not have the benefit of the experience of the gentlemen who were awarded the first premium, and also why the county should be called upon to pay £50,000 more for the new asylum than necessary? Do the ratepayers know what they are paying and what they are getting for their money? Perhaps some explanation may be forthcoming from the chairman of the board, failing which the whole business will have the appearance of a "hole-in-the-corner" transaction hardly creditable to my county. Of course it yet remains to be seen what the Commissioners in Lunacy will have to say when a plan for an *acute* asylum is sent up for their approval after they have already approved a site for a *chronic* asylum. Comment on the unfairness to the authors of the designs placed first and second, who sent in plans in accordance with the instructions costing £50,000 less, is superfluous.—I am, &c.,

A Lancashire Man.

THE ELIZABETHAN BATH IN THE STRAND, W.C.

Sir,—Under the above heading the following appears in the September issue of the *Stonemason*:

"What Mr. C. Y. Sturge described in a contemporary as 'a rather bad piece of vandalism' now appears to be imminent. 'Many of your readers,' he writes, 'may be aware of the existence, in a little-frequented alley off the Strand, called Strand-lane, of an ancient Roman bath in perfect preservation, and still fed by the old natural springs by which it was supplied some 1,700 years ago. This bath, happily, is safe. Two or three years ago it passed into good private hands, and, by the kindness of the proprietor, can be viewed by the public any Saturday between 11 and 12. But adjoining it is a larger and comparatively modern bath of white marble, which is said to have been built by the Earl of Essex, in the reign of Queen Elizabeth. This bath was until quite lately in perfect order, and was still used for its original purpose. It measures, to the best of my recollection, some 10ft. or 12ft. in length, by, perhaps, 8ft. in breadth, and 5ft. in depth at the deepest part. It is fed by the same ancient spring as the Roman bath, the water in both being beautifully clear and cool—it is said that the temperature never rises above 45deg., even in summer, but that is certainly an exaggeration. The bath holds about 25,000 gallons of water, which changes daily. Some time ago the Duke of Norfolk, who is the ground landlord of much of the property in the neighbourhood, acquired the freehold of the small private house in which the Earl of Essex's bath stood. This, with some adjacent property, was then let on a building lease, and the new Norfolk Hotel, with its striking terra-cotta *façade* fronting on to Surrey-street, has been built on the site, and is now approaching completion. The new hotel has been let in turn on a long lease. Unfortunately, nothing seems to have been said in the course of these transactions about the bath. The bath itself is still *in situ*, but the water is being used for common building purposes, and the whole is threatened with speedy destruction.

The future proprietress of the hotel, naturally enough, looks at the matter from a business point of view, and says she needs the space for a larder. She is, however, quite willing to listen to any representations that may be made from a proper quarter, provided her interest does not suffer. Will not Mr. Walter Besant or some member of the Society for the Protection of Ancient Monuments take the matter up? Acts of what may be called unconscious vandalism are done ignorantly, and, so to say, innocently around us every day. In the present case, the Duke of Norfolk is probably entirely unaware that he recently parted with the control of one of the most interesting and beautiful relics of the Elizabethan period left in London. The lady who holds the underlease of the property had never so much as heard of the bath until her attention was called to its existence a day or two ago. The masons, indeed, knew of it, and, when questioned about it, expressed a mild regret that it should go, but supposed it to be inevitable. It is thus that London's heritage is bartered away bit by bit under our very eyes, the barterers themselves scarcely knowing or troubling to inquire what it is they barter! Is it too late to hold out a helping hand to save this interesting relic? The Duke of Norfolk is one of London's County Councillors. If the matter has, indeed, passed beyond his control, surely he will raise his voice to save an object of so much historic value to Londoners, his own private property, from destruction. The Essex bath is situated in the extreme corner of the hotel, and the small area which it covers could easily be detached, as to the basement only, from the hotel, and be reunited to the Roman bath property, from which it is distant only a few feet, and with which it was until recently in direct communication. The doorway which separated the two has only been bricked up for a few weeks."

I may add that this threatened bath was built entirely of white marble, in A.D. 1588, by the Earl—and tradition says it was first used by Queen Elizabeth. The water—as clear as crystal, and as "cold as charity!"—is perpetually flowing through it a rate, it is computed, of 10 tons per diem. For at least a quarter of a century, I never went to London during nine months of the twelve without having a bathe in it myself. Curiously, however, although I have often had American people as fellow-bathers, I never remember seeing an Englishman there.

Its close to the public, a few years ago, was a matter of great personal regret to me. Its total destruction would be quite a national loss.—Yours obediently, HARRY HEMS.

Fair Park, Exeter, 1st September, 1894.

LOCAL BUILDING REGULATIONS.

SIR,—A question involving the first principles of right and wrong has arisen between the executive committee of the Norwich City Council and a local builder. The latter is building a house of the value of £2,000, and has deposited his plans of same. The site is within the rateable area; but is not reached by the public sewer by about 500 yards. A cement-lined cesspool has consequently to be provided, and the occupier, not the corporation, will have to empty it, the annual expense of which will be about £8.

Now, the question is, Is it right, or in any sense justifiable, that the occupier should have to pay a private scavenger for this work, in addition to paying the public sewer rate—in other words, that he should have to *pay twice over* for the removal of his sewage? For, after all, a town council are only the agents of the ratepayers, and as such make out their demand notes to meet their expenses. But in this case the demand note is false: money is demanded for work which has been done, not by their servants, but by the private employés of a ratepayer. Hence, it would appear that the city council are obtaining money by false pretence, although, of course, not witn intent to defraud.

Perhaps some of your numerous readers may offer a solution, or some criticism, on this subject. The only solatium that the city council have offered is a promise that, at *some future time* the sewer will be carried past the building in question.—I am, &c., SURVEYOR.

SURVEYORS IN THE ROYAL ENGINEER DEPARTMENT.

SIR,—I have only just seen the correspondence relative to the pay and position of surveyors in the R. E. Department, which appeared in your columns last July, and I hasten to put forward a view of the question which seems to be a practical one.

In the first place, I would ask whether the young men who are likely to prepare themselves for this service are in the possession of such abilities, and are favoured with such a connection as would warrant them in expecting, with very little, or even with a great deal of trouble, to earn such a livelihood as they can obtain in the position of surveyors in the War Department?

Secondly, are they likely at the age of 65 to be able to retire from practice, having saved as much out of their earnings as would yield £250 or £300 a year? To do so they must be able to put by over £7,000! I am over 30 years in the profession, and I do not know of more than *one* man who has done so. But I know of many who have lived from hand to mouth for years, and are likely to do so all their lives.

Thirdly, I should like very much to know what it matters to a sensible person whether the colonel, the major, the captain, or even the lieutenant, or all of them put together, claim to have done the work which he does for the Queen. What does the public care who does it? And why should the surveyor care for anything beyond his duty and drawing his pay?

Fourthly, the social ostracism is a very delicate matter. Every person finds his own level. If men have not been in the habit of mixing in military society before they enter the War Department, why should it be a grievance if they are more or less debarred from it afterwards? If any one wishes for all the glamour which is supposed to attach to the life of an officer in the Army he has only—provided he can conveniently do so—to read hard in his youth and obtain the coveted prize.

So long as men wish to earn their bread in an honourable way, without any extraordinary pretensions to rank, so long will the office of surveyor in the War Department be sought after and filled.—I am &c.,

AN OLD R. E. D. SERVANT.

SIR,—I put off writing a second letter to you because there seemed to be an entire lack of interest in the discussion, and I did not care to engage in a duel with "One Who Is In It" on the subjects of registration and the employment of R.E. officers. I wrote in the first instance to warn the correspondents that outspoken condemnation of the R.E. officers over a signature showing that the writer belonged to the department, could only do harm to us, and to suggest that the case of the assistant surveyors might possibly turn out to be not such a desperate one after all. Registration and the civilian employment of R.E. officers have been argued in this paper and elsewhere at length, and I must decline to discuss them, merely saying that personally I have not made up my mind as to the feasibility or desirability of registration, and that I am heart and soul in favour of dismissing R.E. officers to their proper duties.

If you will allow me the space, I now propose to run over the letters which have appeared since I wrote, and notice one or two points, after which I must be permitted to retire gracefully or otherwise.

My phrase "ornamental head" has proved the red rag that I thought it would. Let me illustrate what I meant by following out the probable course of events if the reform laid down in the second paragraph of the letter from "One Who Was In It" was carried out. Say £60,000 is to be spent in barrack reconstruction at a given station. Conditions are drawn up (by whom?), and a helter-skelter rush is made by the profession, some hundreds of designs being sent in. Of course there would be a condition that no member of the permanent staff should be allowed to compete. *Who is to examine these designs?* At once I see the Hon. Thomas Noddy, and Lord Fitzbattleaxe, second cousin of the S.S.W., appointed "Competition Commissioners," with, of course, a general and a few colonels to advise them on technical points, a big staff of clerks, and a new class of Civil Service appointments under them, "examiners of designs in the office of the competition," "commissioners, technical training and qualifications necessary, &c., salary so much, with an ultimate prospect," and so on. Have we not seen it under our own eyes, in the appointment of the "Civil Service Commission."

Then, after the brains of the profession had been at work on the barrack problem for a few years, and a satisfactory type of design for every building had been evolved, that eminent architect Mr. T-Square, whose wife was a daughter of the Hon. Member for Eatanswill, would get the hon. member to point out the iniquitous waste of public money in premiums and 5 per cent. commissions, and the flagrant abuse of the existence of these highly-paid dummies, the "Competition Commission," and prove that economy would result from the establishment of a barrack design commissioner, with a staff, of course. Mr. T-Square, having pulled off several competitions, would be permanently appointed to a good berth near the top, and as this would throw Tom Noddy and his friends out of work, places would be found for them, and things would go on swimmingly, only the Civil Service vote would not be decreased much.

On page 129 the treatment of four eminent architects is referred to. I would add Leeming and Leeming to this list, and ask our friends "Was" and "Is" to settle between themselves the probable treatment that the competing architects dreamt of by "Was" will receive at the hands of their judges, for I suppose there must be a head, ornamental or otherwise.

Mr. Ingress Bell must be amused (he must have got over the annoyance stage) at the way his name invariably crops up. A little while ago every assistant surveyor was taught to regard Mr. Bell's presence in the first-class surveyor's list as one of our great grievances, the phrase "pitchforked into the department" being freely used. Now, it seems, he is one of our brightest ornaments. Mr. Tyndale has the same chameleon-like properties apparently.

The Office of Works, Admiralty, County Council, &c., are held up as free from the abuses under which we are struggling. I have heard a different tale from members of some of these departments. The fact is that Mr. Tite Barnacle, Civil Servant, is invariably an ill-used man; from the F.O. down to the most poorly paid and least thought of appointment, every one has his grievance; while the "temporary man" writes books to prove that Barnacle is retarding the ship of State (see Marvin, &c.); and to give the case a personal application, see letters from temporary men in last year's correspondence, or in *Engineering* the other day, ignoring our existence, or actually daring to say that *we*, the oppressed, the ground down, are too well paid for what we do.

"One Who Was In It" attacks my diagram with more zeal than discretion. It simply shows in pictorial form what he gave in figures, the dates of promotion supposing every one lives to 65, and that the upper classes are not filled up to 11 and 22 respectively. So he is disparaging his own case. Then I said *retirements* would average, have they not done so? I did not say promotions, that was my grievance No. 2. Again, surely he knows what is common gossip in the department, that two surveyors have sent in their papers, and the fact that Mr. Bowden, A.S., retired on Aug. 9.

In fact "Was" shows a disposition to unfair fighting, which I did not expect to meet in this correspondence, for I did not insinuate that the "profession" is lacking in dignity. I spoke of the members of the department. Do we not belong to the middle class? The term is vague; but it is well enough understood, and how should we be received by the members of the upper classes with whom we should have to deal if we were made heads of a department? But I forgot, "Was" wants us to remain in the lower division, as it would practically become.

Then why does "Was" refer to the paragraph on page 270 which suits his purpose, and pass over the three paragraphs immediately preceding which show that Republican America cannot manage these things better than (nominally) Monarchical England, R. E. officers and all.

It is remarkable to notice how we Englishmen alternately thank God that we are not as other men are, especially these foreigners, and laud the said foreigners' institutions to the skies. I should be very sorry to see England laced up to the choking point in uniform like Germany, bankrupt like Italy, covered with a pettifogging parasitical bureaucracy like France. or worked by "bosses" and "rings" like America. Our Civil Service is ridiculous and wasteful in many respects, like our form of government; but I am proud to think that it will stand comparison with any other.

The letter from "A Commissioned Officer" contains a statement which took away my breath. I could not help thinking that the ideal "architect," invented for argumentative purposes by "One Who Is In It," deserved a high place amongst the heroes of fiction, but this "Surveyor" "*at least the social equal, and invariably the intellectual superior !*" This beats any tombstone inscription I have ever heard of.

As regards the billiard-playing question, it might very well have some grounds; in fact, I have known surveyors who stood drinks at the sergeants' mess, and hob-nobbed familiarly with Tommy Atkins generally. We are not free from persons of this class now, either at the top or at the bottom of the list.

His remarks about the various army departments are interesting, showing what a happy united family these army officers, into whose charmed circle we are so eager to press, really are. I could suggest a few more pretty names, but will only give him one for the whole crew, "only butchers." It is perhaps necessary for me to say, considering the way some of my remarks have been misunderstood, that this is not my opinion. I regard the soldier's profession, as defender of his country, as a very noble one.

In conclusion I should like to say, avoiding the appearance of spitefulness if I can, that the great majority of the department would be very much obliged to "One Who Was In It," if he would kindly stay out of it. It is an open secret that the reduction of promotion is owing to the agitation and friction which has been going on lately, and "One Who Was In It," having got all he could out of the department, and now enjoying a pension, is doing his best to spoil the position of his former companions. I have no doubt his indignation is very righteous and all that, but perhaps he would not mind letting us manage our affairs in our own way.

One cannot help retorting to "One Who Is In It," and others, "Why do you stay in it, if the chains are so galling?"

Personally, I feel that I cannot have the whole earth; I must take the bitter with the sweet. In these days of strife and stress, security of tenure is a great consideration—let those who have gone the sickening round of architects' offices looking for a job, or undergone the equally sickening ordeal of waiting for the postman with the competition award, say. Theoretically, I am opposed to all figure heads. I would begin by clearing away the four generations of hereditary rulers and hangers on, and proceed downwards viâ the House of Lords, arriving at the R.E.C.S. in due time, till the ideal of "Looking Backward" was reached in a time when there should be no posing, no social ostracism, no self seeking or glorification at the expense of others, no downtrodden genius, no envy, hatred or uncharitableness; no anything in fact to stir a man's blood in his veins, or rouse him to ambition or "*sæva indignatio*," nothing but contented, sluggish, gelatinous mediocrity.

Meanwhile I am a Barnacle, and a Barnacle I hope to remain, sticking firmly to my "ultimate prospect."

I am glad my old friend Balbus was recognised, I think he must have been a Barnacle in his time, he was such an old grumbler. With a gem from his philosophy I wind up my share in this correspondence; his sage advice to "the boys," which might stand for the text of all my discourse, "Do not irritate wasps."—I am, &c., Balbus.

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In connection with the refuse-destructor, Vauxhall-road, Liverpool, the Health Committee of that city have decided to erect, at a cost not exceeding £1,500, patent hydraulic machinery for making concrete slabs from the "clinker" left in the refuse furnaces. The slabs are used for street pavements.

Under the auspices of the University Extension movement a course of twelve lectures on "Gothic Architecture" is about to be delivered at Newcastle-on-Tyne, by Mr. D. H. S. Cranage, M.A., of King's College, Cambridge. The lectures will be given on successive Thursday evenings, commencing on the 20th inst. at the theatre of the Newcastle Literary and Philosophical Society, and the topics treated upon will be English architecture from pre-Norman to Perpendicular times, mouldings, timber roofs and screens, and architectural art.

An appeal on behalf of the buildings extension scheme of Aberdeen University has been issued. It is stated that the total expenditure is expected to be £140,000. The subscriptions already received, including £10,000 from the town council, and £20,000 from Dr. Mitchell, Newcastle, amount to £50,219, and the Government grant to £40,000, leaving to be raised in round figures £50,000.

Intercommunication.

QUESTIONS.

[11209.]—**Fire-Resisting Cement.**—Is there a cement which is a good conductor of heat, but which will not decompose or crumble on the application of a strong fire?—E. A. A.

[11210.]—**Lightning Rods.**—I have been told that, according to the latest scientific discoveries, lightning rods are useless, and may even be dangerous. Is this true, and if so, why? Any reference to papers by Prof. Lodge on this subject would be much appreciated.—Fasnacht Clayton, Manchester.

REPLIES.

[11192.]—**Building Lines.**—It is possible that the old building line was irregular, or that some of the lessees wished to set back to obtain light to the basement. "Critical" need not fear; such matters are inquired into very closely by the officials.—H. L.

[11193.]—**Chancel Screens.**—One of the best examples is certainly that at All Saints, West Dulwich, a fine church, altogether one of the best in South London. I remember many years since, when I was in the office of the late Mr. C. E. Giles, one of his designs for a church at either Lincoln or Yarmouth showed a similar stone screen, but the work was not executed.—H. L.

[11194.]—**Testing Drains.**—I advise "House" to allow the vestry officials to test the drains: otherwise they may serve him with a notice to reconstruct in accordance with recent legislation.—H. L.

[11196.]—**Joints for Stoneware Pipes.**—The "Stanfeld" joint is one of the best known. "H. D." should consult the trade catalogues.—H. L.

[11202.]—**Chapel Ceiling.**—All ceilings in places of public worship, assembly rooms for lectures, &c., should be horizontal with no obstruction (gas pendants excepted) for the passage of sound-waves; they are much better than open-timbered roofs.—H. N.

[11203.]—"**C.E.**"—These initials mean nothing—except that the man who uses them is mostly a quack, or else a fool. He either intends to gull a client into the belief that he is a member of the Institute of Civil Engineers, or he is idiot enough to think his name looks better with the added initials. The only man I ever knew honest enough to tell the truth was a patent agent, who when I asked him why he had tacked on "C.E." after his name, said bluntly, because he had found out "There was nothing like cheek in this world." If you want to be a civil engineer, you must be apprenticed to one and learn your business. If you want to be a member of the Institution of Civil Engineers, you must write to the Secretary, in Great George-street, for particulars of the necessary qualifications. It is not necessary to join, but you will do so if you are wise, because the Institution is a real and creditable representative body of the profession, just as the Institution of Surveyors is of that profession, and not, like the Institute of Architects, the representative of a section only. If you do *not* join, stand on your own merits, and don't ape quack doctors by plastering meaningless or knavishly intended initials after your name.—Kappa.

[11203.]—"**C.E.**"—"Engineer's" acquirements are hardly sufficient. Besides the building trades, land surveying, &c., he ought to understand the mechanical principles involved in various structures of stone, concrete, iron, and timber, and the elements of mechanical engineering. He should also learn hydraulic engineering, tunnelling, the sewerage of towns, &c. Articleship, though not absolutely necessary, is certainly desirable, to enable the student to pick up the practical knowledge of the profession. "Engineer" should get the programmes of the Institution of Civil Engineers, with the list of subjects required to pass the examinations, for information as to the courses. Engineering can be taught by entering one of the colleges—like the City of London College, Moorfields—where courses of lectures are given. Write for syllabus of lectures in the Engineering Department, White-street, Moorfields.—G. H. G.

[11203.]—"**C.E.**"—"Engineer" should, if qualified, get elected a member of the Institution of Civil Engineers; otherwise he will have no legal right to use these initials after his name.—H. L.

[11205.]—**The "Hermite" System of Treating Sewage.**—"Sanitas" had better consult the official reports published in France and New York. The Hermite process is called in New York the Woolf process, and is a mode of sterilisation by the action of chlorine compounds produced by the electrolysis of sea or salt water. I am not sure of the practical results obtained, but believe that, under certain conditions, the sewage has been improved.—G. H. G.

[11206.]—**Churches in Shropshire.**—If "S. S. S." isn't in a great hurry, he had better wait for a work now in the press, entitled "An Architectural Account of the Churches of Shropshire," by D. H. S. Cranage, M.A., illustrated by litho.-photos. by Martin J. Harding, and ground plans by W. Arthur Webb, A.R.I.B.A. (Hobson and Co., publishers, Wellington, Shropshire). The size of the book (2 vols.) is demy quarto—i.e., 11¼in. by 8¾in.—and it is to be issued in 5s. parts, at a cost of £2 10s. the whole book. I believe something like 200 ancient churches will receive attention therein, as well as a hundred or more modern ones.—Harry Hems.

[11207.]—**Oak Sills.**—Oak sills are, of course, more durable than good yellow deal; but then, again, it is much more likely to twist. When my own place was built in 1881, from designs by Mr. R. Medley-Fulford, F.R.I.B.A., we made all the exterior half-timbered work and interior doors, dados, &c., of oak; but the window-frames and casements of teak, because it does not twist. "A Builder's" query as to why deal is used more than oak in house-building is an old one. The main answer is that it is cheaper and easier to work. But, apart from that, oak is not always appreciated. The tobacco-shop front in the Euston-road, under the approach to St. Pancras Midland Station arrival platform, was put in, by the late Sir G. Gilbert Scott, in oak. The last time I noticed it all this woodwork was painted and grained!—Harry Hems.

[11207.]—**Oak Sills.**—"Builder" must have been studying the cheapest kind of speculative building, as oak or teak sills are used in all good work, with a galvanised water-bar fixed in a groove in both oak and stone sills.—H. L.

[11208.]—**Shape of Room for Sound.**—If in this inquiry it is meant length and breadth, neither length nor breadth has anything to do with sound; but the height has something more or less to be considered. No need to travel far for proof. No room ever yet built but what will speak for itself. The difficulty arises in not understanding it, and the best authority I can suggest for information on the subject would be those who use such rooms for the purposes rooms are intended to serve. That authority would be a sure guide to intending builders of a hall. Much consideration is required in this respect before plans are submitted. Any preacher or speaker, or even singer, can testify as to the acoustics of any place they had used in their vocation, by reason of the exertion or otherwise it requires for articulateness. An instrument (organ), be it ever so costly, loses much of its melody by being placed in a wrong position, which any musical ear can detect when sitting with the audience. After 40 years' experience in such matters, I may, without prejudice, make a few observations—viz., No room or hall used for public purposes should be more than 20ft. from floor to ceiling, if that is a level ceiling; nor more than 15ft. to the spring of rafters if an open-timbered roof. The platform raised 3ft. from floor, and ceiled at 8ft. from its floor. Objection to this cannot be tenable on the ground of ventilation, for in that there is no difficulty if preparation is made for that purpose in the course of construction. I do not mean the application of ventiducts, *alias* ventilators, be they ever so fantastical—those things are perfectly useless; but ventilation in its true meaning, for there is always in an assemblage of persons sufficient heat generated for that purpose.—H. Nichols, Wardleworth, Rochdale.

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CHIPS.

The memorial stone of the intermediate schools for Penrith was laid by Lady Windsor on Wednesday week. The site of seven acres in Stanwell-road was given by Lord Windsor, and the building will be erected from designs by Mr. H. Snell, at a cost of between £7,000 and £8,000.

The will of Mr. William Edward Williams, of 46, Leicester-square, and of Wallington, Surrey, surveyor to the London and General Plate Glass Insurance Company, who died on July 7, has been proved, the value of the personal estate amounting to £9,914.

The restoration of the lofty Perpendicular spire of Newark parish church, which was struck by lightning and seriously damaged during the heavy thunderstorm in May last, has now nearly been completed.

A new hotel is in course of erection at Ham-place, Chelsea. The contract has been taken at £38,250 by Messrs. Stephens, Bastow, and Co., of London and Bristol.

The Rev. H. L. Nelthropp, the master of the Clockmakers' Company, has presented to the Guildhall Library the watches and clocks he had collected during the past forty years. They comprise between two and three hundred specimens, and will be arranged in a case now being specially prepared, to be placed by the side of the exhibit that has for some years been shown at the top of the steps leading from the lobby of the Guildhall Library into the Museum.

The Beehive Inn, in the narrow part of the Butter Market at Ipswich, is about to be reconstructed from plans by Mr. H. J. Wright, M.S.A., Museum-street, Ipswich, and will then contain fifty bedrooms and other apartments. It will be re-named the Grand Hotel.

The German Emperor and Empress and other high personages were present at the consecration of Professor Eucke's sarcophagi of the late Emperor William and Empress Augusta in the Mausoleum at Charlottenburg at noon on Sunday.

The Mansion of Gorgie, six miles north of Dundee, a house erected in 1614, was totally destroyed by fire on Sunday.

The foundation stone of the Passmore Edwards Free Library was laid at Redruth yesterday (Thursday) by Mr. J. Passmore Edwards. The building is being erected from designs by Mr. James Hicks, of Redruth, and was illustated in our issue of August 3rd last. Mr. John Symons, of Blackwater, Cornwall, is the builder.

The extensions to the Llanelly Hospital, which are nearing completion, are being warmed and ventilated by means of Shorland's patent double-fronted Manchester stoves, with descending smoke-flues, and patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

In the case of Henry Smith Holley, of Wellington-street, Strand, W.C., and Great College-street, Abingdon-street, S.W., architect and surveyor, the discharge from bankruptcy has been suspended for three weeks, ended August 31 last. The public examination was concluded so long ago as March 13, 1885.

Legal.

WHO IS THE "OWNER"?

IN the complex dealings with property which so constantly occur where there is a lease and an under-lease of the same premises, confused by assignments from both lessee and under-lessee, it is often very difficult to find out who is the "owner" within the meaning of the statutes as the person liable to the local authorites for any nuisance. This was well shown in a recent case that arose about a public-house in Camberwell, and in which the brewers, Truman, Hanbury, Buxton, and Co., had been made liable for certain structural nuisances to the property by order of a police magistrate, as being the "owners" within the meaning of Section 141, of the Public Health (London) Act, 1891. This decision had been confirmed by Quarter Sessions, from which it now came up to a Divisional Court by way of appeal. The various interests in the property stood in this way. The brewers, the appellants, were assignees of the original lease for the remainder of a term of about 39 years from 1885, and the occupier was assignee of an under-lease for the same term, less a few days, which had been granted by the lessee. The same rent of £50 a year paid by the occupier to the brewers was by them paid over to the lessee, so that they got nothing out of the property as rent. The original lessee had been paid a premium when granting the under-lease, and the present occupier had paid a larger one on his assignment.

In this state of things the question for the High Court was whether the brewers had been rightly convicted as "owners" liable to abate the nuisance under the statute. The section defined an "owner" as the person receiving the rack rent of the premises; but as to this the judges held that none of these parties came within that part of the definition. But then the clause went on to say "who would so receive the same if the premises were let at a rack rent." Now, as the judges of the Divisional Court pointed out, the brewers, as assignees of the lease, subject to the existing under-lease, could not receive any more than the £50, which they in their turn paid over, and they could not, therefore, be the owners; but the occupier, who chose to use the place himself, could let it if he liked, and he would be able to do so at a rack rent. Therefore he was the only person who, if the premises were let at a rack rent, could receive that rental, and so, besides being the occupier, he was also, legally speaking, the owner, as having the largest substantial interest in the property. The conviction was therefore quashed as against the brewers, and the assignee of the under-lease was declared to be both owner and occupier, and therefore responsible for the nuisance.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

T. and M.—Light and Air.—Prescription Act.—The time is still 20 years, and it has not been reduced. The Act to which you refer was passed in 1874, and reduces the time within which actions for the recovery of land, &c., must be brought from 20 years to 12 years. It is thus a statute of limitations, and has nothing to do with the period of prescription for easements.

Chain.—Appraiser.—License.—The law has not been altered, and the appraiser's license can be obtained for £2 per annum at the Inland Revenue Offices, Somersrt House. That should be sufficient for all the purposes you mention.

J. B. F.—Stone.—Building.—Dispute.—You seem to have a fair claim, upon the facts stated, especially as the letter received would most probably be held to be a compromise up to its date. But there is really no legal question involved that can be answered here. An action should be brought, and then the claim will probably go to arbitration, or be met by some sort of arrangement of compromise.

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At Ilkley, on Friday, Mr. F. H. Tulloch, M.I.C.E., one of the Local Government Board inspectors, inquired into an application by the Ilkley Local Board for sanction to borrow £2,600 for improving and enlarging the gasworks recently acquired at a cost of £59,168 6s. 10d.

The excavations which are going on at the cemetery of St. Emilien, Nantes, have already led to discoveries of ancient stone coffins, some of them being highly decorated. A pagan temple evidently stood upon this spot before it was converted to Christian uses, and traces of the foundations have been brought to light.

WATER SUPPLY AND SANITARY MATTERS.

Glasgow.—At a meeting of the Sewage Committee of Glasgow Police Commissioners on Monday, approval was given to a scheme prepared by Mr. M'Donald, the city engineer, for the erection of sewage purification works at Dalmuir, similar to those at Dalmarnock, for dealing with that part of the sewage of the city on the north bank of the Clyde not touched by the east-end works. The scheme proposes that the greater part of the drainage area to be dealt with, covering 4,500 acres, shall be carried in a gravitation sewer, without pumping, to the corporation lands of Dalmuir, and there purified; and it is also proposed that the lower levels of Glasgow and Partick, extending within the city boundary to 800 acres, be pumped into an outfall sewer at a station on the Kelvin.

Halifax.—A scheme for dealing with the bulk of the sewage of the borough is to be brought before the next meeting of the Town Council. The council will consider a resolution to apply for the sanction of the Local Government Board for power to borrow £8,000, for the purchase of 10a. 3r. 1p. of land at Salterhebble, for sewage filtration works, &c. Salterhebble is at the lowest part of the borough, and so placed that 7,689 acres out of 8,209 acres, being the area of the borough, are drained to that point. There are to be settling tanks and precipitating tanks for chemical treatment of 3,000,000 gallons in 24 hours. This scheme is estimated to involve an outlay of £21,841 10s.

Upper Airedale.—Mr. Tulloch, M.I.C.E., of the Local Government Board, held an inquiry at Eastburn, on Friday, as to an application from the Keighley Rural Sanitary Authority for power to borrow money for sewering and sewage disposal at the villages of Sutton, Sutton Mill, and Eastburn, and disposal works for the village of Steeton. Mr. R. B. Broster, the engineer, explained that in Sutton, Sutton Mill, and Eastburn, with a total of 534 houses, the daily sewage from an estimated population of 2,670, was estimated at 80,100 gallons per day, and this it was proposed to treat on a four-acre site, the total cost of the undertaking being £6,476 9s. 3d. Steeton had already constructed a sewerage system, and a field had been purchased adjoining the Aire, the cost of the scheme being £1,546 15s. 9d. Both systems would be on the principle of intermittent downward filtration.

CHIPS.

The statue of Edmund Burke, which has been presented to Bristol by Sir W. H. Wills, will be unveiled next month by Lord Rosebery. It has been cast in bronze by Mr. Havard Thomas, and placed in position on its pedestal of Scotch granite by Messrs. W. Cowlin and Sons, of Bristol. The statue, which is 9ft. 6in. in height, and is raised on a pedestal some 14ft. above the roadway. It faces the Harbour at St. Augustine's parade. The orator is represented in the dress of his day, and in the act of addressing an audience.

The custodiers of the National Wallace Monument journeyed to the Abbey Craig at Stirling on Friday, and inspected several improvements which have recently been made on the monument. The most important of these is a series of four indicator maps placed on the very top of the monument, showing all the interesting features of the landscape, and which will be of advantage to the numerous visitors who annually visit this spot. The maps were all executed by Mr. James Shearer, Stirling.

An organ, built by Mr. Banfield, of Handsworth, was opened on Friday at the Congregational Chapel, Union-row, Handsworth.

At the last meeting of the Aberdeen Harbour Board it was decided to extend the wharf on Regent Quay (Upper Dock) by 410ft. and to erect a shed 22ft. in length by 35ft. in width. The estimated cost is £5,227. The wharf on the south side of the basin will also be extended by 260ft.

On Tuesday week Mr. John Melrose, builder, Leith, who had gone to Crieff with a friend on the previous day for rest and change, committed suicide in his bedroom by inflicting a wound in his neck. Mr. Melrose had been in business in Leith for about 25 years, and was at one time manager of the Sailors' Home. For many years he conducted a Sunday school in the town, and took an active part in the affairs of the session of North Leith Church, of which he was one of the oldest members.

A church erected at Bridgend, Perth, by the Perth United Presbyterian Church Presbytery, was formally opened last week by the Rev. Dr. Smith, Edinburgh. The church is seated for 550 persons, and is estimated to cost £3,500.

The Eccles Town Council have applied to the Local Government Board for power to borrow money for the provision of a town's yard for the borough. Plans have been prepared by the surveyor (Mr. A. C. Turley, C.E.), and the work is estimated to cost about £7,000.

Our Office Table.

The three chief provisional autumnal art exhibitions, at Manchester, Liverpool, and Birmingham respectively, were opened on Monday. They include, as usual, many of the most attractive pictures shown this summer at Burlington House and the New Gallery, and a number of fresh works of interest and value. The twelfth exhibition at Manchester contains Leighton's "Spirit of the Summit," Watts's "Man who had Great Possessions," Stanhope Forbes's "Quarry Team," Hacker's "Temptation of Sir Percival," and Holman Hunt's "Importunate Neighbours;" landscapes by MacWhirter, Murray, and North; seascapes by Henry Moore, Henry Summerscales, and Brett; a military portrait group by Chevallier Tayler; decorative subjects by Grieffenhagen, Poynter, and Brangwyn; and *genre* pieces by Morris, Leslie, and Dendy Sadler. The best works of the Glasgow school are Lavery's "Le Soir," and "A Lady in White" by Mouat Loudan.

At the Walker Art Gallery, Liverpool, Watts's "Eve" and his portrait of Walter Crane are easily first, and other well-known works are Henrietta Rae's "Psyche at the Court of Venus," Briton Riviere's "Beyond Men's Footsteps," lent by the Chantrey Trustees. The weird Academical study of "The Sea Maiden" ennetted by fishermen, by Herbert Draper, and T. C. Gotch's "Child Enthroned" will attract much attention. The architectural subjects include two interiors of French Cathedrals—Rheims and Lyons—by Wyke Bayliss; "Greenwich Hospital," by T. B. Hardy (all three in water-colours); and two views of "Whitby"—one by Terrick Williams and W. Llewellyn. Impressionist works are contributed by Grieffenhagen, Hitchcock, W. Stott (of Oldham), and Robert Fowler. Well-known pictures are "Le Roi s'Amuse," by W. F. Yeames; Val Prinsep's sensational "A Versailles," and MacWhirter's "Flowers of the Alps."

At the Royal Society of Artists, Birmingham, a notable work is Holman Hunt's brilliant "May Meeting on Magdalen Tower, Oxford"; and others are H. S. Tuke's "Autumn Blue" (a loan from the Chantrey Trustees), Hacker's "Circe," J. C. Hook's "Before Sundown," and Bramley's "After Fifty Years." Two views of "St. Ives' Bay" are shown by Moffat Lindner, and the portraitists include Alma Tadema, Herkomer, Sargent, and Glazebrook. Alfred East's "May Morn" and other landscapes by Parsons, Walter Langley, Fullwood, E. R. Taylor, and Clarence Whaite are worth attention. Watts is represented by his "Greek Idyll," from the New Gallery this summer, and Leighton by the head and bust of a little girl. The water-colours are especially strong at Birmingham this year.

The art gallery which the corporation of Blackburn have added to their museum and library buildings was opened on Friday with a loan collection of pictures, the aim being to form a permanent collection of pictures for Blackburn. The nucleus of such a collection already exists in the works given to the town by the late Mrs. Dodgson, Mr. Ainsworth, Mr. W. H. Hornby, M.P., and others, and in a few pictures recently purchased by the committee themselves. The latter include Marcus Stone's "Two's Company, Three's None;" "A Fine Day in Autumn, North Wales," by B. W. Leader; and also the popular picture by Alfred W. Strutt, entitled "Move On"—a policeman issuing his commands to a coster-woman whose donkey has just upset her cart of vegetables and fruit. The loan collection includes some 300 pictures, representing many schools of contemporary English work. Sir F. Leighton is represented by "The Last Watch of Hero," lent by the Manchester Corporation, and two small studies sent by himself. G. F. Watts has lent "Death Crowning Innocence." Mrs. Thwaites lent Sir John Millais's "A Deserted Garden," Rosa Bonheur's "The Horse Fair," the late Edwin Long's "Diana or Christ?" "The Interior of the Duomo at Milan," by David Roberts, and "Worn Out," by Thomas Faed. "A Spate in the Highlands," by Peter Graham, has been lent by Sir W. C. Brooks. Among other notable works are "Balaclava," and "Listed for the Connaught Rangers," by Lady Butler; Professor Herkomer's "Hard Times" and "The Last Muster," A. Hacker's "The Annunciation," "The Passing of Arthur," by Frank Dicksee; "News of the Spanish Armada," by Seymour

Lucas; the late Keeley Halswelle's "Royal Windsor;" J. W. Waterhouse's "Danae;" Clarence Whaite's "Thirlmere," and a fine example of Joseph Israels. The collection also includes two small Landseers, pictures by Colin Hunter, M'Whirter, Briton Rivière, W. P. Frith, G. D. Leslie, Goodall, Ansdell, Linnell, sen., Henry Moore, E. M. Ward, P. R. Morris, the Hon. John Collier, Sir John Gilbert, G. A. Storey, and C. Napier Hemy.

The excavations carried out during the past season at Abæ, in Phocis, by the British School of Archæology, have—says a correspondent of the daily press—yielded results of considerable interest. The site of the ancient sanctuary has been explored, as well as that of a later temple, erected by the Emperor Hadrian. These buildings appear to have stood within a sacred inclosure, surrounded by a wall of polygonal masonry. The foundations of both temples have been laid bare, as well as those of a long double stoa. Inside the *temenos* were found some bronze bowls of Cypriot and Phœnician workmanship, dating from the 6th century B.C. Fragments of an inscription recording the restoration of the older temple in Roman times were also discovered. Excavations at the neighbouring site of Hyampolis were rewarded by the discovery of a number of inscriptions dating from late Greek and Roman times. The explorations at Abæ and Hyampolis were begun under the direction of Mr. Ernest Gardner, and completed by Messrs. Bather and Yorke. A member of the school has gone to Alexandria, where a site adjoining the ancient mosque below the fort of Kom-el-Dik, long identified by tradition with the site of the tomb of Alexander, will be excavated.

At the recent meeting of the American Association for the Advancement of Science, a paper was read by Professor Thomas H. Norton, a Cincinnati chemist, on "The Battle with Fire," in which he treated the great problem of lessening the annual destruction of property through conflagrations from a novel standpoint. Professor Norton recurred to chemistry for means of resisting fire, and many of his suggestions are very useful. He called attention to the valuable properties of the silicates, of hydrate of alumina, and of borate of magnesia as applications for rendering woodwork uninflammable, arguing that if such applications cannot make wood fireproof, they at least delay its burning, and so give time for escape and the arrival of fire-engines.

At Wednesday's session of the Trade Union Congress being held this week in St. Andrew's Hall, Norwich, resolutions were passed pressing upon the Government the necessity of at once re-introducing the Employers' Liability Act Amendment Bill, and stating that, in the opinion of the delegates, it is highly desirable that competent practical inspectors should be at once appointed to supervise the construction of all public works requiring the sanction of Parliament. The Parliamentary Committee were instructed to take steps to make employers liable to workmen for loss and damage of tools while on their premises by the occurrence thereat of a fire.

A meeting of United States exporters of hardwood lumber was held at Roanoke, Virginia, on July 24, and a permanent organisation effected under the style of the Association of American Timber Exporters. Coleman Rogers, of Cearfoss and Rogers, of Hagerstown, Md., was elected president, and H. N. Saxton, jun., of Saxton and Co., of Knoxville, Tenn., secretary and treasurer. A number of firms were represented, and the question of railroad and ocean rates was discussed. A standard of inspection and measurement to govern export shipments was also considered. Considerable criticism was offered at the rough handling lumber shipments received at the hands of the steamship companies. Several other important matters were discussed at length; notably the depressed condition of the European markets, the cause and the methods for relief. A number of letters from prominent foreign firms were read, condemning the manner in which the European markets were being flooded with consignments from shippers entirely ignorant of the requirements of the export trade.

At St. Pancras Vestry meeting on Wednesday the General Purposes Committee reported that, in answer to a request from the vestry to the London and North Western Railway Company that the latter would expedite the construction of the proposed public foot-bridge over the railway at Gospel Oak to Parliament-hill Fields, the Company stated that the bridge was not to be built by them, but by the London County Council. The committee had understood that there was an arrangement between the Council and the company whereby the latter should erect the bridge, and the Council pay £2,400 towards the cost, the company paying £175, and the St. Pancras Vestry undertaking to form the southern approach to the bridge. Mr. Wetenhall, L.C.C., explained that he had been in correspondence with the engineer of the London County Council on this subject, and learnt that the Council had been awaiting since January last the receipt of plans and specifications from the railway company, which had only just come to hand. The engineer would report on them at the first meeting of the Council's Improvement Committee. The arrangement with the railway company was that they should do the work, and the letter from their secretary to the vestry was, the engineer declared, "an attempt to depart from that arrangement."

CHIPS.

The name of William Henry Waterman, of King's Arm's-yard, Moorgate-street, E.C., architect, appears in Tuesday's *Gazette* in the list of adjudications in bankruptcy.

A new school for girls and infants was opened at Polruan, Cornwall, on Monday. It has cost £1,300, and has been built by Mr. N. Panter, of Polruan, from plans by Mr. William Swift, of Truro.

A convalescent home is in course of erection at Colchester, as a branch of the Middlesex Hospital. The contractors are Messrs. H. Everitt and Son, of Colchester, whose tender was accepted at £18,475.

A scheme is afloat for constructing a canal between Marseilles and the Rhone. The length is 34 miles, of which about 4½ will be tunnelled underground. The average depth is 10ft. between Marseilles and Port de Bouc, and 6½ft. the rest of the way. The total cost is estimated at £3,200,000.

At Hurst Hill and at Lower Gornal, in the Sedgeley school board district, buildings to accommodate 350 and 450 children respectively, from plans prepared by Mr. A. P. Brevitt, architect to the board, have been erected by Messrs. T. Jones and Sons, of Sedgeley, and Messrs. T. Tildesley, of Willenhall. The cost of each of the schools is little short of £4,000. Both buildings were opened on Monday.

The students from the Glasgow and West of Scotland technical school were successful in the recent South Kensington examinations, gaining a bronze medal in the National competition, and various other prizes.

The large painting of "The Glaciers of Rosenlui," by the late Vicat Cole, R.A., has been added to the South London Fine Art Gallery, Reading-room, and Lecture-hall, Camberwell.

It is proposed to form a local company for constructing a new pier at Minehead, at the back of the existing one, and available for any state of the tide. The estimated outlay is £7,500.

The members of the Northern Architectural Association will make an excursion to-morrow (Saturday) afternoon to Blaydon and Axwell Park.

The single line of railway from Dumfermline to Charlestown and Limekilns, which has hitherto been used for the carriage of minerals only, was opened on Saturday for passenger traffic.

Between 50 and 60 members of the Bradford Historical and Antiquarian Society journeyed to Malton on Saturday afternoon to inspect the many objects of antiquarian interest in and about that old town; but mainly to visit the fine Gilbertine Church of St. Mary, Old Malton.

From time to time various schemes have been suggested for providing Lynton with railway accommodation. The latest plan embraces a line from Barnstaple by way of Goodleigh, Chelsham Bridge, Bratton, Blackmore Gate, and Parracombe, to Lyn Bridge, and the cost is estimated at £70,000.

For the erection of the Wintringham higher grade school at Grimsby, the school board of that town have accepted the tender of Messrs. Hewins and Goodhand, of Grimsby, at £8.572 10s. The total cost of the school, including site, architect's fees, and furnishing will be £11,900.

A new gasometer has been erected by the gas company at Bourne, Lincolnshire. It is telescopic, on Gadd and Mason's principle, without guide framing. Its capacity is 40,000c ft. The inner lift is 42ft. 6in. in diameter, by 14ft. in depth. The outer lift is 44ft. 6in. by 14ft. in depth. On the outside of the inner lift are five spiral guides of steel rail, fixed at an angle of 45°. The guide-rollers of the outer lift work upon these. The work has been carried out by Messrs. R. and J. Dempster, Newton Heath, Manchester.

Trade News.

WAGES MOVEMENTS.

Bolton.—A largely-attended meeting of the Bolton and District Master Builders' Association was held on Friday, and it was decided to lock out the whole of the men engaged in the several branches of the building trade at once, with the view of bringing to an end the strikes which have been proceeding for some time in the plumbing, bricklaying, and stonemasonry branches. The employers assert that the men's unions have become so aggressive in regard to certain details of work that the lock-out is necessary. Over 1,000 men are directly affected.

Glasgow.—The operative masons and stonecutters of this city are fully employed, and from 500 to 600 additional masons and builders could easily find employment. Notwithstanding the depression in other trades, master masons have been short of men for a considerable time now, and there is a standing difficulty in procuring a sufficient number of men to carry on the various works in process of erection so as to fulfil contracts. Besides a large number of tenement buildings, there is unusual briskness in erecting large structures in the city. The standard for the year ending April next is 8½d. per hour. Notwithstanding the great increase of the city, it is said that in 1874 and 1875 there were more masons, builders, and hewers than there are at present.

Isle of Wight.—The bricklayers and labourers who have hitherto been working for Messrs. Garlick and Horton, of 43, Sloane-street, Chelsea, the contractors for the lunatic asylum works at Whitecroft (2½ miles from Newport), now being built at a cost of £49,000, came out on strike for an advance of a penny an hour. The bricklayers in the employ of the contractors for the barracks at Parkhurst have also struck for a like reason. The amount paid to bricklayers on the island is 7d. an hour, to which it was advanced at Whitecroft from 6d. in July. At Southampton the rate paid is 7½d., and at Portsmouth 8d. The strike has since ended at Whitecroft in a return of the men at the old rates.

Paisley.—A strike of plasterers took place at Paisley on Monday, owing to the masters refusing a demand made by the men for an increase of ½d. per hour, which would bring their wage up to 8½d. per hour, equal to the rate in Glasgow. The men also ask for a guarantee that a further increase of ½d. be given in March next. The masters refused the advance, on the ground that the state of trade did not warrant it, and referred the men to an arrangement made in March last, whereby the present wage was to continue in force for a year.

Among the Acts which received the Royal Assent at the close of last session was the Quarries Act, which protects workers in quarries by placing them under the supervision of inspectors of metalliferous mines, and extends certain provisions of the Mines Act to workers in dangerous quarries.

Several projects are on foot for new buildings at Morecambe, which ought to make work plentiful in that watering place during the next few months. They include a pleasure pier with pavilion for 1,500 persons at the west-end of the town, opposite Regent-road, the rebuilding of the Queen's Market and fancy bazaar, the erection of new offices by the Lancaster Banking Company, a Catholic church, and new hotels at the west-end and in Lancaster-road.

Foundation-stones of a Wesleyan Chapel and school were laid at Boldon Colliery on Friday. The buildings will be Gothic in style, and erected in red brick with stone dressings. The chapel will be seated for 300 persons, and the schools will accommodate 300 scholars. Messrs. T. A. Page and Son, of South Shields, are the architects, and Mr. Robert Allison, of Whitburn, is the builder.

The Watlington (Oxon) School Board, in compliance with the urgent request of the Education Department, have arranged to make important enlargements of the board school buildings, and plans, sections, and specification have been prepared by Mr. R. Spyer, architect, of the Market-place, in the above-mentioned town. Tenders for these works are being advertised for.

The opening of the new City of London School for Girls, founded by the late Mr. W. Ward, will take place on Thursday next, the 13th inst. The school, which is situated in Carmelite-street, off the Embankment, has been built at a cost of £20,000, including fittings. It has a frontage of 71ft. 6in., and a depth of 51ft. 6in., is five floors in height, and will give accommodation for 300 girls. The façade is in Portland stone, and Anglo-Italian in style. The architect is Mr. Andrew Murray, the City surveyor, and Messrs. Atherton and Latta were the contractors. We illustrated the building by a perspective and plan in our issue of Dec 2, 1892.

CHIPS.

The Pershore Rural Sanitary Authority have instructed Mr. J. E. Willcox, C.E., of Birmingham, to prepare plans and specifications, and obtain tenders for the works of water supply at Wyre and Bishampton.

The Bishop Auckland Local Board resolved on Tuesday to apply to the Local Government Board for leave to borrow a sum of £11,000 for the carrying out of a sewage-disposal scheme.

A great fire occurred on Saturday at Fyne Court, Broomfield, about six miles from Taunton, and resulted in the destruction of a considerable portion of one of the finest and most important mansions in Somersetshire. The central portion of the house, its oldest part, was destroyed; but the pictures and most of the furniture and books were saved. The damage is estimated at £4,000.

About £14,000 have been spent by the City Corporation in building new offices at Guildhall and generally improving the accommodation for the staff of officers. The work, which has included the building of new quarters for the town clerk's, chamberlain's, and surveyor's staffs, has extended over two years. A sum of 200 guineas has also been expended in fitting the main entrance with new oaken doors, which have been designed by Mr. Andrew Murray, the surveyor to the corporation. The doors are of 15th-century design, and harmonise with the other work at Guildhall.

Mr. Arthur Montefiore, hon. secretary of the Jackson-Harmsworth Polar Expedition, who is better known to most of our readers as the secretary to the Society of Architects, has just returned to England from Archangel, vià Moscow. He states that the latest intelligence received of the condition of the ice between that port and Franz Josef Land is favourable to the advance of the expedition.

The waterworks committee of the Manchester Corporation contemplate inviting the Prince of Wales to open their great works at Lake Thirlmere next month. The heavy rainfall has raised the water to a level that makes it inadvisable to keep all standing till next spring or summer, and therefore the opening will not be deferred, as was lately proposed.

At a meeting of the directors of the Highland Railway Company, on Wednesday, it was resolved to make application in the ensuing session of Parliament for powers to construct a line of railway from Inverness to Spean Bridge and Fort William. The new line, which will be 58 miles in length, will cross the Caledonian Canal at Bona Ferry, and will keep to the west side of Loch Ness to Fort Augustus, and again crossing the canal, will run along the eastern shores of Loch Oich and Loch Lochy to Fort William. The branch line from Gaerlochy to Spean Bridge will form a junction with the West Highland Railway.

At the Wallasey local board offices last week, a Local Government Board inquiry was held by Mr. Thomas Codrington, M.I.C.E., Inspector to the Board, into the application of the Wallasey local board to borrow the sum of £38,000 for the purpose of extending the Marine Promenade from the Magazines to Rock Point, New Brighton. Mr. Danger, clerk to the local board, said that the board were desirous of extending the promenade from Marine-terrace to Egremont Ferry. The length of the proposed extension was 3,700ft., making, with the work already carried out, a distance of a mile and a half. The width would be 45ft. It was intended to carry a sewer along the whole length of the promenade.

The Walsall Union Rural Sanitary Authority have called in Mr. J. E. Willcox, C.E., of Birmingham, to prepare schemes for the sewerage and sewage disposal of the districts of Pelsall and Rushall.

A portrait of the late Alderman James Park, the second mayor of Bury, Lancashire, was formally presented to the corporation of that town yesterday (Thursday), and was hung on the wall of the council chamber, with other portraits of local men.

BILLS OF QUANTITIES & PLANS.

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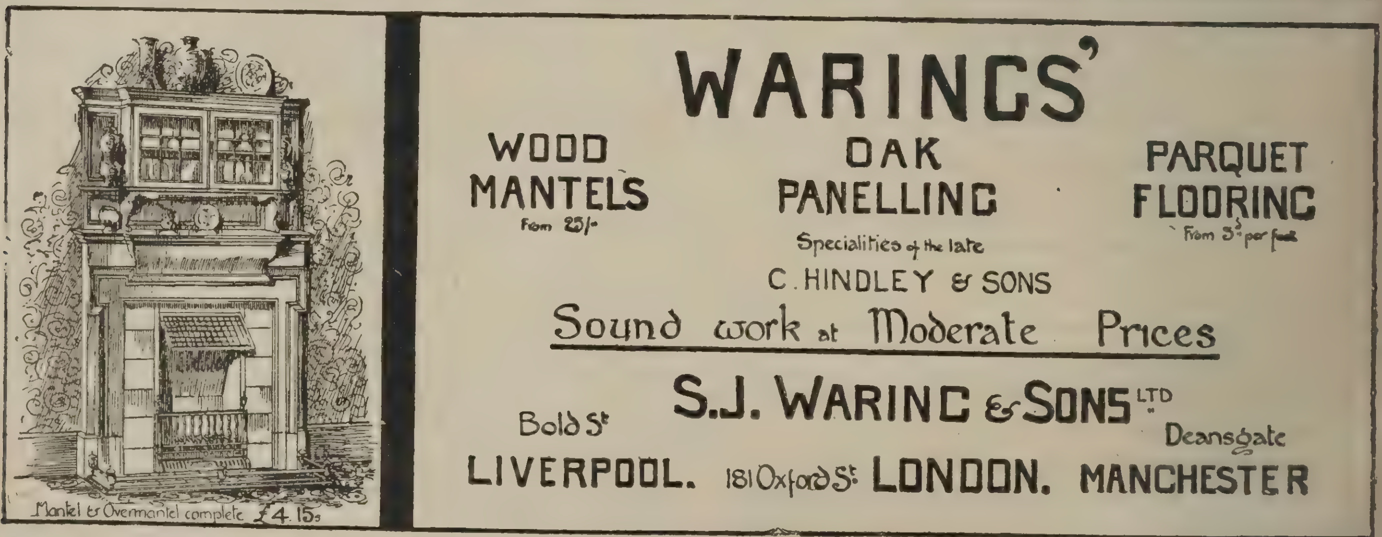
TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Clapham.—For additions and repairs to Guilsfield, King's-road, Clapham Park, S.W. Mr. Herbert Riches, 3, Crooked-lane, King William-street, London, E.C., architect:—

Osborn and Sons (accepted) ... £268 10 0



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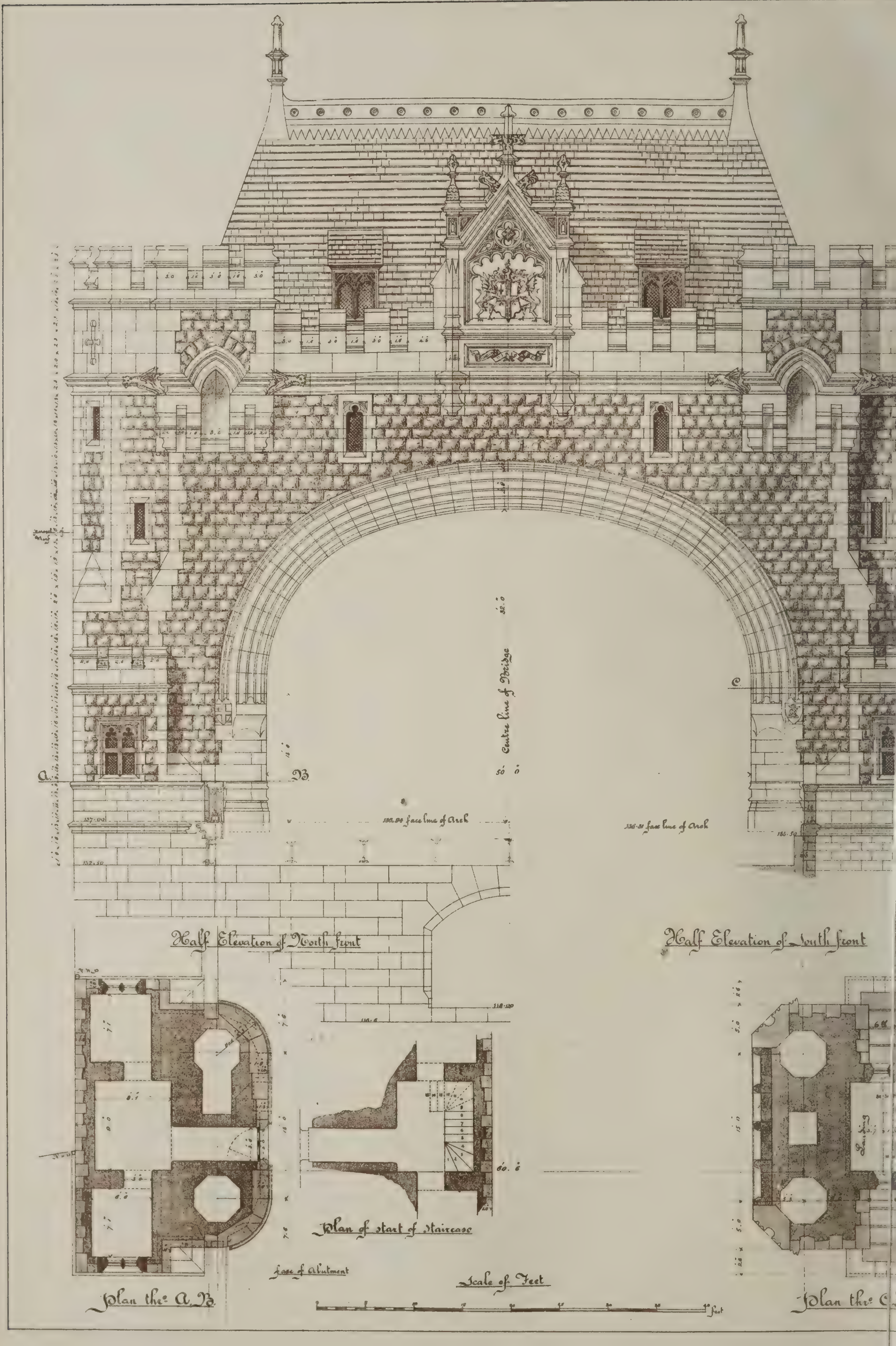
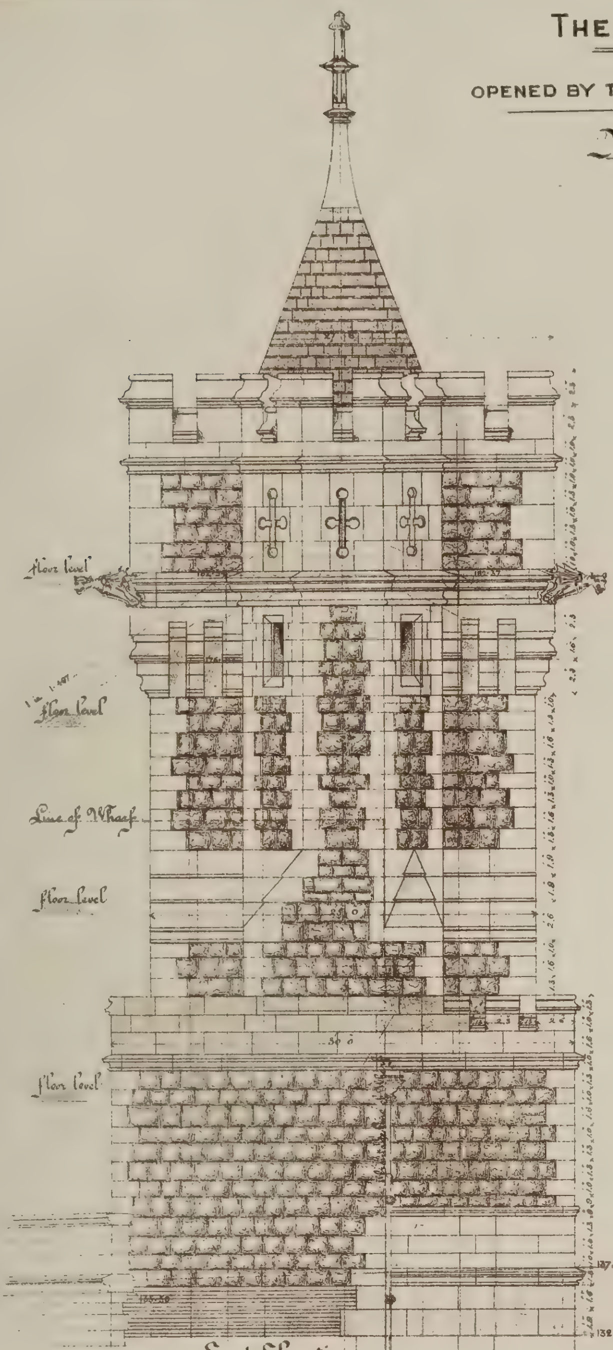

Half Elevation of North front
Half Elevation of South front
Centre line of Bridge
32.0
50 0
A
B
C
127.00
132.50
185.84 face line of Arch
135.81 face line of Arch
118.130
60. 6
Landing
Plan thro A B
Plan of start of Staircase
Face of Abutment
Scale of Feet
Feet
Plan thro C

THE TOWER BRIDGE OVER THE THAMES.

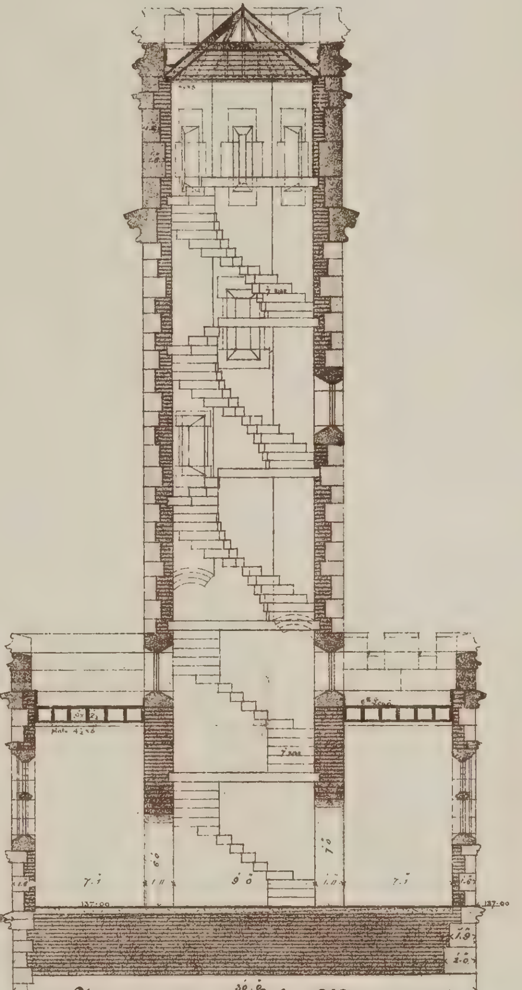
OPENED BY THE PRINCE & PRINCESS OF WALES, JUNE, 30TH, 1894.

Masons Detail of South Abutment Tower

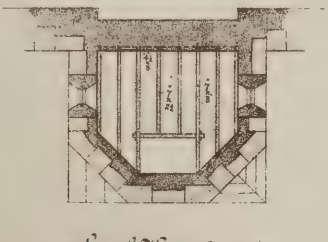
East Elevation & Sections



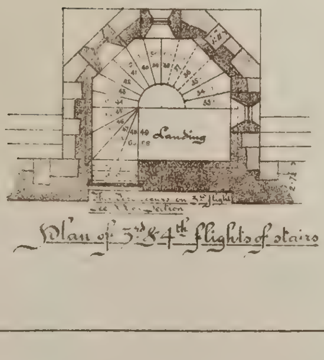
East Elevation



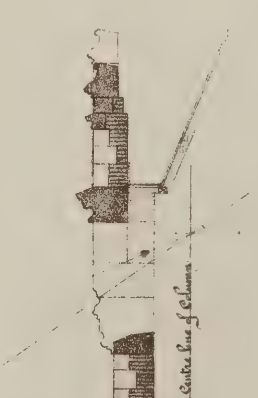
Transverse Section looking West



Plan of Floors (East side)



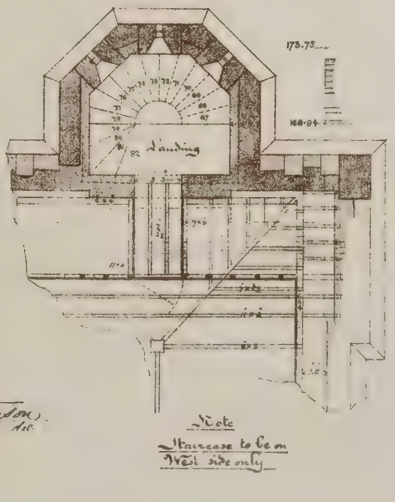
Plan of 3rd & 4th flights of stairs



Section thro' Chain Opening

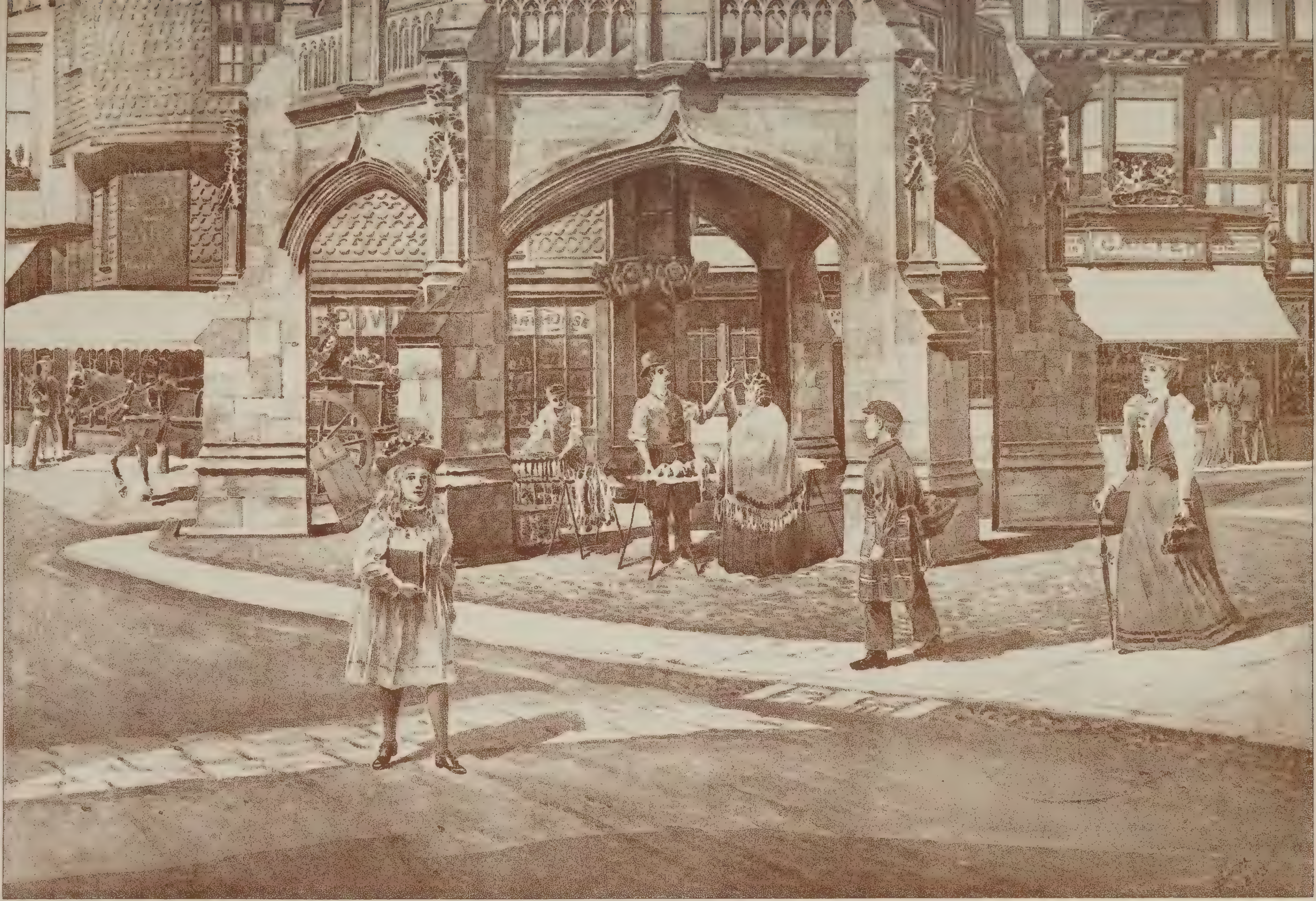
Geo. D. Stevenson

Plan of Top flight and Landing of Stairs (West side)



Note
Staircase to be on
West side only

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.



"PHOTO-TINT", by James Akerm [illegible]

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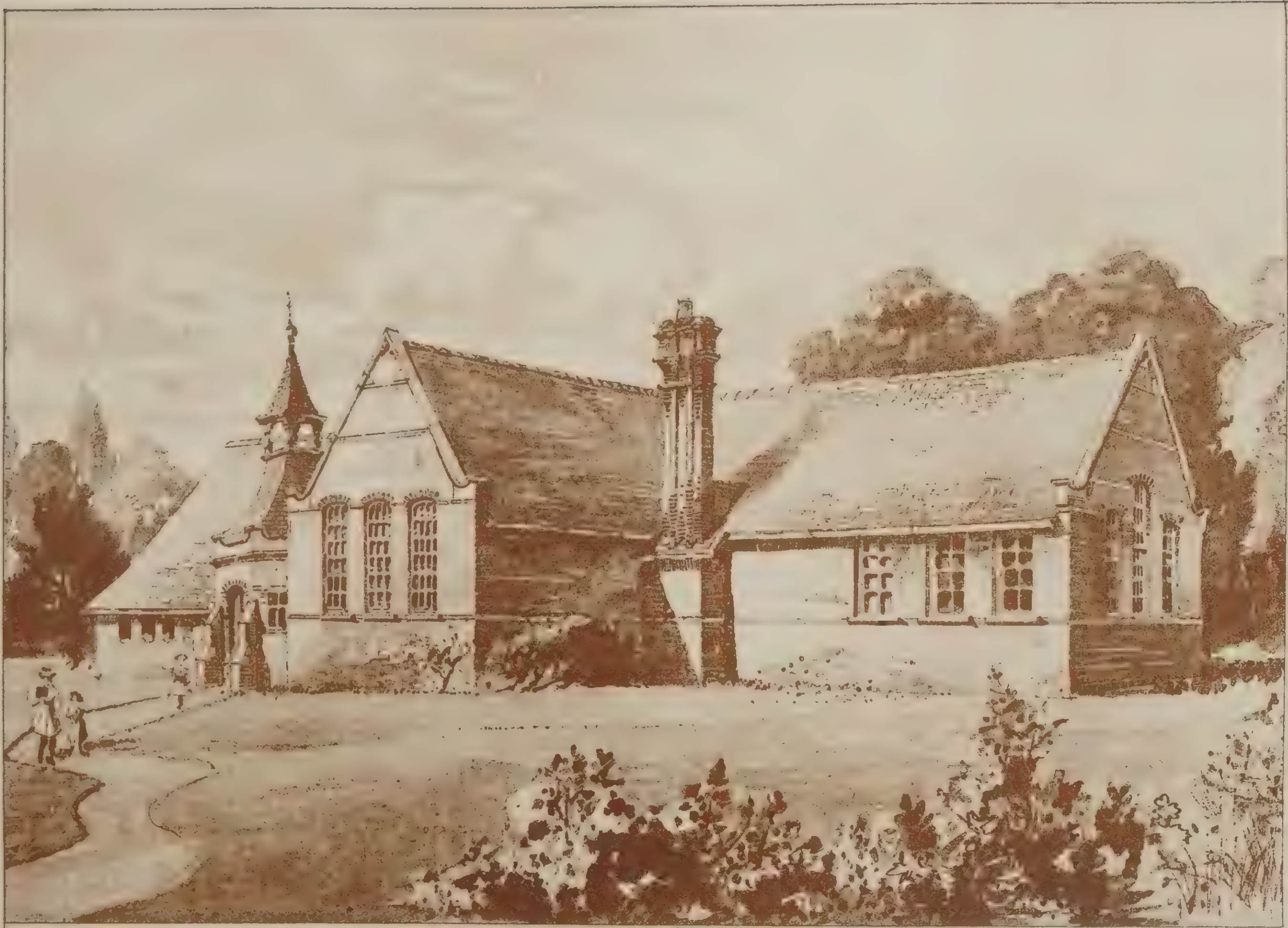
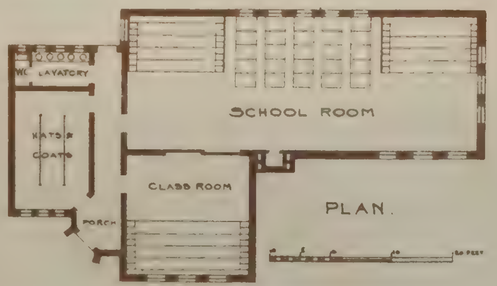
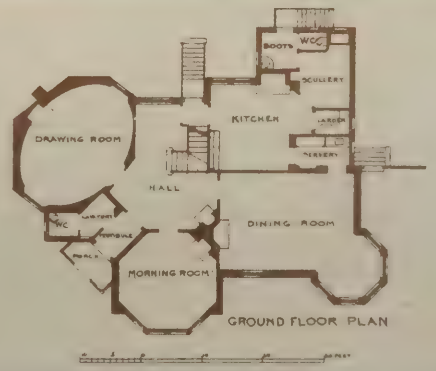
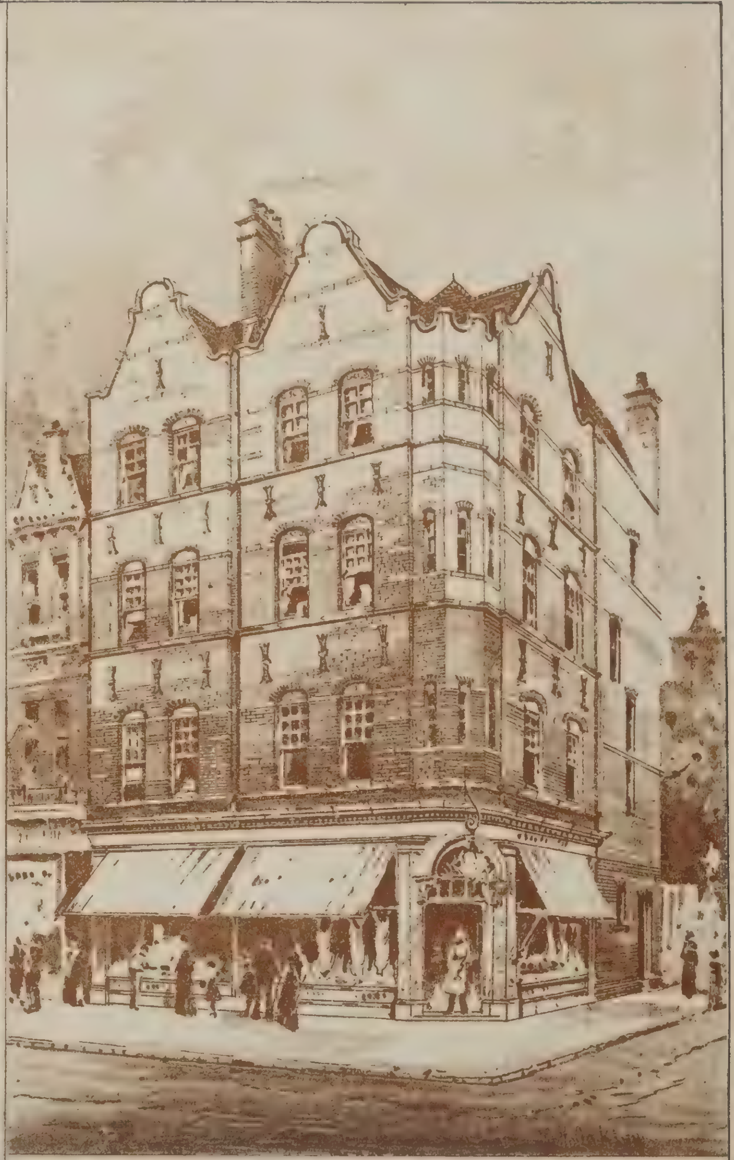


BOARD·SCHOOL· KINGSWOOD· SURREY·



H.D. SEARLES-WOOD. F.R.I.B.A. ARCHT





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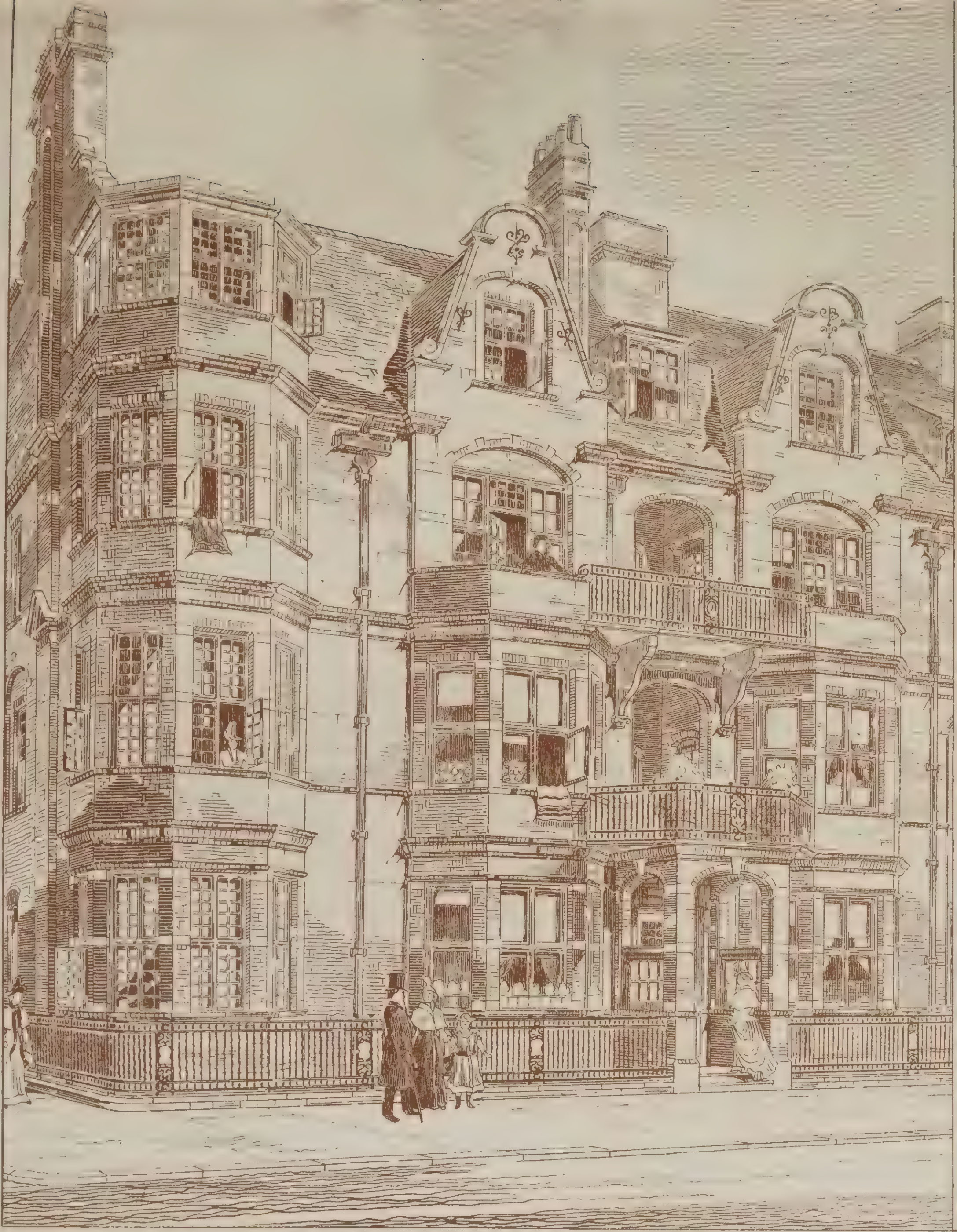
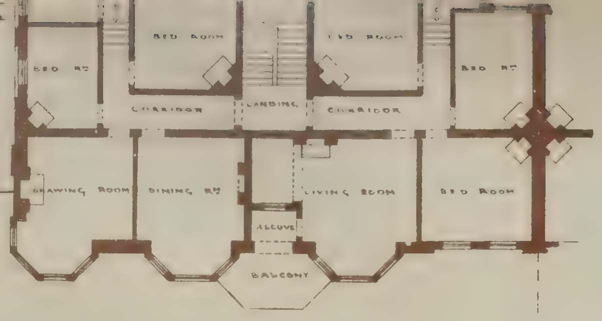


Mechlin Mansion.
Haarlem Road,
Brook Green, W.

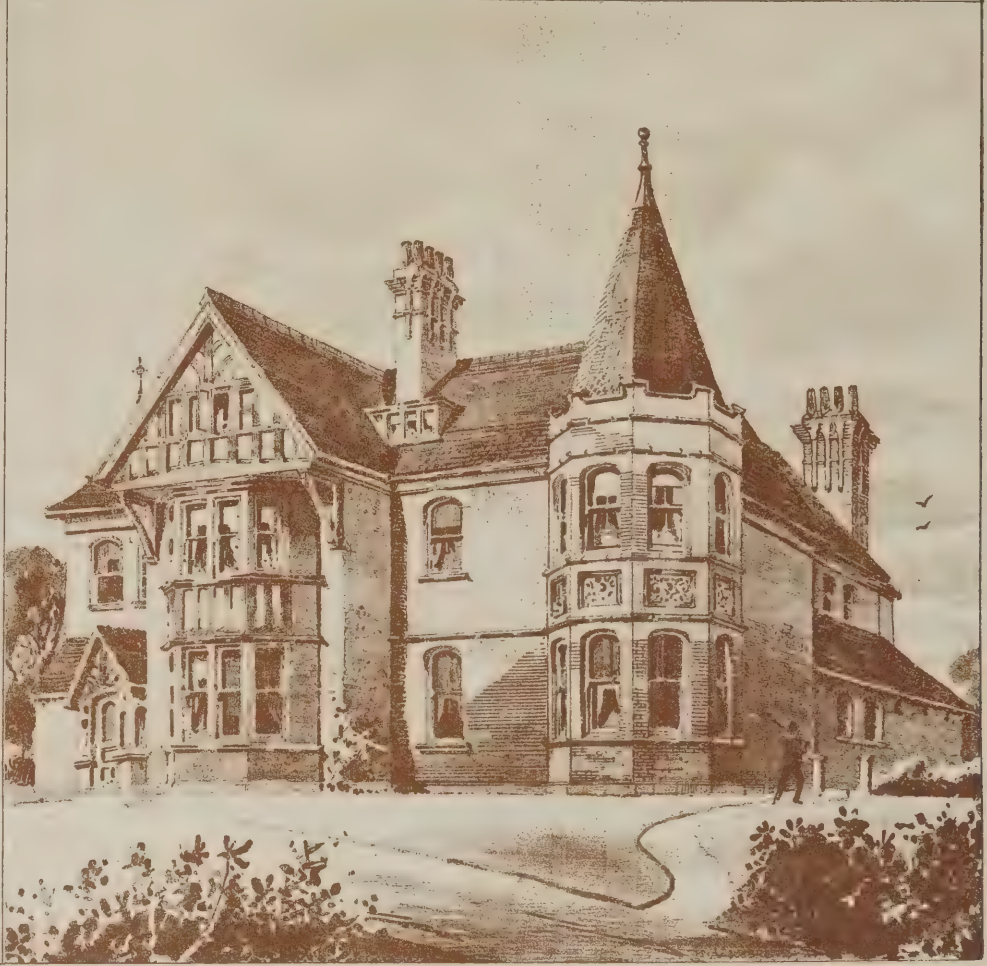
LEWEN SHARP & ARPIN ARCHTS



PLAN OF FIRST FLOOR
(MECHLIN MANSION.)

"MOGADOR".
SUTTON · SURREY ·

H · D · SEARLES · WOOD · F · R · I · B · A · ARCHT



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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2071.

FRIDAY, SEPTEMBER 14, 1894.

THE EVOLUTION OF THE BOARD SCHOOL.

"IF we cannot help making mistakes," said Goethe, "we must at least take care to build none." The aphorism is reasonable enough, but to follow it is not quite so easy as it looks. Its observance has proved too hard even for the combined wisdom of the nation, as concentrated for many years past in the Education Department. The London School Board, too, have, at any rate till lately, found it among the things that were too high for them, as their own architect, Mr. Bailey, not long since admitted. With country school boards the case seems to have been even worse. For years model plans were issued by Government authority. They were more or less closely copied all over the kingdom. School managers came to look upon them as types which it was perilous to tamper with or deviate from; and yet we are now told in so many words that if these very plans were submitted to the authority which formerly issued them, they would be at once and unhesitatingly condemned.

The public naturally ask who is responsible for this state of things. If half the school buildings in the country were more or less unfit for their purpose, somebody, it is assumed, must be greatly to blame. But this is by no means certain. Parents do not blame their tailor because the clothes which fitted a boy at ten fit him no longer at twelve or fourteen. If they had been made to suit him when he had reached the latter age, they would have been useless to him till he did. So it is with many of our school buildings. Elementary education, like the children it deals with, has been, and is, in a state of rapid growth. It has got too big for its early integuments; but there was a time when nothing more advanced would have fitted it so well.

Fifty or sixty years ago elementary schools were worked on a very simple system. As many children as possible were brought together and shut up in a large room. At one end of it was the master's table. There were a number of forms and desks in front of him, and in most cases whatever was taught, he taught himself. His only assistant was a cane or a ruler. Those details in a lesson which he could not explain he sought to instil into the pupils' minds by a forcible application of the lesson-book to their heads. But, as a general rule, explanations were neither asked for nor given. What was learned was learned by rote. The children in a body repeated line after line at the tops of their voices, and when they had done so for a sufficient time they were supposed to "know their lesson." This sort of training did not do much for their minds. But it was an admirable exercise for their lungs; and in country places the learners, after two or three terms, became highly qualified to sit on walls or gates, and scare the birds away from the corn.

The Lancasterian system was an advance on this. There was still only one large room, with the master stationed at the end of it. But he was now assisted by a number of the more advanced scholars under the name of "monitors." The middle of the room was filled with benches and desks, but a wide space was left along each side between the seats and the wall. In this space, at intervals, semicircles 5ft. or 6ft. wide, were marked on the floor. The base of the wall formed the diameter of each semicircle, and its circumference was permanently outlined by a piece of hoop-iron, bent to the shape, and nailed down. The monitor stood within the space. On the wall behind him were maps, reading lessons, or problems in arithmetic. The class stood round with their toes touching the curve, and read, or asked and answered questions about the subject of the diagram. There were thus five, ten, or sometimes more classes, all receiving instruction in different subjects in the same room and at the same time. Discipline was better observed than it had been, for the Roman maxim, "Divide and govern," applies to schools as well as to nations. But the noise was intolerable. There was a worse confusion of sounds than in the old days of learning by rote. A good deal of useful education was given, but it was given under conditions which were very "wearing," both for teachers, monitors, and children. It was with the Lancasterian system, however, that school planning, as an art, seems to have made its first beginnings. Almost anything with four walls and a roof served to shut in the herd of children who, in the early part of the century, constituted an elementary school. But on the Lancasterian plan a room of one shape began to be better than a room of another. Considerable width was wanted to allow for the half-circles of children who formed into groups along the side walls; and some thought had to be given to the arrangement of windows and wall-spaces, that there might be places to hang the diagrams in and light to see them.

As the "monitor" system gradually died out, and the "pupil-teacher" system came in, an entirely different type of building suggested itself. The schoolroom grew longer and narrower; for the seats, instead of being placed in the centre and facing to one end, were now set along one side, looking to the opposite side. Three or more rows of long desks, divided by narrow alleys, came into fashion. The windows were generally behind them, so that the scholars' faces were in shadow, and the teachers had the light full in their eyes. At about this stage it began to be recognised that a classroom attached to the school was a valuable appendage. It generally opened out of the school, and some little disturbance inevitably occurred as the children entered or left it. Here, too, the windows were sometimes behind the desks, sometimes at the right of them, and sometimes on the left. The model plans issued by authority at this period exhibit all these varieties of lighting, and show the schoolroom sometimes dark at both ends and sometimes lighted. In one belief, however, everybody seems at this period to have agreed—namely, that the essential thing for an elementary school was one large schoolroom. The classes in it were thought to be sufficiently divided from each other by curtains.

From then till now the tendency has been to use more and more classrooms. Yet a room which will hold all, or most, of the pupils in each department is also wanted. An obvious resource was to divide the main school into classes by movable partitions, so that all could be thrown together easily, and could easily be sundered again. And this plan seemed good until the unpleasantness of lighting the desks from behind was fully recognised. Gradually it became a rule that classrooms should be lighted from one side of the children, not mainly from behind them, and still less from the front of them. A little later it was made an object to get this light from the left, because then, as every architect knows by daily experience, the shadow of the hand does not darken the slate or paper on which it is at work. But general schoolrooms are too long to be wholly arranged on this principle. The desks at one end may be lighted from the left, but not those at the other end, and not those in the middle. In this lies the weakness of the long schoolroom. It is still in favour here and there, but its days are apparently numbered.

Within the last 20 years schools have been built—and large and cleverly-designed schools, too—where the chief windows, in parts, are in front of the scholars as they sit at the desks. This is generally allowed to be the very worst direction for light. The teacher, with his back to a window, is only seen as a dark *silhouette;* and any objects or diagrams set before the class are almost invisible to them. They write in a glare, and the sunshine, when there is any, is reflected from their books into their eyes, so that in such a position they see nothing perfectly. This arrangement, then, being excluded, there remains, in a long schoolroom, a left-hand light to the desks at one end, a right-hand light to the desks at the other, and a back light to those between them. When the building is but one-story high, it might be possible to invent arrangements by which the classes had a left-hand light in every part of the long room. Something in the nature of transverse clerestories would effect this, though whether they would effect it satisfactorily may be doubted. Probably their windows would, necessarily, be too high up; and, if so, the scheme would be no improvement on the present ones. But where there are two or more floors, one above the other, nothing of this sort could even be attempted; and, on account of the expense of building land in towns, a multitude of schools have to be built with floor over floor.

The primitive school, and especially the rural school, did not lay itself out much for the comfort of its occupants. The entrance often had no porch, and the interior no fireplaces. Their absence was seldom complained of. There was a general feeling abroad that a school ought to be uncomfortable. Mr. Bumble, as we know, objected to "pompeying boys," and public opinion was on Mr. Bumble's side. Fathers remembered what they had gone through in their own childhood. The floggings, and the freezings, and the narrow forms without a back were the things which, as they believed, had "made men of them," and they wished to hand down these advantages, undiminished, to their posterity. The progress of luxury, however, went on in spite of protests. The schoolroom acquired a stove—a doubtful improvement, for those who stood near it were in a tropical temperature during working hours, and naturally took cold when they went away. Other modes of heating were tried in course of time—hot air, hot water and steam, as well as ordinary open fireplaces. Heating brought draughts, as it always tends to do, and how to get rid of these was the next question. There was no getting rid of them while staircases opened into schoolrooms, and schoolrooms opened into the external air. So lobbies and corridors were called for. The early staircases, again, were awkward and sometimes unsafe. They did fairly well for boys and girls, when there were not too many of them, but they were unpleasant for the local board or committee when they visited the establishment, and they were very literally a stumbling-block to that important personage, the Government Inspector. In large schools they were a real source of danger. A rush of several hundred children might take place, and then dark corners and unsuspected steps might mean broken limbs or instant death. So it has come about, in the course of years, that school staircases have developed into some of the safest staircases that are built—with wide treads, low risers, unbroken landings, good light, and division-walls instead of well-holes.

The schoolroom of 30 or 40 years back was surrounded in great part by hat-pegs. They took up wall-space which was wanted for other purposes, and even this was not the worst of them. In wet weather they were occupied by steaming rows of cloaks and coats, which added their own peculiar odour to the mixed scent of pomatum and fish-oil which then characterised a working-class school. The pomatum, of course, had been applied to the children's heads; the fish-oil was the favourite dressing for their boots, especially at rainy times; and the combination of the two was bad enough to bear, even without the vapours from slowly-drying clothes. But these, again, were amongst the things without which no working lad's education had been held complete. Outside cloak-rooms would have been thought an unpardonable piece of extravagance. They have come by degrees. Clothes-pegs were first removed to corridors and passages; then a piece of the passage was wholly devoted to them; and, finally, we have the number, the height, the distance apart, and the lighting worked out for everybody in the Education Department's rules.

As to ventilation, matters have hardly gone on so successfully. The present rules are good as regards the putting of windows near the ceiling, and as to getting cross-currents in summer time by open sashes or casements. But they advise "a separate air-chimney to each room, carried up in the same stack with the smoke flues." Why in the same stack? If it is for the sake of the warmth, then this warmth will fail when fires are given up for the year, and the ventilation will be imperilled in spring and autumn, when the air is too cold to allow of open windows. To put air-flues in a smoke-stack is to run the risk that smoke at times may come down them, and there is no obvious advantage to counterbalance this risk. It is true the rules say, and say rightly, that "an outlet should have motive power by heat or exhaust." But if it has this, there is no need to rely on such warmth as may come to it from contiguous flues; and motive power can be applied to air-shafts equally well, whether they are in a chimney or out of it.

The progress in sanitary arrangements need not be detailed here: it is part of the general progress in this subject made during the last half-century. Perhaps much special progress in this department may yet have to be made by schools in particular. The elementary school still tends to be a kind of circulating library of infantile diseases, distributing whooping-cough and measles, if not scarlet fever and diphtheria, to the surrounding neighbourhood. Some day it may be discovered how to prevent this. The school building will then have new arrangements or new appendages, and future times will look back on the buildings of to-day as we look back on those of our great-grandfathers. But this is a novel subject. It will first have to be dealt with, not by the architect, but by the physiologist or the microscopical explorer. In the mean time, the most conspicuous tendency in school arrangement is the tendency to multiply class-rooms and to give up long schoolrooms. The central hall is the feature of the day. No doubt it is a great convenience, but it is also a great expense. In these times, countries, like individuals, need more and more to think about cutting down expenses: and, from motives of economy, it may become necessary to cut down the central hall. As matters stand, however, the hall, with its consequent scheme of grouping, is looked upon as "the long result of time," the highest product of thought directed to school planning. It may be so. We may have reached a point beyond which improvement will be difficult, but it is a standing weakness of human nature in every age to think its latest improvements perfection, and its latest changes of opinion final.

ARCHITECTURAL STUDENTS.

THERE are two kinds of architectural students: those who desire to attain to the position of "architect," or to tack "F.R.I.B.A." after their name with as little preparation and delay as possible; and those who wish to make the necessary knowledge their own, and to become masters of the art. To the former the desire to be called and thought of as "an architect" is the chief impulse; to the latter the professional achievement is nothing compared with the real aim and objects of architecture. It is needless to say which is the right and true motive. Our Correspondence column very frequently and fairly gauges the objects and ambitions of students and would-be architects and engineers. A very common kind of question put to us is, "What is necessary to take the title of an architect or a civil engineer?" Or, "What is necessary to entitle me to call myself 'architect' or 'C.E.'?" A week or two since a question of the latter kind was asked in our "Intercommunication" Column, and they are repeatedly occurring. In the rush to enter a profession, not so much from any natural liking or aptitude for it, as from the necessity of making a choice or a living, a large number of young men proceed from this motive. Parents urge their sons to make up their minds, and the first idea of the young man is to enter into the profession as soon as possible. Others who have been fulfilling the duties of assistants, and who have learnt something of building routine, are often anxious to make a start on their own account, and if they can get any initials attached to their names they are satisfied. The ambition is very natural and very praiseworthy, though in a large number of cases their mistake of the vocation is soon realised. What to study? What books to read? are the too plain indications that these students are helplessly at sea, and have not comprehended the real bearing of their calling. They drift about from pillar to post aimlessly, catching at one thing, then at another, without any purpose or object. Drawing has occupied their attention during office or leisure hours; they have, perhaps, copied specifications, and tried their hands at details or quantities; all the while they have failed to perceive their proper course, or the real object of architecture. Between "squaring" dimensions, tinting plans and elevations, copying specifications, the youthful pupil is in a perfect "fog" as to what the architect is expected to know. These things are so apparently disconnected and singularly out of "gear" in the mind of the tiro, that he cannot exactly see where he is. We cannot wonder at the query put by a correspondent to us the other day, "Whether it is absolutely necessary that I should be articled?" or whether the profession cannot be learned by books and "coaching"? To many, office work is mere drudgery, beyond which they see little that is encouraging; to more intellectual youths in connection with day and evening classes, such as those of King's College or the Architectural Association, it is a preparatory training of much value. The desire for a "royal road" to the profession is just now a prevailing one, and there are hundreds of students who would rather go by the shortest road—if any were open to them—than submit to a five years' pupilage. The age in which we live is for "short cuts"; even literature is beginning to be fragmentary and scrappy, till we fear in a few decades from now real classical authors will seldom be read. It is the same with everything. The "coach" and the cramming system supply the place of pupilage and the college course; everything is learned in a pick-and-choose sort of way, much to the deterioration of the professional man. Upon educationists is the responsibility laid, and it is for them to try and stem the prevailing habits. In the medical, legal, and architectural professions we hear the same cry, "Full to repletion; keep back the crowd. Make entrance more difficult." In the two first we know, as a fact, the qualifications have been increased and the examinations made stiffer. The effect of this is to increase the tendency to "cram," to invent methods of overcoming a long course of study. It will also, we fear, do another thing: it will make pupils anxious of evading articleship, for they will naturally think, if they have to go through a course of study and lectures before they can pass, they might as well reserve their study and money by not entering an office. Hence the very natural question that has been put to us of late by more than one student, "If it is absolutely essential to be articled?" If they can go through a course of instruction at King's, University College, at the City of London College, or elsewhere, and obtain all that is necessary to pass an Institute exam., why should they spend three or five years in an architect's office, and pay a heavy premium? Such is the course of reasoning adopted by a great many who wish to enter the profession.

The perfunctory way of making an architect is also observed in the method of study. Let us take, for example, the class of young men who wish to be admitted in the easiest manner and by the quickest road, but who have no real idea of the aim and responsibilities of the vocation. We find them asking such questions as to the kind of books to read, as if any quantity of reading will make them qualified architects. The candidate that has benefited by reading is one who knows something of the practical every-day work of the architect, who has set his mind over plans and sections, has seen a little of actual building and has sketched old work. These men seldom ask such silly questions as which is the best book to learn Gothic or Renaissance architecture and details, for they know that the best instruction is gained by observation and careful sketching of details, and that the most the textbooks supply is the names and dates of examples and their cursory characteristics.

The tiro who enters a technical or architectural school straight from his home or his college is without any idea of building, and takes to his lectures and his books very much as a boy enters an office. It is all foreign to him. After a few months' instruction he is still a long way from understanding the duties of an architect's calling—how to prepare a design or write a specification. And why? Simply because the office and the workshop are still strangers to him. He may have made technical drawings of brickwork, of carpentry and joinery, of masonry, of iron roofs and floors in the same perfunctory fashion as he learned to copy his writing-lesson at school.

Book work and practical work are two of the relative factors in the student's life; but for some reason or other they are generally divorced. Many a student thinks he can learn everything from books. The recent remarks of a medical authority to students in that profession are applicable to the architectural student. The elementary textbook ought to be used as the skeleton of his knowledge; the student ought to endow it with tissues and life from his own personal observation, by practical school courses and visits to buildings. A mere dry study of textbooks is of little value, except to furnish the mind with names and definitions, and yet the ordinary student regards the textbooks in the light of something to be read through, and committed to memory as quickly as possible. No wonder the pupil undervalues the textbook, and looks upon it much in the same manner as the schoolboy does his Murray or his Eton Latin Grammar. They are looked upon as "dry-as-dust" manuals, and the more elementary they are the more difficult they are to grasp or comprehend. Instead of being used as a "skeleton of knowledge," which they simply are, to be clothed by his own experience, the student cannot see any use or value in them, as they do not supply his needs. But the student of a practical order of mind, who has served his time in an office, can utilise the elementary textbook; he reads into it his own experience, and he begins to read it with some interest. A good advice given by an eminent physician to his class is to write his own textbook by grafting his practical work on to an elementary manual, and to revise his knowledge before entering for an examination by the light of a first-class textbook. Every student can do this; if he has any love for his work at all, he will take an interest in filling up the outlines and dates of a manual on styles with his own notes and sketches, and his scientific textbooks with remarks of his own derived from practical knowledge, or from other authors. The Institute rightly insists on the necessity of making reading thorough by supplementing it by the taking of notes and sketches, and by information under various heads from different authorities. The continuous use of a notebook is enjoined on the student, in which he should write down, in his own words, the principal parts of the books under study, and also supplement these notes by sketches from all available sources (notes on one page, sketches on the opposite page). The accurate sketching of old work in plan, elevation, construction, and detail from memory is equally valuable, thus bringing eye, brain, and hand into exercise. In this way the student can be made to enter into the spirit of the art. The note and sketchbook are the only true tests of the student's knowledge; they serve to indicate the extent of the knowledge he has made his own from lectures and reading and observation, and serve to mark him off from those who pursue the course-and-cram system, and desire to become architects in name only. We are inclined to think, despite the advice of teachers at official head-quarters, that the "course-and-cram" system is now most in favour amongst young men who desire to assume the *rôle* of architect or engineer. Like the clinical work of the medical student in the hospital wards, the practical work on buildings must go hand in hand with books and lectures.

Perhaps there is another distinction between the two aspirants we have been considering, and one that lies deeper than methods of study. The novice who is in such a hurry to take the name of architect is often a more receptive man than he who is in earnest to prove his qualifications and credentials. He learns by rote quickly, has a capital memory, and, with the help of a little "coaching," is sure to pass any examination. It has been pointed out by all authorities on teaching that the receptive man quickly learns and benefits by teaching, which only arouses opposition in the critical man, and this explains the reason why so many of those who have passed examinations with credit frequently fail to exhibit any talent in actual practice. In every profession there are examples of this fact; but in architecture we find designers of very feeble buildings able to go through their examination with conspicuous credit. Between the critical faculty necessary to select good forms and to arrange plans upon logical data, and the mere receptive ability to collect facts and work out formulæ, a great gulf is fixed. The one order is perceptive—it can discriminate between good and bad, can think out a problem of design, while the other can only gather and grope its way between conflicting opinions. The first can invent, the other only collect and classify; hence we find that copies and poor compilations of existing buildings are the rule rather than the exception.

REPAIRS TO BUILDINGS.

THE periodical repair of buildings is one of those matters which are intrusted largely to the trades. The architect is sometimes called in to prepare specifications of what is necessary to be done, and these relate mainly to structural repairs as well as to those of a superficial character, like painting and decoration. The subject is one dearer to the surveyor than to the architect in its quasi-legal aspect, and every provincial practitioner whose practice is of a general character must have at one time or another have been called upon to draw out specifications for repair of premises, and to define what a dilapidation really is. Lawyers have invested the question of dilapidations with a degree of verbal obscurity which has to be mastered before anyone can presume to say what a dilapidation is. Between accident and wear there is a distinction to be drawn; fair wear without accident is declared to be not a dilapidation, so that if one sees a very worn staircase with its treads and nosings nearly worn down to a fine edge in front, it cannot be called a dilapidation, whereas if there is any "degree of accident" it is one, as, for instance, if the "nosing" of any step is broken, it is taken as a dilapidation. In all cases "reasonable wear" is excepted in the covenants of a lease, though how the word reasonable is to be taken is not very obvious. Repairs also are "substantial" which relate to structural parts like walls, floors, and roofs, and "tenantable" such as fittings or fixtures, windows, doors, ironmongery, plastering, painting, papering, &c. Of course, in every case the dilapidations are more strictly defined by the covenants and conditions. There are a great many things which the tenant or lessee is supposed to do under a lease, which few ordinary people who take houses know anything about. Neglect of repair in time to save any part of the premises is justly visited on the tenant; thus, if a tenant neglect to repair any slating, tiling, or roofing, and by his default the plastering or papering or woodwork internally is injured, he is responsible. Also, if he neglects to replace a rotten joist by which the floor sinks and is damaged, he is in like manner responsible. But if the roof gradually gets impaired, so long as it is weatherproof it is not a dilapidation; and if the beam or joist, though decayed, still supports the floor, he is, in the same manner, exempted from repair. And it is the same with other things like painting; if any decay arises owing to the neglect of painting, it is a dilapidation. The common phrase, "wear and tear excepted," therefore, must be taken with certain limitations; for wear and tear may pass beyond the limits of moderation and become positive neglect, so that the premises begin to suffer thereby. The architect or surveyor will always have some nice distinction to draw in asserting whether such-and-such a fitting or covering has gone beyond wear and tear. Very ambiguous are the terms under which he has sometimes to act. The liabilities of tenants have been over and over again brought before the Courts, and are so largely dependent on the stipulations that it is almost impossible to lay down any general rules. Where no stipulations exist, or where no covenants are inserted in the lease, the law still holds the tenant liable for the common covenants to "repair, maintain, and uphold." The contract is implied not to commit waste, but exercise "reasonable care, and use premises in a tenant-like manner." Elmes, in his work on "Dilapidations," an able authority, very fairly interprets the mind of the law in his day when he says it is so notoriously the duty of the actual occupier to "repair, sustain, maintain, and uphold the premises, and so little the duty of the landlord, that even without an agreement or covenant to that effect, the landlord may maintain an action against his tenant for neglecting such duty on the ground of the injury done to his inheritance." The Courts now are a little less exacting on the tenant where there is no express contract to repair, and it may be affirmed that under such circumstances the tenant will only be held liable for those accidental dilapidations which we have before indicated. The obligations of tenants under leases are certainly not understood as they ought to be. In his own interest a tenant ought to be sure that he does not make himself liable for the neglect or waste of his predecessor, and he can do this only by employing a competent architect or surveyor to find out whether the premises are in fit and proper repair, or ascertain at least their real condition, so that at the determination of the lease any dilapidations or neglect may be ascertained, and any disagreement avoided. How many a helpless lessee has been subjected to an action for dilapidations due to neglect of a former tenant!

There appears to be much uncertainty about the usual phrase of "good, tenantable repair." In a recent case tried in the Court of Appeal, "Proudfoot *v.* Hart," Justice Cave said that "tenantable repair" extends to commissive and to permissive waste, and "that a tenant must not only make good the damage going beyond mere ordinary wear, which is done by himself and his family and servants, but that he must also make good the damage which is done by other causes, such, for instance, as a casual storm which takes off a slate from the roof, or a stone thrown from the outside which breaks a window." If the tenant neglects to do these things, and the result is that further damage is caused to the structure, then he must make good that damage also, because it comes of his not performing his covenant to do tenantable repairs.

Papering and painting are considerable items in most tenancies. The same judge laid it down, as to papering walls, that a tenant was not obliged to put new paper on the walls simply because the old paper had become worn out—a dictum which is perfectly reasonable. However, we know that repairs required by lessors under this covenant generally include repapering. Again, with respect to painting woodwork, the tenant is generally required to repaint throughout; but according to the decision in this case, he is not bound to do so where it is only required for the purpose of decoration. Woodwork that is simply painted when he enters the house, and the paint wears off during his tenancy, causing injury to the woodwork, he is liable to repaint on the ground of permissive waste; but if no damage is done to the woodwork he is not liable, for such wearing-off simply would come under the designation of "wear." And the same rule is applied to whitewashing ceilings which may become black during the course of the tenancy. The same decision applies to walls, floors, doors, and windows. Generally it is held the tenant is bound where there is a breakage; but he is not bound when a portion of the structure has become absolutely worn out and necessary to be replaced. He undertakes simply to patch the work up so long as it is right and reasonable that it should be patched up, but no longer. When it can be patched up no longer, the tenant is not bound to put in anything new, or to pay any proportion of the cost of putting in the new thing. The decision which we have cited was contrary to that which the official referee had given, and we do not hesitate to say that it is contrary to the view held by many eminent surveyors.

From what we have said, there is little question that the law takes a less stringent view of the lessee's obligations than it was wont to do when Elmes wrote his book. We remember several instances in which the tenant, under his lease, has been called upon to reinstate portions of the structure, like decayed floors and roofs, and where damages have been awarded to the lessor in respect of cost incurred by him in repapering walls, repainting the internal woodwork, whitewashing, &c., where the paper, paint, and whitewash had been simply worn out during the tenancy. Unless this natural wear can be shown to have resulted in the permissive waste of the fabric, the law is clearly as the decision above given points out.

FILTRATION.*

As the country increases in population, and the drainage areas of many of the streams and other sources of supply are gradually utilised for the habitations of mankind, the question of obtaining a water supply free from disease producing germs and other objectionable matter, vegetable, animal, or mineral, is of increasing importance, particularly in the densely populated districts of the Eastern and Central States. When it is possible to obtain an artesian supply, virtually free from animal matter, it is a fortunate circumstance. The removal of such slight vegetable and animal growths as may from time to time occur is an easy matter. But many "ground-water supplies" from shallow, open, or driven wells are little better than those from contaminated streams. When a place is so situated that it must depend for its water supply on drainage, and dotted with farmhouses, barns, stables, &c., with here and there a village or hamlet, the only absolutely safe way for the town or village to remedy the evil is to purchase the entire watershed and allow nothing to live on it. This will eliminate most disease-producing germs, and subsequent filtration will remove nearly all the objectionable matter, organic or otherwise. It is quite true that at present there are many places where the supply is not subject to such contamination, but will they remain so for a reasonable time? As the expense of purchasing an entire watershed would bankrupt almost any place, it must accept the contamination as an unavoidable and permanent condition, and, like such cities as have an impure ground-water supply, they should provide for as perfect purification as is possible for a reasonable though perhaps great expenditure of money. If I am correctly informed, filter galleries were used in India 600 years ago, and it is a well-known fact that the Egyptians and the Orientals placed aluminous rocks in their water-jars in order to remove the impurities; that in England, France, Germany, and other countries, sand filters in one form or another have been, and are now being, used with more or less success; that the proper application of metallic iron at Antwerp and other places has increased the efficiency of the filter, and many of the old filters used in New England for clarifying the water for manufacturing purposes embodied many of the principles now recognised, and alum, iron, and other chemicals were used. A rotary air agitator in place of an air-pump was used in connection with alum in the year 1846 at Norwalk, Conn., by a hat manufacturer, but the use of alum was soon discontinued on account of its bad effect on fine colours. The numerous pressure and gravity filters of the present day, which may not or may use coagulants or precipitants, and the many natural and artificial filter-beds and those that depend upon chemical change of the matter in the water, are not the product of the chemist or biologist, but the results of the combined efforts of each, perfected mechanically by the engineer. Each one has its merits. In some cases one will do what the other will not. In other instances either would do. In the latter event first cost, running expenses, and cost of maintenance should determine which is best to use. It hardly seems necessary to refer to filters using sponges, charcoal, or coke breeze, either alone or combined as a filtering medium. While with proper attention they have done good work, the voids become filled up with sediment, and any sudden change in the velocity of the water tends to drive this matter through the filtering medium, to the great detriment of the filtrate. Such filters need most careful attention, or better yet, should not be used at all. It would seem as if coke filters should have merit, for with proper attention they effect a decided reduction in the amount of organic matter in the water. It is thought its action depends upon the metallic iron present. When the coke has been fully used as a filtering medium, it can be dried in a few hours and used as fuel. In many filters using a silicious medium for a filtrant, the water is first treated with a precipitant or coagulant.

On account of its cheapness and efficiency alum is given the preference. If just enough of this could be used to coagulate the foreign matter, there would be no better way of reducing the impurities in the water to a form in which they are readily retained by the filter. Unfortunately no one has yet found a way of adding just the right amount at all times, as the impurities are constantly varying in quantity. The amount of alum sufficient for one week may be largely in excess the next. As is sometimes the case, the filtrate contains 12, 14, and even more grains of alum per gallon. A small amount of this will kill a fish, and less than one ounce has been known to kill an adult human being. Its use in bread-making was prohibited by law in England years ago, as it was conclusively proven that its use, even in small quantities, is conducive to severe derangement of the digestive organs. It is not the object of this paper to discuss the merits and demerits of any of the filters on the market, as the representation of the different companies here present are better able to do so. If an occasional statement should seem prejudicial, it is not intended as an adverse criticism. While several failures have occurred, many of the filters are doing good work, and each year shows a marked advance in the elimination of disease-producing germs. The same is true of filter beds, and after a partial failure at Berlin and other places, to America belongs the credit of having demonstrated that by proper filtration through sand, without the aid of chemicals, typhoid fever and other disease-producing germs can all be eliminated from drinking water for a reasonable cost. Filter beds in this country seem to have few friends and many enemies, but after considerable experience with them I am forced to believe that they not only have merit, but are deserving of as much consideration as any one of the pressure or gravity filters. In many cases a plain dyke of sand and gravel has answered the purpose. At Waterville, N.Y., population 1,500, the water at times is highly charged with vegetable matter and much clay in suspension. After passing through a dyke it is made perfectly clear and wholesome, and never, to the best of my knowledge, has any fault been found with the water in town. The dyke cost 1,500dol., and has been in operation since 1888. The cost to clean it has been about 20dol. per year, which, added to the interest on the investment, would make the total cost 80dol. per year, or $5\frac{1}{3}$ cents per capita. At Bethel, Conn., population 2,500, the water was highly contaminated with vegetable and animal matter. Its odour was very offensive; in fact, the supply was so bad that it could not be used for drinking purposes, or in the manufacture of hats, which is the largest industry at Bethel. Something had to be done, but bearing in mind the injurious effects of alum on fine colours it was decided to employ some method not involving the use of chemicals. Accordingly there was designed for them a simple filter properly underdrained, with a submerged well in one corner. The gates were so arranged that water could be drawn down to the bottom of the filter bed and the air allowed to circulate through it; thus one filter bed was made to possess all the advantages of intermittent filtration, and, in addition to the advantages of nitrification, thus gained the action of the sun in drying up the sediment on top of the bed, saved much work in scraping the surface, for after a few hours' exposure the sediment peeled up and dried, and upon refilling with water it floated ashore. It was calculated to, and does, filter 300,000 gallons per day at the rate of 5 gallons per square foot per hour, or 5,227,200 gallons per acre per day. The total cost of the improvements, including a long dam for increased storage capacity, was about 6,000dol., but only 300dol. can be charged as the cost for filter. The cost to operate, including removal of sand, is 50dol. per year, which, added to interest on investment, makes 170dol. per year, or $6\frac{8}{10}$ cents per capita. Analysis shows that over 94 per cent. of the organic matter is removed by filtration. The lowest estimate we had for a filter using alum was, first cost, 3,200dol., and the running expenses estimated at 1·85dol. per day, of which 60 cents was for alum and 1·25dol. was for attendant. It will be seen that this added to the interest on investment would have made a total of 803·25dol. per annum, therefore the Bethel has saved each year since 1890 633·25dol., or over 25 per cent. per capita per annum, in using the filter-bed instead of the cheapest mechanical filter offered. At Nantucket, Mass., in 1892, a filter-bed, similar in principle to that of Bethel with minor conditions, was constructed. The water supply here is taken from a pond with no visible inlet or outlet, and the water seems to percolate into it from the sandy territory surrounding it. About every other year they are troubled with vegetable growth for about three months, generally in August, September, and October. The analysis given in the table printed herewith will show the purification effected when the trouble was greatest—viz., on August 14, 1893. It will be noticed from the analysis, first, that 68 per cent. of the organic matter as presented by the albuminoid ammonia was removed; that 13 out of 16 genera present were filtered out; that crenothrix and anabaena spores were absent in the filtered water, while out of a total of 216,000 anabaena per 100 cubic centimètres, but 3,600 remained, or $98\frac{1}{3}$ per cent. were removed. The iron was reduced eleven-twelfths, but this is probably because the organisms removed contained much iron, though aëration no doubt had considerable effect. If we except September 22, when, for some unaccountable reason, the organisms, if the analyst did not make a mistake, remaining in the filtered water were the same as in the unfiltered, an average of 96 per cent. of the micro-organisms were removed during the season of three months. The average amount of organic matter removed as represented by the albuminoid ammonia was 65 per cent. One strange thing at Nantucket was that occasionally an odour could be noticed in the filter water. It was observed, however, that as the aëration was increased and the temperature reduced, it became much fainter. It is the intention to carry out the original plans to the letter this season, and, first, to construct a submerged well, so that the filtered water can be protected from heat and light; and second, to cover the stand-pipe so that it will be light-proof; and third, to take the air from an adjacent ice-house, instead of from the hot engine-room, as at present. The total cost of the plant was 4,500dol., and it cost 90dol. per annum to operate. The sand used would pass 40,000,000 gallons per day through 1ft. under 1ft. head. At Lawrence, Mass., a filter bed $2\frac{1}{2}$ acres in area is in successful operation. In its design the engineer has shown considerable ingenuity and considerable study. It is designed to filter at the rate of 2,000,000 gallons per acre per day. The finest sand used will allow 50,000,000 gallons per

Turbidity.	Sediment.	Parts per 100,000 Colour.	Sample taken August 14, 1893.	
			Odour, Cold.	Odour, Hot.
Unfiltered, decided green	Very rusty.	0·70	Distinctly disagreeable, flat.	Distinctly vegetable.
Filtered, none	None.	0·15	Very faintly disagreeable next day.	Faintly vegetable.

Residue on evaporation—unfiltered total, 7·2; filtered, 6·5; loss on ignition, 2·25. Filtered—fixed, 4·95; filtered, —.

	Ammonia.			
	Free.	Albuminoid.		
		Total.	In Solution.	In Suspension.
Unfiltered	·0110	·0526	·0272	·0254
Filtered	·0000	·0169	—	—

Filter reduced chlorine iron 2·04 to 1·98; hardness, 0·1, and iron from ·12 to ·0125.

Nitrogen as nitrites or nitrates was absent in both waters.

MICROSCOPICAL EXAMINATION, NUMBER OF ORGANISMS PER 100 CUBIC CENTIMETRES.

Name.	Pond Water.	Filtered Water.
Cyclotella	200	None.
Anabaena	216,000	3,600
Clathrocystis	600	None.
Anabaena spores	6,400	,,
Pandorine	1,000	1,000
Scenedesmus	400	None.
Staurastrun	200	,,
Crenothrix	5,600	,,
Zoogloea	1,440	150
Euglena	200	None.
Monas	400	,,
Peridinium	200	,,
Anurea	400	,,
Polyarthre	200	,,
Other organisms	208	,,

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* Paper read before the Minneapolis convention of the American Waterworks Association by James B. Rider, of New York.

acre to pass through 1ft. of it under 1ft. head. It has successfully removed, when working at above rate, $98\frac{33}{100}$ per cent. of all bacteria, and though it has been in operation only since Sept. 20, 1893, the marked decrease in deaths from typhoid fever from a total of 43 for eight months in past years to 17 for the present, shows how near perfect the filter must operate, especially when it has been shown that nine out of the 17 that died had frequently drank of the unfiltered water. The death-rate from typhoid fever was in reality, therefore, reduced nearly 82 per cent., while the organic matters, as represented by the albuminoid ammonia, of which 15 or 20 per cent. is in suspension, was reduced 45 per cent. It cost about 75,000dol., but had other than home labour at 2dol. per day been employed in construction, its cost would not have exceeded 50,000dol. The cost for maintenance, as estimated by the superintendent, Mr. Salsbury, is as follows: Interest on 75,000 dollars at 4 per cent., 3,000dol.; cost for cleaning bed and replacing sand, 3,000dol.; total, 6,000 dollars, or 12 cents per capita per annum. The superintendent states that, to provide for a 7,000,000-gallon mechanical filtration plant, a filter company wanted about 60,000dol.; but assuming they could get one at the low price of a 5,000,000-gallon plant for 30,000dol., the interest on this sum would be 1,200dol. per annum, which, added to the cost for coagulant and attention, to say nothing of the water necessary for cleansing a 5,000,000 battery, would certainly make the cost for running a mechanical filter plant at Lawrence as much as it now costs the city. The above facts have been cited not for the purpose of showing that the filter beds are in all cases cheaper than mechanical plants, for they are not. And again, many are the conditions where a mechanical filter could be used and a filter bed could not. One thing is certain, that to-day many filter-beds in America are giving far better results than the old ones of Europe; also that a filter-bed properly cared for, as at Lawrence, Nantucket, Bethel, and other places, ceases to act entirely as a strainer; but by the admission of air, by the drawing down of the water to beneath the bed, chemical action takes place, and as Mr. Mills says in his report on the Lawrence filter: "There is nearly air enough in our drinking water to supply the oxygen which is necessary to carry on the process of nitrification when the water comes in contact with the grains of sand which have nitrifying bacteria adherent; but the condition of the air which enters the sand by drawing the water out of it once a day caused a more complete burning up of organic matter in the water, which is the nitrifying process spoken of. The question may arise: If water contains so much air, why does not nitrification take place in a reservoir? The reason is that nitrification will not take place unless the water with the air comes in contact with certain bacteria, which in some unknown way cause the process to be carried on. These bacteria attach themselves to the grains of sand of the filter, and remain there, and when air is present they can in a short time cause the nitrifying process to be carried on so completely that nearly all the organic matter in the water is burnt up, and with this burning the disease germs in the water are killed." Recent investigation has proven beyond question that where a filter bed is not forced to filter beyond more than, say, 8,000,000 to 10,000,000 gallons per acre per day, that most micro-organisms are retained in the upper portion of the bed and do not pass down into it. It has been demonstrated that the cost of cleansing is not great, and that the cost of construction under favourable conditions is not greater than that of a mechanical plant, and frequently it is less. In short, all that has been said against filter beds and mechanical filters is not true. Both have done good work, and ofttimes poor, but to-day there is no excuse for having a poor filtrate from either. In relation to mechanical filters using a silicious medium, one thing is certain: that is, that such of them as use a proper coagulant and precipitant can with safety filter at a more rapid rate than those which do not, and if the filter companies will insist on having plants large enough, no matter if the cost is increased to the user, it would be seldom that the chemist could find more than a trace of the coagulant or precipitant in the filtered water. The great efficiency of filter beds and mechanical filters has been so thoroughly demonstrated by experience, that there is no excuse for any community to longer use unfiltered water. After an experience with 40 waterworks, the writer and his father have decided not to build another without a proper filtration plant. No matter how careful an engineer may be, if the water is bad at any time, he is blamed for it. Very few supplies are such that they cannot be improved by proper filtration. Again, you do not know even with good water what day you will be troubled with "purging." At Chester, N.Y., "purging" never occurred at Walton Lake until the first year it was used as a source of supply. At Norwalk, Conn., they have two reservoirs a quarter mile apart. In the upper one purging never took place until last season, while in the lower one, with the same water, it occurred annually until last year. At Orange, N.J., as in many places with new reservoirs for the first few years, they had the same trouble, but of late they have not been annoyed. From a business standpoint, filtration is necessary from the first day water is introduced. A system of waterworks must have friends and consumers or it cannot live, but a people cannot be expected to discard their wells and cisterns for a contaminated or objectionable supply. In several small places where waterworks have been constructed, if nearly everyone was not a water taker the works would be a financial failure. In conclusion, while the arguments would to a certain extent commit the writer to filter beds, let it be fully understood that such is not the case, and as proof of this will say that, with two plants that he now has under construction, in one case is providing for a filter bed, and in the other a mechanical plant. Above all there is in this life for a man is contentment; without health this is impossible, and no community can be healthy while drinking bad water.

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL.—VIII.

THERE are a few points in which the difference between the designing and construction of steel and iron bridges is so marked that attention must be drawn to them. They concern the quality of steel used for different parts of the same structure, and have an especial reference to riveting, which we shall point out in its proper place. In the case of ordinary iron girders, trusses, and bridges, it is a common practice to specify one description of cast or wrought iron for all the parts of the design, with the exception of the bolts and rivets. In steel bridge girders and roof trusses, this licence is not permitted. According to the position of the various members of a compound or built-up girder, and the amount, as well as the nature, of the stresses to which they are subjected, so must the quality of the steel employed possess special powers of resistance. When the great cantilever or continuous girder railway bridge was built over the Mississippi at Memphis some two or three years ago, three descriptions of steel were required in the specification. A high-grade steel was demanded for the booms, chords, and all the principal members of the trusses; a medium quality for the longitudinal, cross and other platform girders, and transverse and diagonal bracing, and a soft steel for only the rivets. The following table gives the strength in English tons and decimals, and some other particulars of the different qualities of steel employed in the Memphis bridge:—

TABLE I.

Description.	High Grade.	Medium.	Soft.
Maximum ultimate strength	35·04	32·36	28·12
Mimimum ultimate strength	30·80	28·57	24·55
Minimum elastic limit	17·85	16·52	13·40
	per cent.	per cent.	per cent.
Maximum elongation in 8in.	18	22	28
Minimum contraction	38	44	50

It should be observed with reference to the above Table I., that whereas the differences between the ultimate strength and elastic limits of soft and medium steel is approximately double that existing between the medium and the high-grade qualities, the minimum elongation and contraction do not follow the same law, but approach a great deal nearer a constant difference.

It is clear, therefore, so far as regards simply the ultimate tensile strength of the material, the harder it is the better. It must be borne in mind one of the principal reasons for employing steel in preference to iron in constructive works, is that it admits of a higher unit stress being imposed upon it. Consequently less material is required, which means less weight, or, more correctly speaking, a less proportion of dead or useless weight between the structure itself and the load it has to carry. Such being the case, it may be fairly asked, Why not almost use steel of a medium or high grade, as in Table I.?—and so secure at once the highest unit stress and the greatest amount of economy at one and the same time?

This is just the point respecting which engineers and architects are not altogether *d'accord.* Some consider it undesirable to specify for too high a tensile resistance in the steel employed for bridges and roofs, and instance the fact that cracks and other mysterious defects make their appearance in steel of this high-grade quality, from which the milder specimens are altogether exempt. Without taking into consideration the highest quality of the material, very satisfactory, trustworthy, and excellent results are obtained with a steel possessing a tensile strength of from 26 to 30 tons per square inch of sectional area. If we take the average of these two values, call it T, put F equal to the factor of safety, and S for the safe-working stress per square inch, to which the material is to be subjected, we shall always have—

$$S = \frac{T}{F}.$$

In Germany, very mild steels, possessing correspondingly low tensile powers of resistance, are used in the construction of boilers, in shipbuilding and metallic structures generally, on the plea that the milder steel is more trustworthy. This statement is, to a certain extent true; but if engineers are to adopt, for the sake of alleged greater reliability, a quality of steel which is endowed with a gradually decreasing tensile strength in proportion to its mildness, they will very speedily find that there is no economy in using that material at all. They had better go back to good wrought iron, which can still be obtained always well up to the old stereotyped Board of Trade working stress of five tons per square inch. It is just possible that the reason the German engineers not only advocate the use of these low steels, but, it must be admitted, act up in practice to their own recommendation, is that they are obliged to employ this quality, as they are either unable to turn out a higher class of steel which is trustworthy, or when they do, the cost is far too high to allow of its employment in ordinary constructive works. This supposition derives some support from the fact that steel of a higher tensile strength is made in Germany, but only under especial conditions, when it is expressly sought for, and the parties requiring it are not obliged to cut down the estimate too low. At the same time, it should be mentioned that there is equally a limit in the other direction, and that it is quite possible to have steel of too high, as well as of too low, a grade. A quality of material which would serve admirably for the manufacture of tools with sharp cutting edges would make but a very poor specimen of a rivet.

Before drawing the attention of our readers to the practical part of steel riveting, and those points in which it differs from wrought-iron riveting, we will proceed to the theoretical analysis of the joint for the flange-plates of the main girder of the bridge under design. There are three plates in each flange, but it is only necessary to consider the heaviest of them, which is $\frac{1}{2}$in. in thickness, against $\frac{3}{8}$in. for the same dimension of the other. It has been already stated that although there is a difference in the net sectional area of the two flanges, insomuch as the upper has three plates each $\frac{1}{2}$in. in thickness, while in the lower flange one of these is only $\frac{3}{8}$in. thick, no distinction will be made in the number of rivets required, or in the length of the covering-plates or wrappers, and the question of the effect of the holes upon the compression boom will be disregarded. Let A = the gross area of one of the flange-plates either at top or bottom, and let A_1 = the net area of the same plate. Put U to represent the unit stress—that is, the working stress per square inch of the net sectional area of the lower flange, or the one under a tensile stress, and let U_1 equal the same stress for the rivets. Make N equal the number of rivets required on each side of the joint, put *d* for the diameter of the rivets, and π for its universal value, then we have—

$$A_1 \times U = N \times U_1 \times \frac{\pi d^2}{4}$$

which gives the value of N, the number sought.

$$N = \frac{A_1 \times U \times 4}{U_1 \times \pi d^2} \quad \ldots\ldots\ldots\ldots \quad (1)$$

But if *b* and *t* = breadth and thickness respectively of the plate, then $A = b \times t$, and $A_1 = (b - nd)\,t$, the symbol *n* representing the number of rivet-holes in the same line of fracture in the cross-section of the plate, so that we may write—

$$N = \frac{(b - nd)\,t \times U \times 4}{U_1 \times \pi d^2} \quad \ldots\ldots\ldots \quad (2)$$

From the nature of the example, we find—

$$A_1 = (b - nd)\,t = (18 - 3 \times \tfrac{3}{4})\,\tfrac{1}{2}.$$

In the accompanying Figs. 11, 12, and 13, it will be seen that the absolute theoretical value for *n* is 2, taken through the line of fracture A – B; but is equal to 3 along the line CD, although one of the rivets does not really belong to the joint. For reasons already laid down, it is preferable to put it equal to 3, as there is then a margin allowed for the insertion of an odd rivet here and there, the exact position of which cannot be determined with complete accuracy until the structure is actually erected. There is in every bridge and roof a certain amount of external work to be done; brackets, lamp-fixings, gas-pipes, gutters, facia, and ballast boards, parapets, and very frequently accessories of an ornamental character in architectural designs, which must be fixed on to the main framing. In fact, there is nothing else solid enough to attach them to. It therefore nearly universally occurs that holes must be punched or drilled wherever they are needed, and whether they deduct one or more diameters from the original value of the gross sectional area A is a matter which is completely disregarded. It is, therefore, well not to put the value of *n* too small.

FIG 11.

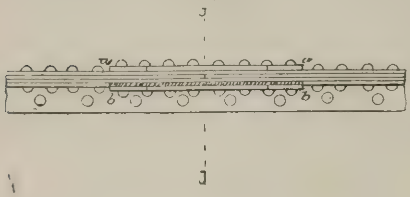


FIG. 12.

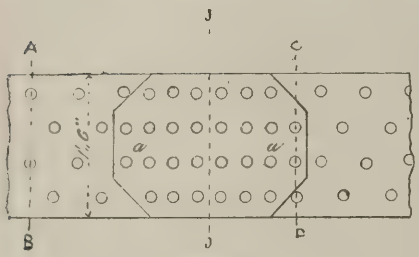
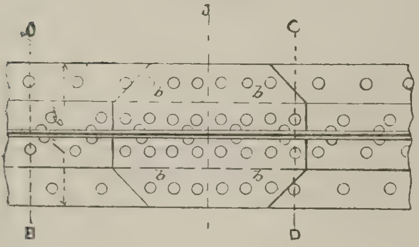


FIG. 13.



Returning now to our equation "2," and substituting the actual numerical equivalents for the algebraical quantities, we have the following:—

$$A_1 = \frac{(72 - 9)}{8} = 7{\cdot}87\text{sq.in.}$$

and also—

$$\pi a^2 = 3{\cdot}1416 \times 0{\cdot}5625 = 1{\cdot}7715.$$

Inserting these values in equation 1, we obtain, bearing in mind, that, from previous articles, U = 7, and $U_1 = 5$—

$$N = \frac{7{\cdot}87 \times 4 \times 7}{5 \times 1{\cdot}77} = 25 \text{ rivets.}$$

This number would be required, supposing the rivets were all in single shear; but they are evidently, so far as the jointed plate is concerned, in double shear, Figs. 11-13. Here we have a practical and noticeable difference between steel and iron riveting. In the latter the unit shearing stress of rivets in double shear is not twice the amount of that which obtains when they are only in single shear; but the correct ratio is 1·75 to 1. In the case of steel rivets the proportion is 2 to 1, so that in the joint in question 13 rivets will be sufficient, which can be obtained by the arrangement shown in the cuts, in which the pitch of the rivets is 3in. or one-half that of the regularly continuous pitch of the rivets uniting the plates, angle-irons, and web of the girder itself.

The joint J J is practically built up as follows:—One outer cover-plate or wrapper, *a a*, of the shape shown in the elevation in Fig. 11 and in plan in Fig. 12, and of a thickness of ⅜in. As there are plates of this thickness in the lower flange of the girder, short pieces can be readily supplied for the purpose, or otherwise they would have been made ½in. thick, the same as the plate they are intended to cover. The joint line J J runs between pairs of rivets that are ¾in. in diameter, which allows of a distance between the joint and the edge of the nearest rivet-holes of 1⅛in., or a diameter and a half, thus leaving quite margin enough. On the inner side of the joint, Fig. 13, a pair of wrappers, *b b*, each of which are about one-half of the outer wrapper in shape and size, are riveted over the flange-plates and angle-irons, and packing pieces, shown by hatched lines in Fig. 11, are placed between the wrappers and the flange-plates to give the former a flush bearing over the whole joint. Instead of this arrangement, the inside cover-plates are sometimes bent and cranked over the horizontal flange angle-irons, and in other instances the angle-irons are not covered; but the strips over the inside part of the plates are the only inside wrappers used. If the last-mentioned method be adopted, then the thickness of the outside wrapper and of the inside covering strips should not be less than that of the plate they joint. A glance at Fig. 13 will point out that if strips are used which cover the plates only, the angle-irons have to perform the duty of inside wrappers for a large portion of the joint, and therefore the thickness and consequently the sectional area of both outside cover plates, *a a*, Figs. 11 and 12, and also of inside strips, *b b*, must, when united, be sufficient to relieve the angle-irons of all stress on the supposition that the joint might fail by want of strength in the covers, inside and outside.

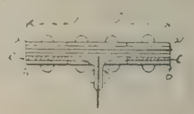
In the actual process of riveting up a steel bridge, the rivets, if of that material, cannot be heated to the intense heat to which iron can be subjected; but when they are to be "closed," must not be at a temperature higher than about that of a dull red heat. We state "if of that material" advisedly, because iron rivets were commonly used in the early examples of steel bridges, roofs, and other similar structures. Only a year ago, when the reconstruction of the Morand and La Fayetté bridges over the Rhône at Lyons was in progress, iron rivets were used instead of steel in one of the bridges, which, like the others, consisted of solid steel arched ribs abutting on cast-iron skewbacks. It was stipulated in the specification that the rivets for all these new bridges should be made of steel; but an exception was made in the instance alluded to on the grounds, alleged by the contractor, that the workmen engaged under him were not sufficiently acquainted with the process of steel riveting to be certain of doing good work. It is evident, therefore, that the operation demands a special kind of handicraft with which the ordinary iron riveter is not always acquainted. It would appear that steel rivets are more likely to fill the holes better than those of iron, for, as they are not "closed" at so fierce a heat, they will not contract, or, so to speak, shrink so much in cooling.

Referring again to Figs. 12 and 13, it is clear that the jointed plate is also held to a certain extent in its place by the regular riveting uniting it to the other plates, and the longitudinal angle irons. The whole case is quite distinct from the simple jointing of two plates in one and the same plane, and in which outside the area of the joint we have the gross area equal to the net; or, employing a former equation—

$$N = G = (b \times t).$$

A cross-section of the joint in Figs. 11—13 is shown in Fig. 14, in which *a a* are the outside cover-plates, *b b* those on the inside covering the horizontal angle-irons, and *c c* the packing strips inserted to constitute a flush connection for the whole interior part of the joint. We have now to consider the method of riveting up the cross-girders, the rolled joints, platform, and general erection of the bridge. There would be no difficulty in a bridge of only 60ft. in span, in building it upon one or other of the approaches, and then launching it on to its permanent site; but, on the other hand, if it were permitted to put up a temporary scaffolding underneath, the contractor would probably prefer the latter expedient.

FIG 14



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WAGES AND HOURS IN LIVERPOOL.

THE city council of Liverpool received at their last meeting the following return comparing the hours of labour and rates of pay in the City Engineer's Department compared with those recently issued by the National Association of Master Builders:—

CITY ENGINEER'S DEPARTMENT.

	Average hours per week.	Wages summer and winter.	
		Day.	Week.
		s. d.	s. d.
Masons	53·3	5 6 to 6 6	33 0 to 39 0
Bricklayers	53·3	6 2	37 0
Carpenters and joiners	53·3	6 0 and 6 4	36 0 and 38 6
Plumbers	53·3	5 8	34 0
Masons' labourers and bricklayers' labourers	53·3	3 6 to 4 6	21 0 to 27 0

NATIONAL MASTER BUILDERS' ASSOCIATION.

	Hours per week.		Wages per week.	
	Summer.	Winter.	Summer.	Winter.
			s. d.	s. d.
Masons	49·5	44·5	37 1·5	33 4·5
Bricklayers	50	47·5	37 6	35 7·5
Carpenters & joiners	50	47·5	35 5	33 7·75
Plumbers	50	47·5	37 6	35 7·5
Masons' labourers and bricklayers' labourers	50	47·5	20 10 and 22 11	19 9·5 and 21 9·25

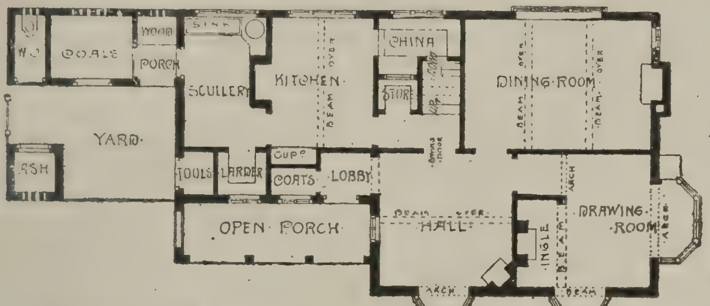
At Brownlow-street Central Store Yard, the hours throughout the year are 55½ per week. Men working underground are paid 6d. per day additional to above rates.

Mr. Boulnois, the city engineer, reported that nothing more than a general comparison could reasonably be made between the wages paid in the City Engineer's Department and by the Master Builders' Association, as the Corporation workmen are paid the same wages in the winter as in the summer; the men receive 6d. per day extra when working underground, and practically the Corporation give constant work and other advantages.

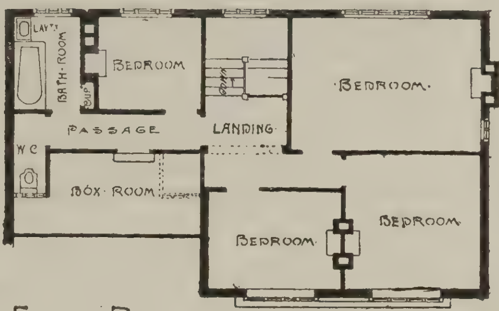
* * *

"THE DELL," NORTHFIELD, WORCESTERSHIRE.

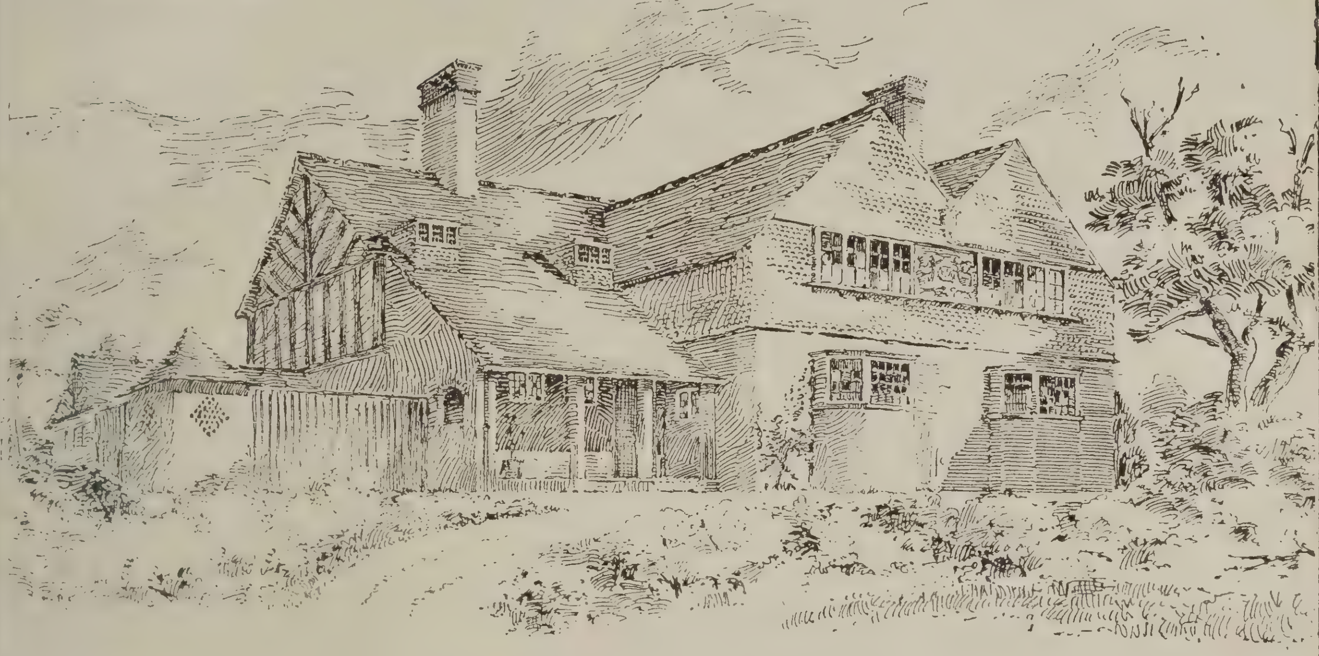
THIS house stands about 30 yards from the road at the top of a large dell surrounded by oak-trees. It has been carried out in local bricks and tiles by Mr. D. Edwards, builder, Bank Green. The lead lights by Messrs. J. R. Lee and Co.; iron casements by Messrs. Hope and Sons. The hall is panelled to the height of about 4ft. The downstairs rooms have beamed or moulded plastered ceilings. The hall is so planned that it can be shut off from the rest of the house, and so form a third room. The architects are Messrs. T. W. F. Newton and Cheatle, 121, Colmore-row, Birmingham.



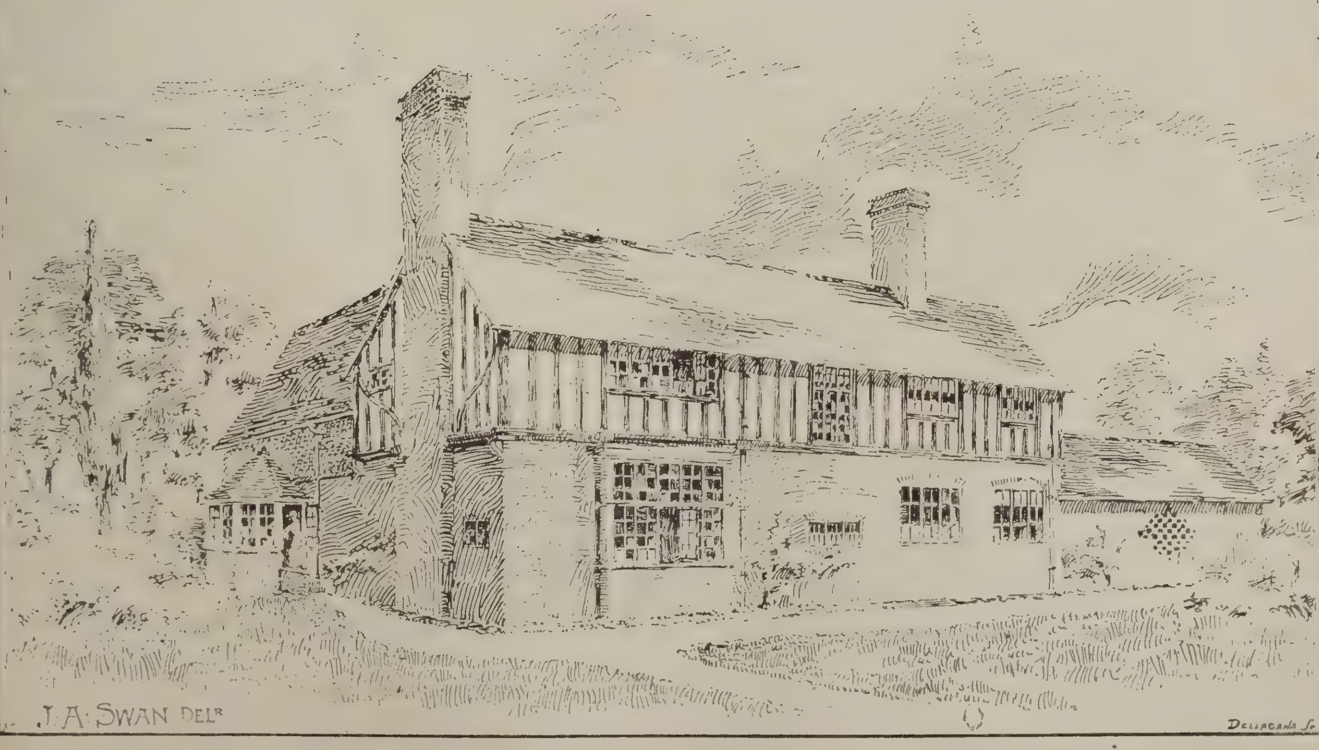
GROUND PLAN



FIRST FLOOR PLAN



"The Dell" Northfield Worcestershire.
Messrs T. W. F. Newton & Cheatle Archts



HOUSE SANITATION AND THE CONSTRUCTION OF WORKMEN'S DWELLINGS.

At the closing meeting of the International Hygenic Congress at Buda-Pesth, held on Friday, an animated controversy took place in a combined meeting of two sections in reference to the construction of workmen's dwellings. The discussion was initiated by Professor Corfield, of London, who submitted a series of resolutions asserting, first, that the general health of the population was improved and the spread of disease prevented by the frequent removal of all foul matter and a copious supply of pure water; secondly, that the paving of streets should be smooth and, as far as practicable, impervious, so as to facilitate cleansing and prevent the contamination of the subsoil; thirdly, that the access of damp air and moisture to houses should be prevented wherever necessary by means of an impervious basement floor, and a damp-proof course in the walls; fourthly, that house drains should be watertight, and should each be provided with a disconnecting trap to prevent the access of foul air from the sewer, and should be freely ventilated; fifthly, that street sewers should be ventilated in such a manner as to prevent foul air entering houses and streets, and should be well flushed so as to prevent the accumulation of foul deposits; sixthly, that the minimum width of streets should be 40ft. between the houses, and that the houses should not be higher than the width of the street in which they are situated, nor built back to back; seventhly, that regulations should be made by public authorities with a view to enforcing the practical application of the principles here laid down. These proposals gave rise to a heated discussion. Mr. Arthur Cates, of London, objected to the limitation of the heights of houses to the width of the street. Other members of the section strongly opposed the declaration against houses built back to back. The fourth resolution, dealing with house sanitation, was also warmly contested on the ground that it would prevent further experiments in sanitary science, and that the disconnecting trap itself, which diminished rapidity of flow, was unscientific. The Continental delegates were disposed to think that the British did not take a broad enough view of the question of sanitation, and suggested the appointment of a committee to formulate new resolutions. Professor Corfield, replying to these objections, said that his calculations had been subjected to most contradictory criticism. Some thought them too general, others too detailed. As he could not consent to his resolutions being emasculated, he begged, with the consent of his seconder, Dr. Pistor, of Berlin, to withdraw them. This was accordingly done. Mr. Thomas Blashill, the superintending architect to the London County Council, subsequently explained to the section, with the aid of drawings and a plan of the block, the associated buildings and artisan dwellings now being built by the Council at Blackwall and elsewhere in the Metropolis. He said that they were intended chiefly for artisans, messengers, and other workmen earning an average wage of 21s. a week. The average cost to the County Council would be about £80 per room. This was more than had been spent previously on construction, but the cost of building had greatly increased in London during recent years. The Council had the power to borrow money at 2¾ per cent., and they intended to let these buildings at a rent yielding only about 3 per cent. on the cost.

COUNTY LUNATIC ASYLUMS.

By George H. Bibby, F.R.I.B.A.

INTRODUCTION.

The general treatment in mental disease had formerly little purpose beyond the aversion of the danger that might arise to the sane from the uncontrolled roaming of such as were mentally deranged, or the requirement for the preservation of public order. Some were confined in hospitals, others in penitentiaries and workhouses, and usually in most wretched apartments. To treat them as patients was a thing unthought of: the great aim was to render them harmless—a method said to have been adopted from a mistaken notion of their excessive bodily strength. This was frequently effected by very rough measures. The unfortunate creatures, often oppressed with chains, pined away behind iron bars in wretchedness and filth, in the endurement of tortures and lashes. The remaining traces of humanity could not but disappear, and whoever once crossed the threshold of an asylum was considered lost.

When at length it began to be considered a requisite that asylums should be new and specially erected institutions, in many countries men hesitated at a prospect so expensive as the erection of several large establishments, with complicated arrangements and increased medical superintendence. They could not, however, return to the former system of mingling all the insane, but perceived the necessity of separating the various classes.

A very large number of the insane are brought under treatment far too late. In its first stages insanity is frequently curable, and on its appearance help against it should be sought without a day's delay, since every hour adds to the difficulty of cure, and after a delay of two or three months, relief (perhaps a long relief) may indeed be obtained, but cure may have become nearly impossible.

These facts are, however, far better known and understood than was the case some twenty-five years ago, and one result is that a far larger proportion of the population are under asylum treatment; but the increase of insane patients arises from various causes beyond the inclusion of a class who were formerly neglected, under unsuitable private care, wandering about the country, or indiscriminately mingled with the workhouse inmates, and merely classified as paupers—as is still the case in many districts in England, Ireland, and Scotland.

The special importance of the subject to architects will be perceived if it be remembered that there are in England alone no less than 170 asylums (public and private), and that some of these have cost (exclusive of land and furnishing, &c.) so much as £500,000, the price per patient varying from £80 to £250, or £300 in special cases.

In Scotland there are about 50 asylums (including lunatic wards and poorhouses), and there are 42 asylums in Ireland, where, however, there are also no less than 4,334 lunatics and imbeciles confined in union workhouses. Many of the asylums in Ireland appear to be wholly insufficient for their purposes; for instance, the Richmond Asylum, near Dublin, is so overcrowded as to act most injuriously on the patients' health, and materially lessen the prospects of their recovery, and to disorder every department of that institution. In this asylum the female observation dormitories are (or were lately) so overcrowded that not only were the beds placed side by side, but mattresses have had to be placed on the floor to provide for additional patients! In view of the constantly-increasing numbers of the insane, of the utter unsuitability of many of the older asylums (and some of the more recent), there appears to be a great probability of extensive asylum works in all parts of these islands, and of considerable work for architects and the building trades.

In actual practice, the architect who is intrusted with the erection of a large asylum will always find it of great importance to have facilities for consulting from first to last a well-experienced medical officer, and it would be well, when a new asylum is projected, that the medical officer should be appointed to the asylum before it is erected. If this were always done, much loss and trouble would be avoided in alterations, &c. In times past I well recollect (although nearly 30 years since) a great medical authority on the subject of insanity taking a temporary seat in an architect's office, and performing draughtsman's work as an expeditious mode of conveying his views and instructions to the architect. This gentleman was one of the most accomplished medical superintendents of the day, but ultimately is said to have become a remarkable example of the fact that continued and close contact with the insane is an occasional source of absolute danger to the mental powers of the sane, and suggests the advisability of an architect so arranging his plans that the apartments for the officers when off duty shall be so disposed as not to be within sight or hearing of the patients.

In no class of building can an architect make himself more felt as a lasting benefactor to the occupants than in a lunatic asylum, and, in order that he may be armed with every probability of success in arranging his plans, he must to some extent study the ways and mode of life of those for whom he provides. It is most desirable, therefore, that he should have an intimate knowledge of the position of the medical superintendent, for this very knowledge must influence his ideas in the planning of the buildings.

Architects who will not endeavour to bring their asylum plans into conformity with the desires of an experienced medical superintendent are likely to regret their omissions before the end of the work; but of course, in absolutely architectural matters the architect should take precedence.

A modern county asylum has been in some respects compared to a general infirmary; the differences, however, are more noticeable upon an internal than an external view. With regard to the patients in hospitals, most of these are in bed both by day and night; but in asylums the majority are employed or distributed about the day-rooms, &c., during the daytime. An infirmary does not require many single-bedded rooms, while in an asylum—according to some authorities—at least one-fourth of the patients should be accommodated in rooms having only one bed. These conditions render the designing of an asylum a very much more complicated work than for a hospital.

Many of the county and private asylums of this country are situated in finely laid out grounds or parks, and the luxurious arrangements, comforts, and pleasures which are provided for the pauper-patients are often in very striking contrast with the surroundings of their sane relatives, many of whom may be living a miserable existence, the result perhaps of the former drunkenness, vice, and improvidence of an asylum inmate.

The housing of the pauper-insane has hitherto been more costly, in proportion, than for any other section of the poorer class. The cost of the land (of which, at least, 100 acres are requisite for an asylum for 1,000 patients) is the first serious item, and its selection is a difficult matter. Suitable sites are somewhat difficult to meet with, as the requirements are so varied. The situation should be elevated with regard to the adjacent district generally, with cheerful adjuncts, and should not be at an unreasonable distance from the abode of the population from whom its inmates are collected, particularly with a view to the visits of patients' friends and the supply of fuel and provisions, &c.

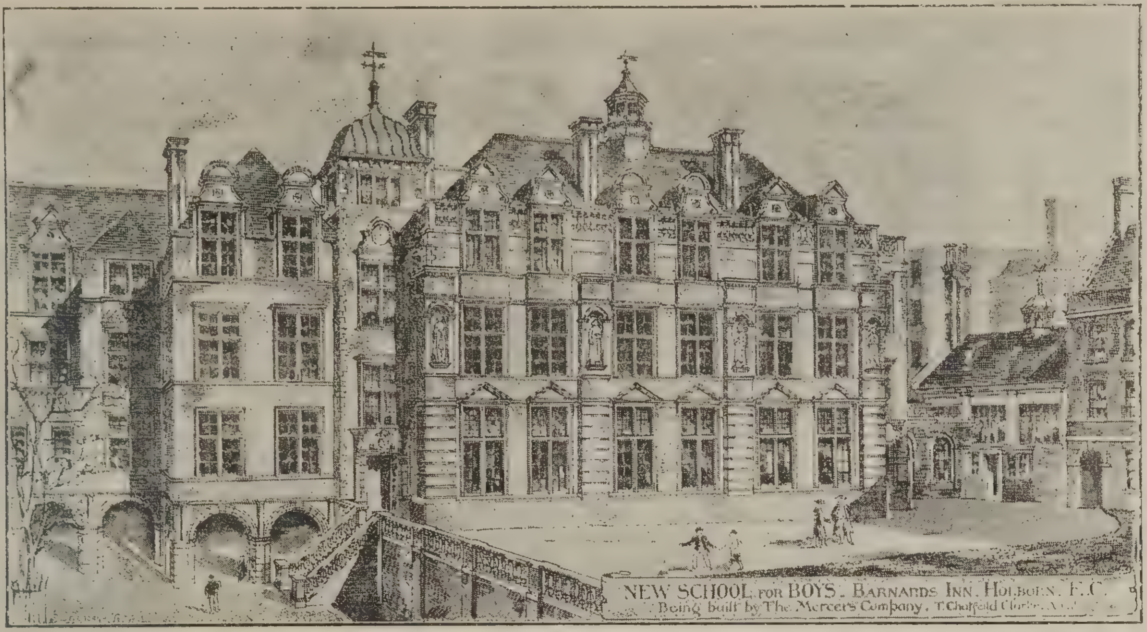
The water supply and sewage-farming questions are also to be considered, prior to the selection of a suitable locality for the buildings. It has been suggested that future asylums shall be limited to accommodate not more than 1,000 patients each, upon the ground that it seems impossible that one medical superintendent should know all the idiosyncrasies, &c., of so large a number of patients as are often placed in his charge.

For kindred reasons it also appears that the periodical enlargement of existing asylums is objectionable. Not infrequently additional day-rooms and dormitories have been added without a corresponding addition to the administration buildings, which latter have in consequence become utterly inadequate for the service. Further than this, overgrown asylums have long since been proved to be disproportionately costly, though the waste and loss occasioned by the multiplication of servants, and the difficulty of subjecting them to the individual and constant oversight of a single responsible head, and because a medical officer, let him work as he will, cannot do his duty thoroughly in the care and treatment of patients, unless there be reasonable limits to their number.

(*To be continued.*)

LAYING OUT STREETS.

Some valuable hints are given in J. Stübbens's paper on the "Practical and Æsthetic Principles for the Laying Out of Cities," prepared for the International Engineering Congress of the late Columbian Exposition. The author, speaking of streets and squares, says the former should not be too long. Too great length of street wearies the eye and awakens a feeling of discomfort. The danger of this unpleasant sensation begins when the length exceeds 20 or 30 times its width. Should a change of direction be undesirable for practical reasons, the author suggests varying its width and cross section. Gentle curves are preferable, especially those which conform to superficial outlines or natural boundaries. It is not necessary that the two sides of a street should be always parallel. A pleasant effect may follow from irregular widths of streets at the opening of squares. A street ought not to be straight over a summit—i.e., convex changes of grade are to be avoided. Passing over a high


NEW SCHOOL FOR BOYS. BARNARDS INN. HOLBORN. E.C.
Being built by The Mercers Company. T. Chatfeild Clarke

point is best accomplished by a bending of the street in plan and profile, the course of which the eye cannot follow beyond the ridge. The interruption may be a vertical one, in the form of a monument, a fountain, or plantation, or a horizontal interruption in the form of a crossing. The concave profile is more handsome than a convex one. It affords to the street surface by day and by night a pleasing spectacle of light and shade. The author suggests that if the street surface cannot be laid out with rows of trees and garden plots, a width is to be preferred restricted to traffic and health. Those portions not required for traffic should be adorned with garden spaces, monuments, fountains, arcades, and other architectural adjuncts, and also tasteful erections such as trading stalls, waiting-rooms for street tramways, conveniences, alarm-boxes, drinking-stands, lamp-posts, street-signs, boxes for sweepings, inclosures, &c. These subordinate objects of utility, if artistically designed, give pleasure. Other suggestions are made on the relation of streets and squares to the buildings of more or less value, to which we may call attention. The Metropolis has benefited by many of those features we find in Continental cities, such as avenues of trees, improved lamp-standards, fountains, boxes for sweepings, shelters, and conveniences; but a great deal more remains to be done to render our embankments and main thoroughfares ornamental as well as useful.

NEW MERCERS' SCHOOL, BARNARD'S INN, HOLBORN.

WE illustrate this week the renovated and newly-erected buildings in Barnard's Inn, to which the school of the Mercers' Company has been removed from College-hill, Cannon-street, and which were opened by Earl Selborne on Tuesday. The Mercers' Company, through their surveyor, Mr. Daniel Watney, purchased the site of Barnard's Inn, Holborn, an area of 27,000ft. superficial, including the buildings standing thereon, two years ago. The new building is faced with red bricks, with Ancaster stone dressings. One of two entrances to the main block of buildings is surmounted by a clock-tower. The old Inn Hall has been retained and redecorated, to be now used by the boys as a dining-room, and with this object kitchens, sculleries, &c., have been built in close proximity. The headmaster's room adjoins the dining-hall, and then the main block of buildings follows—with its large assembly-hall on the ground floor, a room 70ft. by 40ft., with an arcade on its western side. On the same floor a large lecture room is provided, and also the physical laboratory and science master's room, and a special classroom for the headmaster, Dr. Scott. On the first floor are six large classrooms, and the second floor has a similar number. These rooms are lofty, and all lighted from the left-hand side, with glass screens to the corridors. They are fitted with open warm-air stoves, and the larger rooms and all the staircases and corridors are heated with low-pressure hot water, which is also used for extract purposes in a large trunk placed on the roof. Under the lecture-room block a covered playground has been provided for use in bad weather. A separate building of three floors, backing into Fetter-lane, contains the chemical laboratory and the drawing school. The buildings are fireproof throughout, and they have been fitted both with fire hydrants and with the electric light, no gas mains being introduced into the premises. The total accommodation is for 300 boys, exclusive of the lecture room, laboratory, and drawing school. The classrooms are being fitted with single desks, and a separate locker is provided for every boy's hat and coat. The lavatories are situated in a distinct building in the playground. Messrs. E. Lawrance and Sons, of Wharf-road, City-road, have carried out the works, from designs prepared by Mr. T. Chatfeild Clarke, F.R.I.B.A., under whose direction and that of his son and partner, Mr. Howard C. Clarke, the buildings have been erected. Mr. J. P. King has acted as clerk of the works.

THE A.A. BROWN BOOK.

THE familiar calendar, members' roll, and lists of meetings and classes of the Architectural Association has just been issued, more than a month earlier than usual. The committee, in their report, state that during the year 96 new members were elected, 4 members were reinstated, and the losses by death, resignation, and other cases amounted to 98, leaving a net increase of 2, the total number being 1,131, against 1,129 in 1893. (The number of members was 1,125 in 1892, 1,138 in 1891, against 1,129 in 1890, 1,094 in 1889, 1,052 in 1888, 993 in 1887, and 972 in 1886, there thus being shown a slow, but steady, increase year by year.) A meeting of instructors and lecturers was held on the 4th April to discuss the methods of teaching adopted, and the work done in the Classes and Studios. Suggestions were made tending to increase the efficiency of the classes and lectures, but no radical changes were recommended either in methods of teaching or conducting the classes. An innovation, which has already had good results, has been the holding of a meeting of class secretaries for the discussion of A.A. matters from their point of view. The committee refer with satisfaction to the marked increase in the members attending the ordinary meetings of the Association and in the discussions on the papers read, and they also refer with gratification to the marked improvement in the financial position of the Association as compared with last session. As in former years, it is stated that "the committee have viewed several premises; hitherto none have been found suitable, but the matter is still under consideration. There is, therefore, nothing definite to report in respect to the premises question, although the need for additional accommodation is greater than ever." The attendance in the Studio and Classes is said to be generally satisfactory, particularly as regards the number of students in the Studio and Classes in Divisions I. and II.; but an unfavourable report is made with regard to the number of students in Divisions III. and IV.

It is stated that the sub-committee appointed so far back as Jan. 24 last, to inquire and report if and in what manner the Association can exert its influence towards the organisation of a more thorough system of education than at present exists for artisans in the London building trades, and its future supervision by architects, have not yet submitted their report, although they have made numerous inquiries. During the past session papers were read by Messrs. A. Beresford Pite, H. W. Barnes, Owen Fleming, A. O. Collard, J. Daymond, E. Woodthorpe, J. L. Robinson, S. B. Beale, F. E. Masey, W. H. Seth-Smith, R. A. Briggs, H. Longden, and Arthur Bolton, all of which were fully reported in our columns at the time.

The syllabus for the ensuing session is as follows, the meetings being held, as hitherto, at 7.30 on alternate Friday evenings, in the hall of the Royal Institute of British Architects:—

Oct. 26, 1894.—Annual General Meeting: The President's Address, E. W. Mountford.

Nov. 9.—"The Study of Modern Architecture," A. Beresford Pite.

Nov. 23.—"Sanitation in regard to Hospitals and Infirmaries," Keith D. Young.

Dec. 7.—"The Modern Theatre of the Continent," E. O. Sachs.

Jan. 4, 1895.—"Architectural Illustration," C. G. Harper.

Jan. 18.—"Bricks," John Slater, B.A.

Feb. 1.—"Architectural Perspective," W. S. Weatherley.

Feb. 15.—"The Bridges of London, Architecturally Considered," with Illustrations, H. H. Statham.

Mar. 1.—"The Use of Sculptural Decoration at the Present Time," T. Stirling Lee. "Plasterwork," F. W. Pomeroy.

Mar. 15.—"Iron and Brass," J. W. Singer.

Mar. 29.—"Specifications: from a Builder's Point of View," Henry Holloway (Holloway Bros.). "Specifications: from an Architect's Point of View," E. C. Pinks

April 26.—"Painting and its Relation to Architecture," C. W. Whall.

May 10.—"Treillage," John Belcher.

May 24.—"The Influence of Architectural Style upon Design," Walter Crane.

BOOKS RECEIVED.

The Practical Designing of Structural Ironwork, by Henry Adams, M.Inst.C.E., M.I.Mech.E., &c., Professor of Engineering at the City of London College, first series, revised and enlarged (London: E. and F. N. Spon, Strand), is a volume that will be welcomed by all engineering and architectural students who are anxious to make themselves proficient in the designing of iron girders, bridges, roofs, and stanchions. The subjects, or many of them, have appeared in pamphlet form, and have been noticed in these pages—such, for example, as the detailed calculations and notes for the design of a small cast-iron girder, a wrought-iron girder, a flitched beam, cast-iron bridge-girder, roof truss. Of the merits of Professor Adams's method and treatment we have before spoken with commendation, and we believe many a student has learnt more from these practical examples of designing than they have from the ordinary textbook, of which there are so many, filled with algebraic formulæ and equations unintelligible to the majority of students. The notes and calculations are brief, and each subject is discussed in the manner which a practical engineer would adopt in making a design for any iron structure. The working out of each step is clearly stated. We may add here that the author's new series of lectures on designing ironwork has been commenced at the City of London College, and the notes of those will be published as before. Any student who desires to acquaint himself with the subject of construction cannot do better than join the classes of Prof. Adams.——Among the principal contents of the *Illustrated Archæologist* for September (London: C. J. Clark, Lincoln's Inn-fields) is an article on "Asurbanipal: his Books and Buildings," by Mr. Leonard W. King, who describes the formation by that monarch at his palace in Nineveh of a universal collection of inscribed tablets and copies of others, instituting the first great national library in the world. The only remains of the fittings of this library that have come down to us are two labels, oblong pieces of clay, inscribed with titles, now to be seen in the British Museum. Mr. G. F. Hill, in a paper on "Roman Copies and Greek Originals," points out the danger from an archæological standard of the study of Roman imitations of the masterpieces of Greek art, although their examination is of service in elucidating the history of the mechanical development of ancient art. Another illustrated contribution is on "Sussex Iron," by Mr. W. Christian Symons.

ELECTRIC-LIGHTING FOR A MARKET HALL.

THE installation of the electric light at the Market Hall at Birmingham is nearly complete, and the new illuminating appliances will be brought into use in about a fortnight. At present the hall is lighted by a central ring of gas-jets and by standards and naked burners connected with the various stalls. Altogether there are 550 burners to illuminate a building 350ft. long and 100ft. wide. The gas is lighted on an average for 15 hours per week, and before the rise in the price of gas the payment to the Gas Department was about £470 per annum. The recent rise will increase this to £522 per annum. Inquiries and experiments were made by the markets committee as to an improved method of gas-lighting, and it was found that electric arc lights would be more economical. The new installation consists of 33 arc lights, of which 16 will require an electric current of 15 ampères, and seven a current of 10 ampères. Each circuit includes two lamps, and each current of 15 or 10 ampères passes, therefore, through two lamps in series. The lamps will be suspended over the gangways of the hall at a height of 14ft. from the floor Externally, nine lamps will be placed on artistic standards at the four entrances from as many streets. The electric energy will be taken from the Electric Supply Company's mains in Bell-street. The switches have been so arranged that when only half the internal lamps are in use, the light will still be uniformly distributed. The light from the arc lamps will be between three and four times that derived from the present gas-lighting, even after allowing for the loss of half the total light on account of the use of opaline globes around the carbons. The cost of running the electric lamps will be £507 for energy and £25 for carbons, as compared with £522 for gas. The new installation has been designed by Messrs. Henry Lea and Thornbery, civil engineers, of Birmingham, under whom it is being carried out by the Walsall Electrical Company as contractors. Messrs. Lea and Thornbery also have in hand the introduction of electric lighting for the new Meat Market, the Municipal School, and Botanical Gardens, all at Birmingham. The arc lamps are of the Brockie-Pell pattern, and the ornamental ironwork is by Messrs. Hart, Son, and Peard, of Drury-lane, London, and Birmingham.

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A new Wesleyan chapel, which has been built at a cost of £3,300, and provides accommodation for 620 adults, was opened at Bank's Hill, Morley, on Thursday in last week. Under the chapel is a schoolroom, with accommodation for 300 scholars.

OBITUARY.

Professor Brugsch Pasha, the well known Egyptologist, died at Charlottenburg, on Monday, after a long illness. Heinrich Karl Brugsch was born in 1827 in Berlin, and while still at the Gymnasium he published a pamphlet entitled "Scriptura Aegyptiorum Demotica," a contribution to the knowledge of the language and hieroglyphical characters used by the ancient Egyptians. This publication and some other treatises on Demotic writing procured for the author the patronage of Von Humboldt and King Frederick William IV., who liberally supported Brugsch's studies. After completing his philological and archæological studies in Berlin and making researches at the British Museum and those of Paris, Turin, and Leyden, Professor Brugsch made his first scientific journey to Egypt in 1853, and there met M. Mariette, the French archæologist, whose excavations near Memphis furnished abundant material for linguistic and historic studies. In 1854 he returned to Berlin, and was appointed Keeper of the Egyptian Museum. As a result of his first visit to Egypt he published "Reports on a Visit to Egypt," followed by the work entitled "Monuments of Egypt." The archæological researches of Professor Brugsch during his second visit to the countries of the Nile in 1857 and 1858 were described in his "Recueil de Monuments Egyptiens." At the beginning of 1860 he accompanied the Prussian Embassy to Persia in an official capacity, and made a tour through that country with Baron von Minutoli, the head of the mission. Upon the death of the latter he assumed the direction of the Embassy. On his return in 1861 he published an account of the journey of the mission. In the autumn of 1864 Professor Brugsch was appointed Prussian Consul at Cairo. In 1868 he returned to Germany and accepted the post of Professor of Egyptology at Göttingen. This post, however, he only held until 1870, when, in response to an invitation from the Khedive, he again went to Egypt in order to assume the direction of the Ecole d'Egyptologie at Cairo. In 1873 Professor Brugsch acted as Egyptian Commissioner-General at the Vienna Exhibition, and three years later he organised the Egyptian section of the Philadelphia Exhibition. He afterwards lived alternately in Cairo and Graz, and in 1879 he settled for a time in Berlin, where he delivered a series of lectures at the University. In 1882 he accompanied Prince Frederick Charles of Prussia on a journey through Egypt and Syria. He was again in Persia in 1884, but since 1886 he has lived in Berlin. He was the author of many important works on Egypt and its history, on the hieroglyphics, and on other kindred subjects.

Mr. James Naylor, of Birkenhead, who was for nearly forty years one of the leading contractors for the Admiralty and other Government departments, died on Wednesday. A native of Glasgow, where he was born in 1817, he became connected with Fox, Henderson, and Co., London and Birmingham, and in 1852 established the Britannia Engineering Works at Birkenhead. He was the inventor of the floating graving dock, and the inventor and builder of some of the largest steam cranes in the kingdom. Many of his inventions have been used in Her Majesty's dockyards.

The Canadian papers announce the sudden death at Toronto, in his 67th year, of the Hon. Christopher Finlay Fraser, for the last twenty years Commissioner of Public Works for Ontario. Since he took the appointment in 1870, says the *Toronto Globe*, "the affairs of his office have been administered with thoroughness and unswerving honesty. The adminstration of the Works Department of Ontario was regarded as much nearer perfection than it is given mundane things to be." Many important buildings were erected under the superintendence of Mr. Fraser. The Mercer Reformatory, the Mimico Asylum, the Orillia Asylum, the Brockville Asylum and others bear testimony to the manner in which Mr. Fraser's work was done. "The erection of the new Parliament buildings was," says the *Globe*, "the last and greatest triumph of Mr. Fraser's administrative career. Their low cost, taken in connection with their solidity, throughly good work, convenience, and fitness for the needs of a great Province, is the wonder of American visitors. The Province for which they are built is one of more than two million people, of vast extent, and contains a large unorganised territory, stocked with rich resources under the control of the Government. The administrative work carried on in the building is varied and of high importance. Taking population, territory, and law-making and administrative powers into consideration, there is no State Legislature or Government in the Union, with the possible exception of New York, which has more important duties than those that are discharged in the Ontario Parliament buildings. What is the comparison as to cost? They were built for about a million and a quarter dollars. The Illinois State buildings cost three and a half millions, the Michigan State buildings a million and a half, the New York State buildings more than twenty millions of dollars."

CHIPS.

The Batley town council adopted on Friday a plan for widening and straightening the High-street at Carlinghow, at an estimated cost of £5,000.

A scheme has just been completed at the Free Methodist chapel, George-street, Burton-on-Trent, in connection with which the chapel has been restored in accordance with modern requirements, and new schools have been erected. The total cost has exceeded £7,000.

The death is announced of Mr. W. F. Palmer, vice-chairman of Platt Brothers and Co. (Limited), Oldham, at an advanced age. Mr. Palmer was a native of Stafford, where his father held the office of taskmaster at H.M. prison. Fifty years ago Mr. Palmer practised as an architect in Tipping-street, Stafford, in partnership with Mr. Boulton, whose sister he married.

The first submarine block of the new east pier in connection with the Harbour of Refuge at Dover was laid on Thursday in last week on the bed of the sea. The huge stone blocks will be laid with the aid of diving-bells.

M. Zola and the editor of the *Gil Blas* have been served with writs for libel, at the instance of M. Bourgeoise, builder of the church at Lourdes.

George-street Free Methodist chapel, Burton-on-Trent, was reopened last week after renovation, the work of beautifying and improving having taken about five months. The total cost of the work has been about £7,000, and among the improvements are the introduction of the electric light, a better system of heating, and the transfer of the organ from St. Paul's Church in the same town to the chapel.

An organ built by Messrs. Steel and Keay, of Burslem, has been placed in Melton Church, Staffs, and was formally opened on the 6th inst. The case is of figured pitch-pine, and the front pipes are illuminated in gold and colours.

The East Riding Antiquarian Society have just recommenced the excavations on the site of the long-buried Abbey at Walton, a branch of the greater Abbey at Whitby. The work was commenced last summer, and a special meeting of the society will be held at Walton on Tuesday week, the 25th inst.

It was resolved at a conference of South London vestries and district boards at Peckham, on Friday night, to form a committee for the purpose of securing the abolition of the Lambeth bath tax.

A fisheries school is about to be established at Falmouth, after the plan of those that have been so successfully in operation in Norway, France, Holland, and the United States. It is intended to develop hatcheries and the planting of young shell and fish life, and to erect a building to serve as a laboratory and museum. The scheme is supported by the Cornwall County Council and the Royal Cornwall Polytechnic Society.

The Duke and Duchess of York began at Birmingham, on Saturday, a series of public ceremonies in the large provincial cities, the occasion being the laying of the foundation-stone of the new General Hospital in Steelhouse-lane. We so recently described the building in detail, that it is only necessary to repeat that Mr. W. Henman, of Birmingham, is the architect, and Messrs. Burnsley and Sons are the contractors. The hospital will contain 342 beds, and will cost about £206,000 (including £48,000 for site), of which £140,000 has been promised.—On Monday the Duke and Duchess visited Liverpool to lay the foundation-stone of the new General Post-office. In the cavity of the foundation-stone was placed a bottle containing copies of the Liverpool daily papers and of the Building News for Oct. 27, Nov. 24, and Dec. 15, 1893, these three copies of this journal containing illustrations and descriptions of the building. Mr. Henry Tanner, of H.M. Board of Works, is the architect, and Messrs. Thornton and Sons, of Liverpool, are the contractors for the removal of the old buildings on the site and the excavations, foundations, and vaults; the general contract for the building, which will be French Renaissance in style, and cover an area of 280ft. by 300ft., has not yet been let.

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ILLUSTRATIONS.

NEW SCHOOL BOARD OFFICES, SALFORD.—NATIONAL GOLD MEDAL DESIGNS FOR BOOK ILLUSTRATION.—ST. BARNABAS CHURCH, GREAT TEY, ESSEX.—ST. PAUL'S CHURCHYARD. —THE EGYPTIAN COURT, CRYSTAL PALACE. — THE RECTORY, BRONDESBURY.—"THE DELL," NORTHFIELD, WORCESTERSHIRE.—ENGLISH AND FOREIGN TYPES OF FURNITURE.

Our Illustrations.

SCHOOL BOARD OFFICES, SALFORD.

This building, the foundation-stone of which was laid last Wednesday, has a frontage of 103ft. to Chapel-street, and will be faced with Messrs. Doulton's tawny terracotta, on a base of grey Aberdeen granite 8ft. high, the roofs being covered with dark green Westmoreland slates. Two entrances are provided; the principal one, which is in the centre of the Chapel-street elevation, gives access to the hall and main staircase. A side entrance is placed at one extremity of the front, leading to a staircase communicating with all the floors. On the ground floor are the offices of the clerk to the Board, cashier, with strong room, organising master and clerks' general office and waiting-room. On the first floor the board-room 45ft. long and 23ft. wide occupies a large portion of the fronts. A committee-room communicates directly with the same, and two large members' rooms and waiting and cloakrooms are adjacent. On the second floor the assembly-room, 75ft. long and 30ft. wide, is placed, with its ante and retiring-rooms, with lavatories in convenient positions. In the basement there is a large waiting-room giving access to three minor committee-rooms, and offices for the school attendance officials and the superintendent. The heating chamber in the sub-basement is entered from the yard at the back of the office. It is intended to finish the hall, staircase, the board-room, and corridors with a panelled dado six feet high, this and the whole of the woodwork to the principal rooms being in oak. The floor of hall and corridor will be laid with mosaic. In addition to the open fireplaces provided throughout, a scheme of heating and ventilating by warm air has been adopted. The cost of the building, exclusive of furniture, will be about £12,000. The work has been let to separate contractors, a list of which we append: Brickwork, Mr. C. H. Normanton, of Manchester; woodwork, Messrs. Halstead Brothers, of Eastwood; stonework, Mr. Thomas Derbyshire, of Stockport; plumbing, Mr. Openshaw, of Salford; plastering, Sir J. J. Harwood and Sons, of Manchester; ironwork, Mr. Myles Cooper, of Manchester; slating, Mr. Barrow and Sons, of Manchester; granite, Messrs. Fenning and Co., London; terracotta, Messrs. Doulton and Co., London; heating, Messrs. Langfield and Co., Manchester; decorative woodwork, Messrs. Waring and Co., Manchester. At the rear of the offices the board is erecting a Central Higher Grade Scholarship school, at a cost of £11,000. The memorial stones of both buildings were laid on Wednesday, the 12th inst., by Canon Scott, M.A., the chairman of the board. The architects of both buildings are Messrs. Woodhouse and Willoughby.

NATIONAL GOLD MEDAL DESIGNS FOR BOOK ILLUSTRATION.

This double-page plate represents a selection of designs by Mr. R. Spence, of North Shields, for which a National Gold Medal was awarded last year. The large drawing is a composition for a given subject—viz., "The Archer." Considerable force and suggestion of action is obtained by the foreshortening of the arms of the bowman, a treatment necessitated by the narrow width of the upright panel here adopted. Of the two smaller designs the lower one, representing an engagement on board ship, is an illustration of Dr. Conan Doyle's book "The White Company," and the upper picture is entitled "The Banner," which was likewise a subject set in competition for the prize. Mr. Spence has been so far successful as to win another gold medal this year.

ST. BARNABAS CHURCH, GREAT TEY, ESSEX.

This picturesque representation of the historic tower at Great Tey is one of those drawings awarded a consolation prize in our late Competition for the Artistic Rendering of Architectual Subjects. The author of the study is Mr. William Ffrench, of Colchester. Of the building itself little need be said, as its character has suffered very considerably through rebuilding and repairs. The nave was entirely re-erected in a poor style some time since; but the fine Normal central tower, largely composed of Roman tiles or brick, is of massive proportions and is typical in its style. In the turret one light is composed of a whole Roman flue tile, which circumstance has before been noted. The chancel is described as of "Decorated" work, and the cruciform plan of the church is made out by the north and south chapels forming the arms of the cross. There is a built-up Norman arch with piers in the interior of the church.

ST. PAUL'S CHURCHYARD.

This illustration, drawn by Mr. F. Williamson, of Bloomsbury, is taken from a blue-black washed study submitted by him in our competition for the "Picturesque Rendering of Architectual Subjects," and a consolation prize was awarded to the picture. The scene is so familiar, showing the Cathedral from the south-east looking from the island at the entrance to Cannon-street, that little description is really necessary. The south transept of the church and the clock tower are the leading features in the view; rich in their sooty dignity, much the better for "all the incense which all the chimneys since the time of Wren have offered at its shrine, and are still flinging up every day from their foul and grimy censers." "There cannot," says Hawthorne, "be anything else in its way so good in the world as just this effect of St. Paul's in the very heart and densest tumult of London. It is much better than staring white; the edifice would not be nearly so grand without this drapery of black." Mr. Williamson gives a good idea of this all-pervading impression of its dark majesty and sublime grandiose and sooty dignity, alone in indescribable stateliness. The ugly and pretentious buildings which flank the four sides of what is known as St. Paul's Churchyard, exhibit by their striking contrast the elegance and beauty of our Great Metropolitan church; but with the sole exception of the baldly plain "chapter-house," there is not one façade in the entire square possessed of a worthy architectural elevation for so notable a position; indeed, as if to surpass the rest, the new premises erected on the fresh line of frontage, west of the cathedral at the top of Ludgate Hill, excel in all the horrors of their nondescript commercial building, without any architectural merit whatever.

THE CRYSTAL PALACE EGYPTIAN COURT, BY JOSEPH NASH.

This drawing, contributed by Mr. Thomas Wolfenden, F.S.I., of Southport, is another example which we have chosen from the original architectural drawings by the famous Joseph Nash, and it is included in our series* of reproductions to-day, not only by way of variety of subject, in contradistinction from the views of old English mansions with which his name must ever be chiefly associated; but also as illustrating Nash's capability of handling so massive and formal a subject as that with which he had to deal when the Egyptian Court at the Crystal Palace was given him to illustrate. The design, largely based upon the authorities furnished by the celebrated Egyptian scholar the late Joseph Bonomi, was worked out by Owen Jones, who, in conjunction with Sir Digby Wyatt, schemed the Greek, Roman, and Alhambra Courts at Sydenham. This contemporary representation by Joseph Nash of a highly successful and learned restoration, thus produced by so distinguished a combination of archæological authority and artistic talent, cannot fail to be of interest now. At the time, the drawing was no doubt made for chromo-lithographic reproduction; but we have no details of the history of the picture.

RECTORY HOUSE, BRONDESBURY, N.W.

This building is faced with picked stock bricks, red bricks being introduced in the arches, bands, and chequered patterns. The dressings are of Doulting stone, and the roofs are covered with Sedan slates. The works were executed by Mr. J. Hicks, builder, of Stamford Hill, at a cost of about £2,100, from the design of Mr. Charles R. Baker King, architect.

"THE DELL," NORTHFIELD, WORCESTERSHIRE.

(See sketch and description on pp. 352 and 353.)

ENGLISH AND FOREIGN TYPES OF FURNITURE.

The Renaissance Cupboard, which holds the chief place on this illustrated sheet, is architectural in form; both the parts of which the double-bodied piece of furniture is composed, being treated with columns raised on bases and crowned with entablatures. The intercolumniations, friezes, spandrels, &c., are all richly carved with the allegorical subjects affected by foreign workers of the 17th century. The German Chest is a very fine example of the kind, thoroughly Gothic, with traceried panels which ornament nearly its whole surface. The change in the design of the tracery in the upper part is singular in its apparent want of system; but its very carelessness not only prevents a monotonous appearance, but even adds interest to it. The Jacobean Cabinet in oak and ebony is a handy piece of furniture, thoroughly typical of the period, and was to be seen at Messrs. Thomas and Co.'s attractive old house at Winchester. We gave an illustration of this house during and after restoration in the Building News of June 23rd, 1893. The Coronal Chair came from Cleadon House near Sunderland, and was one of a set recently sold by Messrs. Davison and Son, of Newcastle-on-Tyne.

CHIPS.

The Margam local board resolved at their last meeting to obtain the report of Mr. Willey, of Exeter, upon the advisability of constructing gasworks in the district of the board, and as to the probable cost.

The Canadian Trades' Union Congress, which is holding its sittings in Ottawa, has appointed a delegation to wait upon the Dominion Government to ask them to introduce a Compulsory Eight Hours Bill into Parliament next session.

We ought to have stated that the works of water supply at East Cowes, referred to in our last issue on p. 319, are being carried out for the local board under the direction of Messrs. Lemon and Blizard, of Southampton.

On Wednesday, a new Wesleyan Sunday-school at Colliery-row, Chilton Moor, co. Durham, which has been erected at a cost of £290, exclusive of building materials, which were a special gift, was opened. It is built of red bricks, with stone facings and pitch-pine seats, and a large schoolroom and vestry are attached. The contractor was Mr. March, of Lumley, and Mr. Shanks, of Lumley, was the architect.

The Brighton town council have adopted an extensive scheme for improving the sea front. The cost will be nearly £50,000, and the scheme provides for further provision against encroachments of the sea, the extension of Madeira-road Terrace, and the construction of a sea-wall a quarter of a mile in length.

Mr. F. H. Tulloch, M.Inst.C.E., an inspector of the Local Government Board, held an inquiry at the town hall, Ripon, on Friday, with respect to an application by the Ripon corporation for sanction to borrow £19,000 for purposes of sewerage and sewage disposal, and £1,050 for works of street improvement. The town clerk, Mr. M. Kirkley, appeared for the corporation, and Mr. A. E. Preston, of Bradford, the engineer of the works, exhibited and explained the sewerage scheme.

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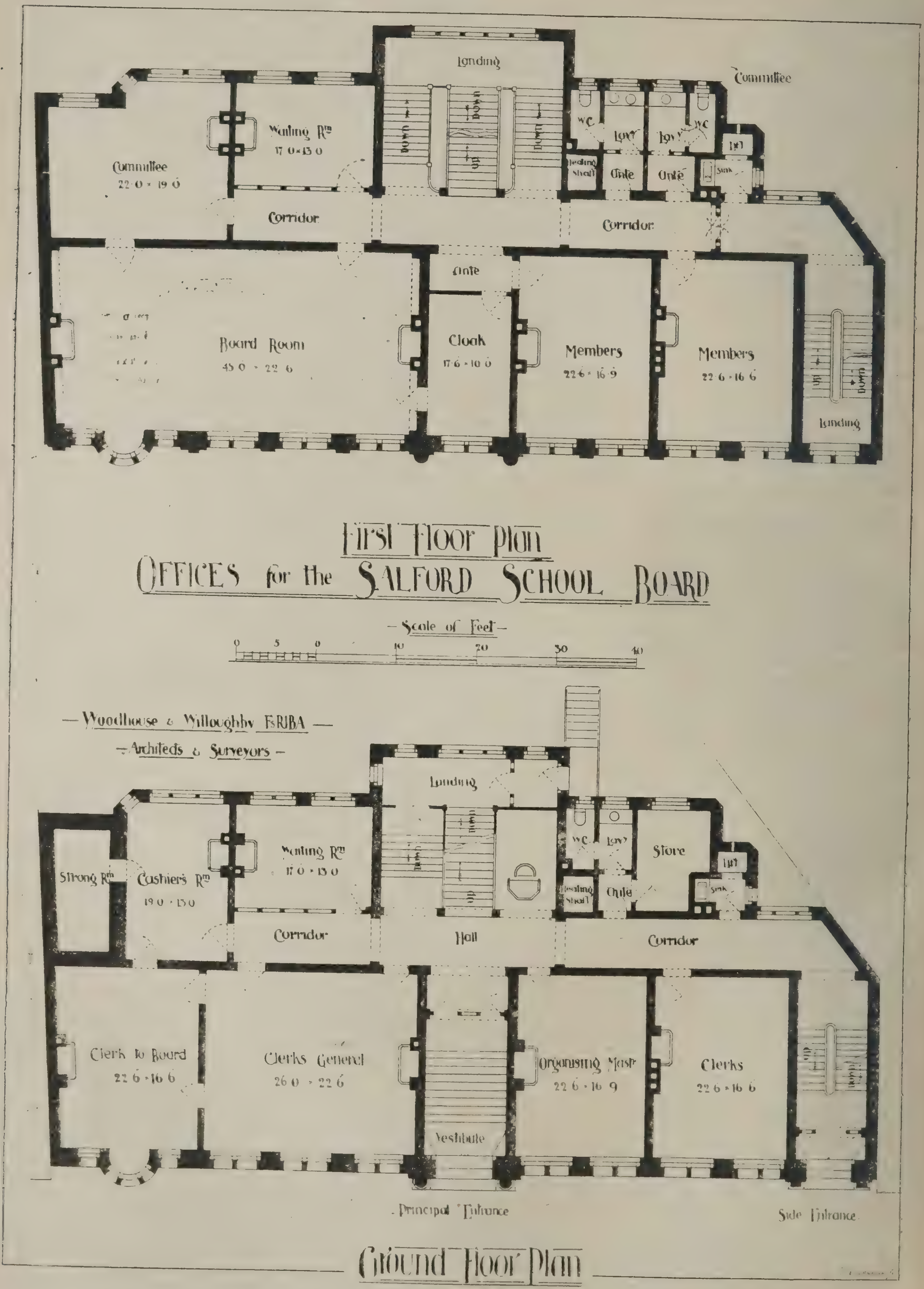
* Other examples by Nash will be found in the Building News for Jan. 5, Feb. 2 and 23, March 30, and Aug. 3, 1894.



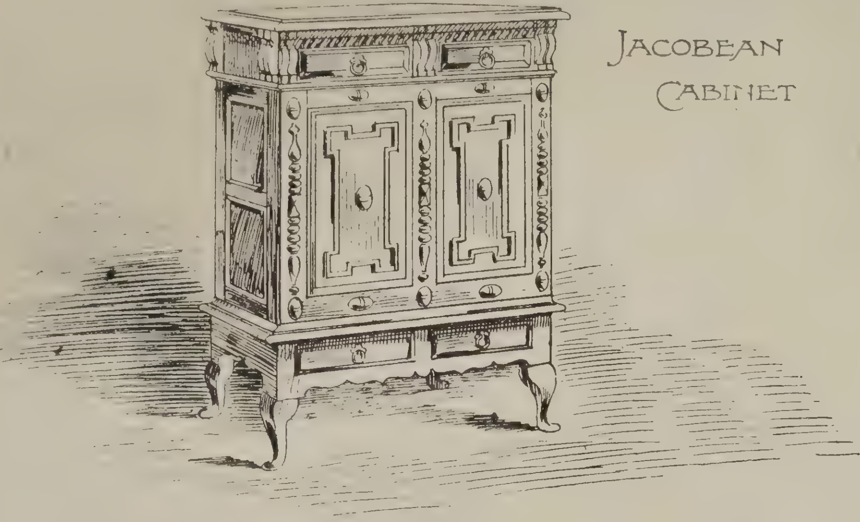
First Floor Plan

OFFICES for the SALFORD SCHOOL BOARD

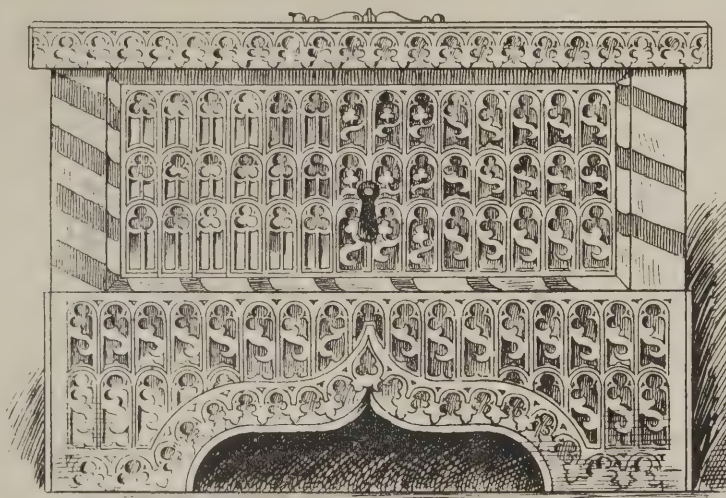
— Woodhouse & Willoughby FsRIBA —
— Architects & Surveyors —

Ground Floor Plan

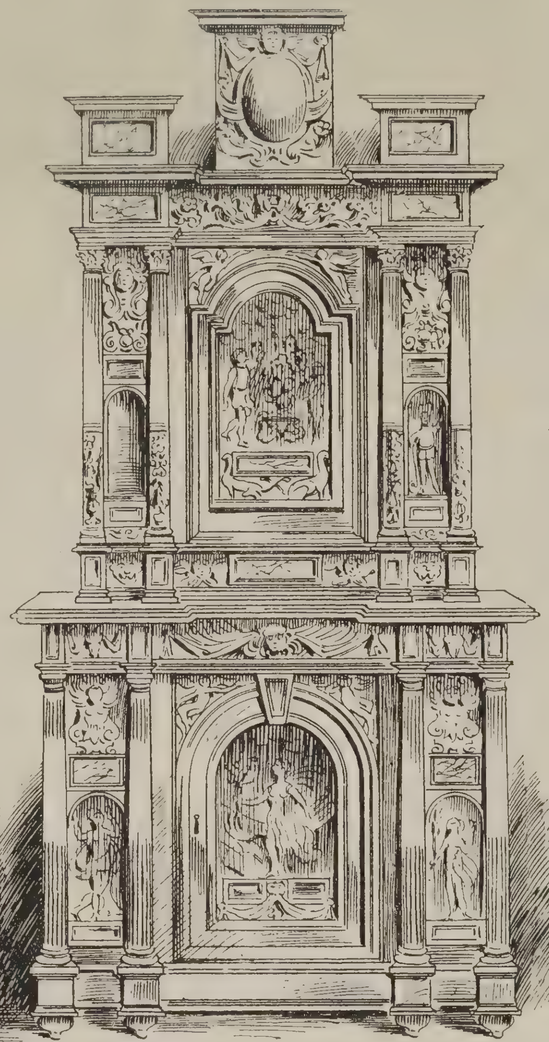
ENGLISH
AND·FOREIGN·TYPES
OF·FURNITURE·



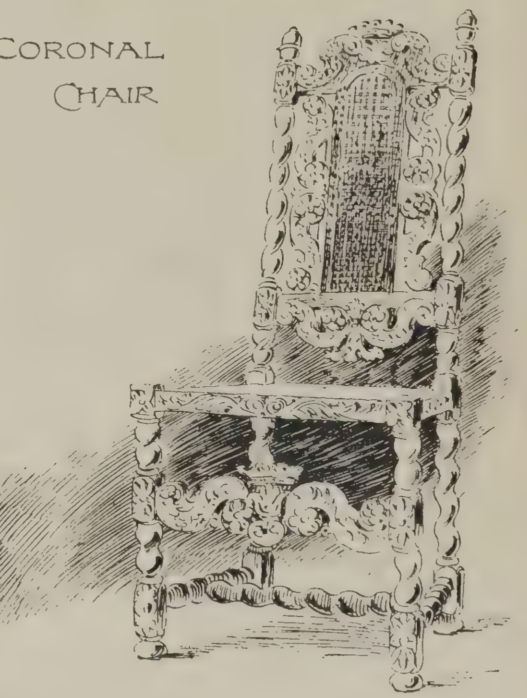
JACOBEAN
CABINET



GERMAN·CHEST·



RENAISSANCE·CUPBOARD·



CORONAL
CHAIR

A: Ernest Chancellor. del:

Dellagana Sc.

WAYSIDE NOTES

THE vacant curatorship of the Sir John Soane Museum in Lincoln's Inn-fields, has, I hear, been temporarily filled, pending the formal election to the post, by Mr. J. P. Seddon, F.R.I.B.A., who for very many years was one of the Hon. Secretaries of the Royal Architectural Museum, Westminster, and before then was well known as one of the Hon. Secretaries of the Royal Institute of British Architects. The appointment, which is worth over £500 per annum and a house, is vested in the Trustees and Royal Academy, and I can hardly imagine a more worthy candidate than Mr. Seddon, whose knowledge of his art has always been largely associated with its literature and archæology. His prominent connection with the profession and acquaintance with the leaders of the profession also well befit him for the curatorship of such an institution as the Soane Museum. I sincerely hope the position will be confirmed to him, for no better candidate could be chosen.

M. Alfred Waterhouse, R.A., as the President of the National Society for Checking the Abuses of Public Advertising, points to the desecration of Nelson's Monument in Trafalgar-square by flashing lantern views on the column as a typical beacon light to warn Englishmen of the results of the absence of regulation in the matter of advertising. As the law stands, there is no remedy for this annoyance, and Mr. Waterhouse remarks that the public may be well assured that, bad as things are, they must persistently grow worse. Everybody who wants in this way, rather than by excellence alone, to gain notoriety for his wares, must outdo the efforts of his rivals, and thus all that has been expended to give dignity and interest to the aspect of London and our other large towns, will have been in great measure thrown away. There will be no peace from the advertiser if he be not in some way restrained, or the world come to a sounder judgment than is the case at present, on the necessary excellence of advertised goods.

Plumbers and others will regret to learn that another attempt to "corner" the tin trade seems to have been temporarily successful, notwithstanding the ignominious failure of the syndicate which engineered the "corner" in tin during the years 1887-8, when the price was manœuvred up to £170 per ton, and the complete collapse of the Société des Métaux a few months later, brought about by their unfortunate speculation in copper. Already it is asserted in some quarters that French and Dutch speculators hold about 16,000 tons; but as this represents almost the whole of the European supply, which at the end of August amounted to 16,926 tons, such figures are not credited, the quantity being thought to be nearer 12,000 tons. The low price to which the metal had fallen (£65 17s. 6d. being touched in July) seems to have been the main inducement for the syndicate's embarcation in the speculation. Under the influence of their purchases, the value of the metal has been raised about £6 per ton, which roundly represents an appreciation in the metal in sight of some £120,000, and there is no doubt that if they could get out of their holdings at the present price they would make a nice little "scoop"; but the difficulty is to find buyers. Whatever the trade may do, so far there has been little inducement for them to buy tin, no appreciable improvement in the demand for tinplates having yet occurred, and, as they are not likely to find willing purchasers for their holdings among the wily group who assemble in the Metal Exchange, they are at present in possession of something which very much resembles a white elephant.

At the closing meeting of the Trades Union Congress at Norwich, held on Friday, Mr. Benjamin Turner, of Batley, moved, as a result of a conference of the delegates who had motions on the subject of the Factory Act, "That this Congress instructs the Parliamentary Committee to introduce a Bill, at the earliest possible opportunity, to amend the Factory and Workshop Acts of 1878 and 1891." Mr. Walker, London, moved the addition of words to bring about the abolition of domestic workshops, and these being accepted, the resolution was unanimously adopted.

At the same meeting the following resolution was unanimously passed: "That in all Government building contracts a clause be inserted prohibiting any contractor or other persons sub-letting any of the stonework or masonry, or brickwork, carpentry, plastering, painting, or ground work; and that all the above-named work be executed or done within the jurisdiction of such trade or loyal rules of the district wherein such building is being built, altered, or repaired, and to pay the trade union rate of wage and work to the trade union hours of such trade or local rules. Any contractor found violating any of the above conditions to be fined £500, and to forfeit his contract."

Dr. Ernest Hart's paper, read at the International Hygienic Congress, seems to have been one of the most important and interesting of the essays submitted. Dr. Hart's theme was cholera, and he dwelt with emphasis on the frequency with which contaminated water is responsible for the spread of disease. During the epidemic of 1853-54 in London, the foul water drawn from the Broad-street pump caused the death of 22 persons out of every 1,000 living in the parish of St. James's, Westminster. The outbreak of cholera in Hamburg in 1892 was marked by 18,000 cases and 8,000 deaths clearly traced to the polluted Elbe water. Dr. Hart's doctrine of water-borne cholera is also applicable to other disorders. It should awaken municipalities, and London especially, to the most vital question of securing and maintaining a constant supply of drinking water free from impurities.

At the last meeting of the Bristol Association of Clerks of Works and Builders' Foremen Mr. Read opened a discussion on the appearance and characteristics of building stones, and pointed out the qualities that are necessary to insure a good material for building or other work. In the discussion that followed, Mr. Cawsey maintained that wind considerably enhances the durability of stone by drying out the moisture, and thus assisting its lasting powers, and Mr. Pike pointed out that no stone intended for the exterior of a building should have a porous surface, as otherwise the rain conducted the acids from the atmosphere into the pores of the stone, which soon became decomposed.

I have received the syllabus of day classes and the studio in connection with architecture and building construction held at King's College, under Professor Banister Fletcher, F.R.I.B.A. The day classes are fixed at a late hour in the afternoon to enable architects' pupils, improvers, and other students to attend, so as to interfere as little as possible with office work. The studio under Mr. Banister F. Fletcher, A.R.I.B.A., is open every evening. The student in the first year is instructed in the elementary course, in the second year the more advanced, and the third year completes the subject, so as to assist those preparing for the Institute progressive examinations. The fees are moderate. Evening classes are also held for the convenience of those who cannot attend during the day. I would advise all pupils and students who are desirous of improving their knowledge of the profession to avail themselves of these classes, and to write for the syllabus of lectures, terms, and fees.

Messrs. Hayward Brothers and Eckstein, of Union-street, Borough, S.E., have issued a new catalogue of the "Safford Radiators," which are applicable to hot water and steam. The "Safford" radiator is an improvement on ordinary appliances of this sort; it is constructed with right and left screwed nipple connections, with large, clear waterway. No bolts, packing, or gaskets are used, and there is nothing to get out of repair as in the ordinary kind. The "Safford" radiator is made in various plain and ornamental patterns, and it is a very convenient form for decorating, as it can be finished by a combination of different-coloured bronzes. Directions for decoration are given. Sectional views of the hot-water and steam radiator loops are shown. Each loop is tested to a pressure of 120lb. to the square inch, and the radiator is guaranteed against the possibility of leaky joints. By the right and left screw nipple system each loop is drawn face to face, iron to iron, and held firmly without the use of red lead or any other substance; the nipple makes a perfect joint. There are also no bolts or packing necessary. The "Favourite" and "Perfect" patterns are made in various heights —$26\frac{1}{2}$in., $32\frac{1}{2}$in., $38\frac{1}{2}$in., 26in., 32in., and 38in., with single or double loops, giving a width of 5in., $7\frac{1}{4}$in., and 8in. respectively. The flow and return openings are tapped for $1\frac{1}{4}$in. tube. The "Perfect" pattern is plain, and has a heating surface of $46\frac{2}{3}$sq.ft., the price being about £4 4s. The "Favourite" pattern double-loop radiator with twelve loops has a heating surface of 80sq.ft., and is suitable for public as well as private buildings. We believe the "Safford" screw-nipple radiators and the "Daisy Independent" hot-water boilers combine the merits of durability and efficiency. The catalogue gives illustrated descriptions, sizes, and prices for each of these useful inventions, and a form of specification. These radiators are being specified in many first-class buildings, and are worth the attention of all architects.

CHIPS.

The Marquess of Lansdowne and Sir Charles Tennant have been appointed to succeed the late Sir H. R. Layard and Viscount Hardinge as trustees of the National Gallery.

In the case of Henry John Bracher, of Boscombe, near Bournemouth, builder, the bankrupt's application for discharge from bankruptcy has been adjourned for ten years.

The town council of Longton, Staffs, have decided to apply to the Local Government Board for sanction to borrow £2,800 for street improvements.

The winter's course of free museum lectures at Owens College, Manchester, will be given on Saturday afternoons at 3.30, beginning October 13, when Professor Dawkins will discourse upon "The Palæolithic Age," and the following Saturdays upon "The Neolithic Age" and "The Contact with History."

Mr. Basil P. Ellis will occupy the chair at the annual dinner in aid of the funds of the Builders' Benevolent Institution, to be held at Carpenters' Hall, on Thursday, November 15th.

The York school board have instructed Messrs. Demaine and Brierley of that city, to prepare plans and designs for a school to accommodate 1,500 children to be built on Scarcroft Common.

The Local Government Board have given their consent to the borrowing by the Bristol corporation of £37,500 for the purpose of laying down wood paving.

A bazaar in aid of the funds for restoring the spire of Weobley parish church was held at Carnstone Castle, near that town, on Thursday and Friday last. The dilapidated condition of the spire, which rises from the midst of four pinnacles at the top of a substantial looking square tower, has long been a subject of remark. Plans have been prepared by Messrs. G. F. Bodley, A.R.A., and Garner, and the work of restoration has been intrusted to Mr. George Ket, of Cambridge. The cost is estimated at about £1,500.

The new gymnasium, Rydal Mount School, Colwyn Bay, for Mr. J. G. Osborn, M.A., J.P., is being erected from the designs and under the superintendence of Mr. T. E. Lidiard James, F.R.I.B.A., 27, Chancery-lane, London, architect to the school, the builder being Mr. J. B. Jones, of Colwyn Bay.

The city council of Glasgow have adopted a report by the deputation of four who visited London, Amiens, and Paris for the purpose of making inquiries into the question of the decoration of the banqueting hall of the Municipal Buildings. The principal conclusion of the deputation was that "to execute great decorative works the co-operation of great artists is indispensable," and a scheme of decoration is now being drawn up by Mr. W. Leiper, A.R.S.A., a Glasgow architect. It is intended that the whole work of the decoration shall be carried out by Glasgow artists. There is still a sum of £20,000 which the committee have at their disposal to decorate the present buildings.

Colonel J. O. Hasted held an inquiry at the Watford Local Board offices, on Thursday in last week, with reference to an application to the Local Government Board by the Watford local board for sanction to borrow £1,000 for carrying out sewerage works, and for £1,000 for water supply for Watford. Mr. Waterhouse, the engineer, produced and explained the plans.

The foundation-stone of a new bridge was laid at Chapel Lawn, near Clan, Salop, last week. Mr. A. Hamer, of Bishop's Castle, is the engineer, and Mr. Herbert Jukes, of Craven Arms, the contractor.

At Bridge of Weir, Renfrewshire, Sir Wm. Arrol laid yesterday the memorial stone of the first of a series of buildings to be used as a hospital for the treatment and cure of consumption. The author of the scheme is Mr. William Quarrier, the founder of the Orphan Homes of Scotland, and the site selected is in the vicinity of these homes. The total cost is estimated at from £50,000 to £60,000.

Building Intelligence.

Cheltenham.—The newly-erected passenger station at the Great Western Railway Company's terminus in St. James's-square, Cheltenham, was brought into use for the first time on Sunday. The site is nearly three times larger than that of the space occupied by the old station. The station is an open one—that is to say, it is not roofed in, though the platforms for their entire length are covered. The entrance to the booking office, which faces the Roman Catholic Church, is approached by a wide covered way. In the front part of the building are the parcels-office and cloakroom. There are four large waiting-rooms on the departure platform. In addition to the two large platforms for ordinary inward and outward traffic, there is a side platform for the branch trains on the Cheltenham and Banbury line, which also has its terminus at Cheltenham. The station is built of red brick with blue brick decorations. It was designed by the company's architect, and the contract was let to Mr. C. A. Horton, of Brierley Hill. The total cost, inclusive of ground, is estimated at about £50,000.

Lichfield Cathedral.—The Dean of Lichfield, speaking at a civic banquet in that city on Saturday, said that the restoration of the cathedral was proceeding satisfactorily. The renovation of the central tower was completed, and the transepts were nearly finished. Mr. Heywood Lonsdale had given £1,000 to restore the south transept window, just as the late Mr. James Chadwick, of Manchester and Lichfield, gave £1,500 for the north transept window. The ladies of the diocese had subscribed £1,200 for decorating the Lady-chapel, and it was intended to erect a new reredos, to fill the ten vacant niches at the east end with alabaster statues, and to make all the nine stained-glass windows in the Lady-chapel to correspond. In this connection there was a remarkable coincidence. Ninety years ago there was found, stowed away in a Belgian barn, some of the finest stained glass in the world, and with this seven of the windows in the Lady-chapel were filled. Recently some similar glass, about 350 years old, was discovered in a London cellar, where it had been hidden for fifty years. This glass also had been secured for Lichfield Cathedral, and would be placed in the other two windows of the Lady Chapel, which at present were filled with unspeakably bad glass.

Newport, Mon.—The Belle Vue Park, the gift of Lord Tredegar to the borough of Newport, Mon., was formally opened on Saturday. It is situated on a hillside above Newport, and commands a magnificent view of the lower part of the town, the docks, and rivers Severn, Usk, and Ebbw, while beyond may be seen the Quantock and Mendip hills in Somerset, and the rounded masses of Exmoor capped by Dunkerry Beacon. The park is 23 acres in extent, and is approached by four entrances, the principal lodge, of Elizabethan character, carried out in local stone with red tiled roof, being on the Cardiff-road. Four terraces, each holding 3,000 to 4,000 visitors, have been made on as many levels, communicating with each other by broad flights of stone steps. The pavilion has a central hall 36ft. high and 100ft. by 60ft., and is flanked on either side by conservatories, 30ft. square and 26ft. in height, and a series of dells, pools, and cascades wind for a length of 400ft. Near Francis-road is a large circular fountain. Twenty thousand pounds has been expended on laying out the grounds, under the direction of Mr. T. H. Mawson, garden architect, of Windermere and Market Drayton, who has on hand at present no fewer than seven parks in different parts of the country. The fences and heating of the conservatories have been supplied by Messrs. W. A. Baker and Co., Newport; the boundary walls are the work of Mr. J. H. Firbank, Newport; the lodges, terraces, and pavilion are by Mr. Dyson Parfitt, Newport; the conservatories, bandstand, and greenhouses by Messrs. Richardson and Co., Darlington; the fountain, Mr. Davis, sculptor, Newport; the wrought-iron gates, Messrs. Brawn and Co., Birmingham.

Wragby.—A new Wesleyan church was opened on the 6th inst. It is 44ft. 6in. by 24ft. inside, and seats 174 adults, or a mixed congregation of 225 persons. The schoolroom is 30ft. by 20ft., besides which, there are two classrooms, the whole capable of seating 150 scholars. The school is placed at right angles to the church, and opens into it, and will add seating accommodation for 100 more people to the congregation. At the rear end of the church there are a chancel and organ-chamber, separated from the nave by moulded arches. There is also a preacher's vestry, with lavatory, &c. The church gable has three lancet-headed windows, the middle one being of two-lights, with Geometrical tracery in the head. The roof of the church is partly open, with wrought timbers and arches and pitchpine ceiling. The fitting of the church is in pitch pine, with a handsome pulpit, also of pitch pine. The glazing throughout is in cathedral-tinted glass. The building throughout is brick, with stone dressings, and it is heated with hot water. The cost has been about £1,400. The architect is Mr. J. Wills, of Derby, and the builders were Messrs. J. M. Thompson and Sons, of Louth.

CHIPS.

Considerable alarm has been occasioned in Castleford by the bursting of the water reservoir. Within the past week the whole of the water in the reservoir, estimated at between 15,000 and 20,000 tons, has mysteriously disappeared. Investigation disclosed a crack at the bottom, through which the water had evidently rushed, and had found its way into the old workings of the pits or sandholes which abound immediately under the site of the reservoir. A similar incident happened a few years ago.

At Stone, Staffordshire, works of sewage purification are about to be carried out for the local board, from plans by Mr. Theo. S. McCallum, A.M.Inst.C.E., Chapel-walk, Manchester, who is also the engineer for similar works to be carried out for the local board of Longridge, near Preston.

The death took place on Thursday in last week of Mr. Robert Greenlees, R.S.W., at his residence, 150, Hill-street, Glasgow, at the age of 74 years. Mr. Greenlees was a well-known landscape painter in his day, and a frequent exhibitor between 1870 and 1880 in the Royal Academy. He was perhaps best known as a teacher of painting. For many years he was headmaster of the Government School of Art at Glasgow, and in this position exercised for a time an important influence on West of Scotland art. He is survived by two daughters, one of whom is Mrs. Wylie, a well-known lady artist.

Mr. John Cassidy, sculptor, Manchester, has completed the marble statue of the late Mr. John Rylands, upon which he has been engaged for eighteen months past. It will shortly be placed in the position it is to occupy in the building now being erected in Deansgate for the John Rylands Library, from plans by Mr. Basil Champneys. The building itself is still far from completion.

It is stated that the Council of the Librarians' Association will, in response to Dr. Garnett's suggestion at their recent meeting in Ireland, draft a Bill for the protection of libraries from actions for libel.

The Carnarvon Bay Hotel, Dinas Dinlle, a rising seaside resort near Carnarvon, has been sold by auction to a London firm, who are also negotiating for the purchase of lands in the vicinity of the hotel for the erection of villa and other residences—a long-felt want.

Mr. J. Douglass Mathews, C.C., of 11, Dowgate-hill, is the architect for the erection of an additional story and other alterations at the vestry hall, Upper-street, Islington.

The foundation stone was laid of the Pinet Memorial School, in connection with the Roman Catholic Church of St. Mary on the Mount, Richmond Hill, Leeds, on Sunday. It will accommodate 475 infants. The cost is to be £2,000, exclusive of furnishing. The new infant-school will be 60ft. by 30ft., and 24ft. high. There will be two class-rooms, each 24ft. by 23ft., a separate babies' room, 30ft. by 28ft., and cloak-rooms and lavatories.

The Scarborough Town Council decided on Monday night that proceedings be taken forthwith for obtaining the consent of the owners and ratepayers of the borough to borrowing £70,000 for the construction of a marine drive and sea-wall round the foot of the Castle Hill.

In the current half-year the Midland Railway Company contemplate expending £650,000 upon new works, the London and North-Western Railway Company £478,000, and the Great Western Company £250,000.

The work of relaying the existing line of tramways at Newport, Mon., is almost completed. This will bring the older portion into connection with the new section in High-street, which is laid in wooden blocks. On the relaid portion granite sets are used. The old rails of iron are replaced by new ones of steel, bedded on a concrete foundation. Messrs. Krauss, of Bristol, have the contract well in hand.

Engineering Notes.

The M.S. and L. Railway Extension to London.—Another important step towards the construction of the Manchester, Sheffield, and Lincolnshire Railway Company's extension from Chesterfield to London was made on Friday, when several of the more important tenders were accepted. Messrs. Logan and Hemmingway have been intrusted with the construction of the first 20 miles from Chesterfield towards the south; Mr. Lovatt, of Wolverhampton, with the section from Loughborough to Ayleston, Leicester, and Messrs. Topham and Co., of London, with the section from Ayleston to Rugby, and Mr. John Jackson, of London and Newcastle-on-Tyne, with the seventh and shortest, but most costly section, that from Hampstead to Edgware-road. The total length of the railway is 112 miles, and it is estimated to cost 6½ millions sterling.

ARCHÆOLOGICAL.

The Roman Wall.—The examination of Hadrian's Wall, promoted by the Cumberland and Northumberland antiquaries, in conjunction with Professor Pelham and Mr. F. Haverfield, was carried on actively in both counties until the end of August, when the Cumberland excavations were suspended. Sections were cut in the vallum at various places, especially at Brunstock, Whitemoss, Lanercost, and Greatchesters, with the result that its general system was laid open, and it was made plain that the mounds of this great earthwork were mainly excavated from its central ditch. Sections cut from the wall to the vallum showed the Roman military road in good preservation, and revealed also a paved footpath close behind the wall. Of the "Gromatie ditch," so noticeable on the German limes, no certain traces were found, either in front of the vallum or in front of the wall. At Greatchesters (Æsica) the excavators attacked the south-west angle of the Roman fortress, and unearthed a turret and several buildings of uncertain use, and ascertained further that the occupation of the camp had been once or twice interrupted, as was the case apparently with other camps along the Roman wall.

The new chapel, built by the Wesleyans of Summer Bridge, in the Pateley Bridge Circuit, was opened on Friday by the president of the conference. The chapel, which is to seat about 300 people, is in the Gothic style, and has a spire 70ft. high. At right-angles to the chapel is a schoolroom, separated by a screen of wood and glass, so arranged that it can be thrown into the larger building.

Two schemes are announced for proceeding with the works for making a canal through the Isthmus of Panama. One is being promoted in New York, and its principal feature is to create a lake, twenty-four miles long, at Culabra, which will receive the overflow of the Chagres River. The other consists of the formation of a new company in Paris, with the assistance of the liquidator of the old company, and for this the promoters ask, to commence with, a subscription of twenty millions of francs. Col. Reves, the chief inspector of the Panama Railway, believes that the works can be completed for five hundred million francs, and several thousand workmen have made their way to the isthmus and await the resumption of the works.

The annual general meeting of the Incorporated Institute of Architects of New South Wales was held last month at the room in O'Connell-street, Sydney. The President, Mr. J. Horbury Hunt, was in the chair. The following were elected office-bearers for the ensuing year:—President, Mr. J. Horbury Hunt, F.R.I.B.A., Hon. Mem. A.I.A.; vice-president, Mr. J. B. Barlow; hon. secretary, Mr. J. J. Davey; hon. treasurer, Mr. J. M'Donald; members of Council, Messrs. W. G. Coward, W. Kenwood, T. Rowe, A. Thornley, and H. A. Wilshire.

The chairman of the Barton Board of Guardians formally opened the first portion of the new workhouse at Patricroft, near Manchester. The total cost of the buildings, exclusive of the land and properties, is £20,000. The site, including that of the old workhouse, covers an area of over six acres. The new workhouse, when completed, will afford accommodation for about 500 inmates. The section already completed comprise the administrative block, the wards for the aged, infirm, and able-bodied inmates, and the tramp wards. The old workhouse is to be transformed into a temporary hospital. Messrs. Maugnall and Littlewoods, of Manchester, are the architects.

COMPETITIONS.

Cleethorpes.—The committee, with the assistance of a professional assessor, have, after careful consideration of the 39 sets of designs submitted in open competition for the new Public Hall and Club, unanimously awarded the premiums as follows: 1st, Mr. John R. Withers, St. Mary's Court, Shrewsbury; 2nd, Mr. Solomon Ford, 3, Queen-street, Cheapside, London, E.C.; 3rd, Mr. J. Mitchell Bottomley, 28, Albert-road, Middlesbrough. The committee have already met and instructed Mr. Withers to prepare working drawings for the carrying out of the work.

Kirkcaldy.—At the last meeting of the town council a report of a joint meeting of the Beveridge Hall and Library Committee, and the Adam Smith Hall Committee, was submitted, stating that a report had been received from Mr. Gillespie upon the plans for the Beveridge Hall and Library and Adam Smith Hall. The committees recommended the council not to accept any of the plans, on the ground that Mr. Gillespie advised that they could not be executed for the sum authorised by the conditions of the competition. An amendment, that a sub-committee be appointed to go over the eight selected plans referred to in Mr. Gillespie's report, and to report (1) how many of these admittedly exceed the cost prescribed by the conditions; and (2) the order of merit of those which the architects claim can be erected for the money, the remainder of the whole plans to be returned at once, was lost in committee by the Provost's casting vote. The clerk now read the written opinion of Mr. Gillespie, which was to the effect that none of the plans could be carried out for the money stipulated, and he therefore advised that the competition be null and void. After some discussion it was decided to revert the matter back to the committee to see which of the plans should be selected, and if the author guaranteed that it could be carried out for the price stipulated, then they should go on.

"Owen Jones" Prize.—This competition was instituted in 1878 by the council of the Society of Arts, as trustees of the sum of £400, presented to them by the Owen Jones Memorial Committee, being the balance of subscriptions to that fund, upon condition of their expending the interest thereof in prizes to "students of the School of Art who, in actual competition, produce the best designs for household furniture, carpets, wallpapers and hangings, damask, chintzes, &c., regulated by the principles laid down by Owen Jones." The prizes are awarded on the results of the annual competition of the Science and Art Department. Six prizes were offered for competition in the present year, each prize consisting of a bound copy of Owen Jones's "Principles of Design" and a bronze medal. The following is a list of the successful candidates:—Fred Appleyard, School of Art, Scarborough (design for wall-paper); Ernest G. Gillick, School of Art, Nottingham (design for lace curtain); Ernest G. Slater, School of Art, Scarborough (design for a damask); Constance T. Smith, School of Art, Glasgow (design for a printed velvet); Edwin Francis, School of Art, Durham (design for a carpet); Samuel Palmer, School of Art, Macclesfield (design for floor tiles). The next award will be made in 1895, when six prizes will be offered for competition.

Wandsworth.—We have more than once referred to the select competition which was held about three years ago under the auspices of the Middlesex County Council for a new asylum for idiots at Wandsworth, and the contest obtained some interest by reason of the fact that a protest against the award was lodged at the time by the whole of the rejected architects, who protested against the decision because, among other reasons, the limits of cost set forth in the instructions had been manifestly ignored. £30,000 was the amount fixed for the competition; but subsequently the County Council, after about two years' delay, agreed to spend £40,000 on the buildings. Working drawings were then prepared, and we understand that tenders have been obtained; but the amounts, so far as we know, have not been made public. We now hear, however, from the architects, Messrs. Stock, Page, and Stock, the authors of the design which was chosen, that the visiting committee of the asylum has declined to carry out their plans for this building.

Wednesfield.—A meeting of the school board was held on Saturday at Heath Town, to decide the competition of plans for a new board school at Wednesfield. A report was read from Mr. E. R. Robson, consulting architect to the education department, who acted as referee, showing that a plan marked "Creon," sent by Mr. T. H. Fleeming, of Wolverhampton, was first, and "Compact," by Mr. H. Farmer, of Darlaston, was second. Mr. Fleeming's plan was adopted. The other competitors included Messrs. Stanger, Veall, Lavender, R. Rowe, F. Bate, and J. H. Gibbons.

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CHIPS.

The scheme proposed by Mr. James F. Reade, A.M.I.C.E., London, for the supply of water to Kilkenny, has been accepted by the corporation of that city. Fourteen schemes were submitted, but the names of the other competitors have not been published, as the terms of the competition were strictly secret. The estimated cost is £21,500.

The Earl and Countess Derby opened on Wednesday a new park at Ormskirk. The site, which is two acres in extent, was presented by the late Earl, and the land was laid out by the labour of miners during the recent strike.

At Monday night's meeting of Alloa Burgh Commisioners a letter was read from Mr. John Thomson Paton, of Norwood (the donor of the Alloa Town Hall and Public Library), offering to erect and equip a set of baths for the public, together with a gymnasium and some furnished rooms for conversation and amusement. Mr. Paton further offers the sum of £3,000 as an endowment towards the maintenance of the establishment. It was unanimously agreed to accept the gift.

The Secretary for Scotland has approved of the Ayr Town Council borrowing £15,000 for the installation of the electric light.

The local board of Farsley adopted, on Monday, a scheme by Mr. B. Walker, C.E., of Bradford, for the sewering of the board's district.

Mr. T. Mason, of Hebden Bridge, Manchester, contractor for the new drain from James-street to Chequergate, died on Thursday week through rupturing a blood-vessel. Mr. Mason was taking part in the drainage works some few weeks ago, and strained himself in lifting a heavy drain-tile.

Mr. Peter Carter Brownell, of Hazelcroft, Alderley Edge, Cheshire, who died on July 15, has bequeathed his painting of "The Horsepond," by Mr. C. E. Johnson, a native of Stockport, to his wife for life and then to the Stockport Corporation Technical School, free of legacy duty.

On Saturday the foundation-stone of a new Congregational mission church and schools was laid at the corner of Hainton-street and Welholme-road, Grimsby. Mr. Henry S. Scaping, of Grimsby, is the architect, and Messrs. J. M. Thompson and Sons, of the same town, are the builders. The church will comprise a nave 59ft. long and 31ft. wide, with transepts 12ft. 6in. by 10ft. each. There will also be three classrooms on either side of the nave.

The French School of Archæology at Athens propose to excavate the site of the Temple of Athené Alea at Tegae. The sculptures of this building were by Scopas, and a few fragments brought years ago to Athens are the best data we possess for judging of the style of that sculptor.

The town council of Conway have applied to the Local Government Board for sanction to borrow the sums of £1,500 and £2,500 for works of water and gas supply respectively, and have also adopted plans submitted by the surveyor, Mr. Farrington, C.E., for the sewering of Gyffin district and part of Conway, at an estimated cost of £800.

The will of Mr. Julian Arthur Lumley, of 5, Davies-street, Berkeley-square, and 35, St. James's-street, auctioneer and surveyor, who died at Boay on the 17th July last, has been proved; the gross value of the personal estate being £1,353 17s. 4d., and the net value £108 10s. 10d.

A return has been issued of the most serious accidents which occurred during the construction of the Tower Bridge. The total number was 29. Of these 10 were fatal, the verdict in 9 cases being accidental death, and in other instance deceased's negligence. The numbers of men employed at any one time in the construction of the bridge varied between 76 in July, 1886, and 848 in December, 1892. The average for the whole period from June, 1886, to July, 1894, was 432.

The city council of Winchester have elected, from among the 163 candidates who competed for the appointment, Mr. Archibald Henry Jennings as clerk in the borough surveyor's office.

The Gobelins Tapestry Works in Paris have just finished several new works, destined for the enrichment of the foyers of the Comédie Française. They represent scenes from Voltaire's "Zaïre," Racine's "Iphigenie," Molière's "Misanthrope," and Victor Hugo's "Hernani."

Correspondence.

SHOULD ARCHITECTS ADVERTISE?

To the Editor of the Building News.

Sir,—Awaiting the opinions of your readers on the letter under this heading, I inclose an advertisement cut out of a paper which circulates largely among publicans.

MESSRS. DEAR AND WINDER, ARCHITECTS, 119, GREAT RUSSELL-STREET, BLOOMSBURY, having devoted many years to studying the requirements of the Trade, prepare Plans and HIGH-CLASS DESIGNS for Modernising or REBUILDING Licensed Properties. Highest references to Brewers and the Trade generally.

—I am, &c. Observer.

SEWER AIR AND ITS RELATION TO ZYMOTIC DISEASE.

Sir,—Mr. Reeves's investigations of the above subject given in Building News, August 30, adds materially in many respects to the weight of evidence accumulating fast, that zymotic influence originates "in as yet" obscure organic reactions which a putrefactive fermentation of sewage in conjunction with a variable operation of the principles, time, temperature, and air supply in nature, apparently combine to produce; but we have no actual proof, and the fact vitiates all theoretic conclusions regarding a subject on which, from every point of view, an actual demonstration of "the facts involved" is so much to be desired.

Short of actual demonstration, the evidences in favour of the theory is weighty, for in 1892 we find an official inquiry by the M.D.S.G.B. attributing influenza principally to the presence of refractory organic impurities in the air. A year later, at the B.A. Congress, we find Dr. Frankland, F.R.S., advancing the conclusion that many toxic forms—cholera, typhus, diphtheria bacilli—"have pseudo-forms," and that "in certain cases" the pathogenic modification may be due to the exclusion or exhaustion of oxygen, and that, assuming fermentation in presence of air to be normal, a "modified reaction" can apparently proceed when no more oxygen is at disposal. Here we find the results of the most accomplished investigation apparently in close accord with specific details which Mr. Reeves describes. Again, Sir Charles Cameron, in a recent address to the B.M.A. at Bristol, said: "As regards typhoid fever, I have no doubt that local epidemics of this disease are frequently caused by infected water and milk; but I believe the greater number of cases arises from the materia morti of the disease being absorbed from the air." It will, I think, be conceded that, short of actual demonstration of the facts, we find in conclusions quoted ample evidence that many forms of epidemic with which we are too familiar find first cause or origin in organic reactions in the air.

On the other hand, Lord Salisbury, speaking on analogous subjects at Oxford, drew attention to the danger of accepting "conjectural evidence" in substitution for the knowledge to be acquired only by demonstration of theory in detail. This criticism equally applies to a *de novo* theory of infection as to sewer conditions, especially if the latter are based on the theory that by aërification the nature of the fermentation in sewage may be controlled. This theory was, I believe, first advanced by Dr. Angell in a well-known address on sewage disposal to the I.C.E. in 1888. At best it represents a half-truth, proved by the actual results attending "a very practical test" of the facts involved. Did space permit, I would give details of this experiment (which occurred several months previous to Dr. Angell's address), which, as far as practicable, was made analogous to the sewer itself; except that, as regards the operation or influence of both time and air supply, the conditions "were wholly favourable" to a normal course, and although the result failed to control the fermentation beyond "a certain limit," and proved that no conceivable aërification of London sewerage "under present conditions" would, or could, control or prevent formation of dangerous gases, yet phenomena were disclosed in this experiment which point clearly to the procedure required, and also to means by which an actual demonstration of the facts involved in sewer air may be obtained. The increase of diphtheria conditions in districts to which Mr. Reeves refers offers an opportunity to test the facts, and should Mr. Reeves be desirous of proving the truth of conclusions he so ably advances, all information at my command is entirely at his service.—I am, &c.,

Hill-Hartland.

728, Grimesthorpe-road, Sheffield, Sept. 8.

ASSISTANT SURVEYORS, WAR OFFICE.

Sir,—Will you allow me to add my views to those of your other correspondents on this subject?

To "An Old R.E.D. Servant" I would reply: The country may not care one iota who does the work of the R.E., or any other department; but this is no argument in favour of a system which is destructive of all zeal, and has every tendency to make the best man careless. Credit should be given to those to whom credit is due, and, as far as I can see, there is no valid reason why the R.E. surveyor should not be officially and publicly identified with the work he performs, in the same manner that professional men in other public departments are recognised in connection with their particular duties. Is there any other branch of the public service, whether civil, naval, or military, where the work of professional men is appropriated as their own by others who are not even qualified to assist in its preparation? "Balbus" is altogether too modest, and evidently unfitted for leadership; but is this a reason for suggesting that there are not among the Civil staff men well qualified to officiate as the professional head of an Army Works Department with dignity and ability equal to that, say, of the Army Medical or Veterinary Departments?

Now for this vexed social question. It is all very well for those of the Civil Staff who are fortunate enough to be stationed at large headquarter stations at home, where the civil population greatly outnumbers the military element, to affect to ignore this question. Here the influence of the military on society is confined within, comparatively speaking, small limits, and there is little difficulty in making a few friends among the professional families of the district—providing the surveyor stays long enough — apart and removed from all military influence.

But at small country stations at home, or at stations abroad, these conditions are exactly reversed, and the military here to a very large extent control and influence the society of the neighbourhood. Now an engineer or architect in private practice in such a district has a status which is well defined and understood; but a surveyor of the War Department loses his professional status, and in lieu thereof is given that of a departmental officer of the army. This position he would take as a matter of course if he wère in charge of the works branch apart and entirely separated from the Royal Engineers, and he would even now enjoy the privileges attaching to such a position; but—and a very large, *but*, too, if you please, Mr. Editor—for the demeanour of the Royal Engineers, whether in the office or elsewhere. The attitude adopted towards the surveyor, and his family if married, by the Royal Engineer officer with whom he may be serving, in a small district such as I have described, must largely influence for good or bad the other officers of the garrison, their families, and the civil professional families in the neighbourhood. The utter indifference displayed by the majority of the officers R.E. in social matters affecting the civil staff, is such as creates the impression in the minds of others that the surveyor is a civilian of inferior grade, and comparable with the civil subordinates of his own and other army departments. Let the Royal Engineers evince some desire to assist the civil staff in their difficult and anomalous position in the service, and this grievance at least would soon be remedied; if the surveyor cannot look to the Royal Engineers for assistance, to whom is he to look? It must not be lost sight of when considering this question that at some stations at home, and nearly, if not all, stations abroad, the surveyor lives in military quarters within the garrison; this is the reason why military society is in many cases essential to his comfort; it is not the supposed glamour of the life which attracts him, but the necessity which drives him to it. "An Old R.E.D. Servant" perhaps never experienced the drawbacks and misconception of living as a civilian in a military garrison. He may have been fortunate enough to have escaped foreign service; or it may be that long years spent at the War Office towards the close of his official career have dulled his memory, and he is therefore unable to sympathise with the young R.E. servant who is yet on the first stage of the road of his official life.

"A Commissioned Officer," in referring to the Pay Department as clerks, and the Army Service Corps as shopkeepers, alluded only, I presume, to the nature of their ordinary duties. There is no denying the fact that the duties of the Civil Staff R.E. are as closely related to the army as the medical, pay, and other departments in peace times. As their duties lie almost exclusively within the barracks or fortifications, they should have the same protection, and be sure of receiving the same respect and consideration when moving about barracks, &c., which is shown to all other officers of army departments. As it is, the surveyor is frequently disrespectfully questioned and interfered with when on duty, and this acts as a great deterrent to those who would gladly take more interest in their work, could it be performed under more agreeable conditions.

It is really difficult to understand what "Balbus" means by his reference to *retirement*—what is wanted is *prospect of promotion*. How does Mr. Bowden's retirement affect promotion, and of what good is it if two or three, or even a dozen, of the senior surveyors do retire if the vacancies are not filled up? Cannot "Balbus" be induced to write just once more and give us some idea as to in what year and at what age the assistant serveyors who entered the service since 1889 may expect to get promoted to the 2nd class, and when, if at all, they are likely to realise the £500 per annum which they were led to understand there was a *prospect* of attaining?

In conclusion, it is the vagueness of the regulations which are supposed to define the status of the civil staff, the inferiority of the relative rank conferred upon them as compared with other professional men in the army, the utter indifference displayed by the Royal Engineers in all matters affecting the staff, whether official or social, the want of proper identification with the work of the department, and the reduction of the number of senior appointments, and the complete block in promotion that must soon occur, which make dissatisfaction so general in the staff.—I am, &c.,

Mars.

ASSISTANT SURVEYORS, WAR OFFICE.

Sir,—I commenced this correspondence with the object of warning candidates of what they must look forward to. "Balbus" fully bears out what I have said, and endeavours to penetrate my identity. My answer to him is, that he has the same trick as Mr. Elton, of last year's correspondence, of making himself a mouthpiece of the staff. After what he has written, I am confident that his *confrères*, both senior and junior, will heartily wish him out of it, as his twaddle and servility are quite sufficient to deter "*the best men—the men we want*" from entering the department. He admits that he is in favour of dismissing R.E. officers to their proper duties. Then, seeing this necessity, why does he not propose a solution of the question?

The preceding paragraphs on page 270, which he refers to, point out an abuse in connection with buildings erected for the United States Treasury, and that a Bill is being introduced to mitigate it by obtaining plans, &c., through a system of competition among private architects. This is what I advocate. Limited competition among architects of the districts where the schemes are to be carried out would obviate his helter-skelter, and architectural assessors could be found, notwithstanding his diseased imagination.

He forgets Mr. Ingress Bell affects his grievance No. 2, and that it was understood his appointment would not interfere with the promotion of other surveyors.

He may call his diagram by any other name he likes; but let him not dabble in actuarial terms, such as life-history. He said my calculations were pessimistic, and now holds that his diagram pictorially represents what I gave in figures. Retirements will not average three or four per annum, probably not even two.

He had better leave the class question alone. If I find my cousin a colonel in the army and my classfellows amongst its officers, I presume I may consider myself as belonging to their class; in fact, he may ascend to one of the highest officers of the army, and find that his uncle was a bookseller. We are dealing with a practical question, and the self-abasement of "Balbus," who endeavours to drag his fellows down to his own level, can not affect it. Black sheep are found in all classes, but it is unusual for their fellows to herald them.

With regard to "An Old R.E.D. Servant," who values a pension of £300 a year, for a man of 65 years of age, as equal to £7,000—his statement is fit for Bedlam! I have no doubt he found his own level over 30 years ago.

The *Daily News*, 30th ult., in reviewing the report of the Civil Service Commissioners, stated: "For the Royal Military Academy, Woolwich, either the tests are severe, or the aspirants after a military career are indifferent scholars." Perhaps someone can enlighten us on this subject?—I am, &c.,

One Who was In It.

Intercommunication.

QUESTIONS.

[11211.]—**Old Oak Furniture**.—I have some old oak furniture, and in places it has worn whitish, and in other places pieces have been knocked off. Is there any kind of liquid, stain, or process that I could adopt for touching up or doing over entirely a piece of black oak furniture, or how could I renovate? I believe Harry Hems knows how to do what I want!—Old Oak.

[11212.]—**Mensuration**.—Will any reader show me the method of working the following sum:—What is the area of a zone whose greater side measures 72ft., and the less 45ft., and its breadth 19ft. 6in.?—J. P.

[11213.]—**Tall Mill Chimneys.**—Which is the best work on the construction of tall mill chimneys?—F.

[11214.]—**Safe Load.**—What is the greatest safe load the experience of London architects proves piers of good stock bricks well built in stone lime, say eight diameters high, to be capable of sustaining? No two textbooks agree.—J. and B.

REPLIES.

[11204.] — **Weight - Bearing Capabilities of Earth.**—The weight peaty soil will bear greatly depends upon its compactness and dryness. Its spongy nature is likely to cause unequal settlement if built upon, and if your building is adjacent to a road where there is likely to be vehicular traffic, you will perhaps find the vibration will crack the ceilings. I would recommend going down to the gravel (which, you say, is 6ft. from surface) with main walls, and fill in trenches with 3ft. concrete or rubble masonry, then commence footings. This would entirely isolate the inner soil from that outside, and the surface water will have less chance of percolating under footings. The trenches for inside walls need not be taken down to gravel; but they should have a larger bearing area than on ordinary soil. I should say 15cwt. per foot super. would be a safe load on the soil; but you might ascertain the weight it would carry by stacking a cube yard of bricks (equal to 350 stocks) in some convenient form on a bearing surface of 1ft. super. This will give a pressure equal to 1 ton.—W. A. Fryer.

[11206.]—**Churches in Shropshire.**—One of the most important and interesting churches is that of Tong, the date of which goes back to 1411. Besides the Vernon Chapel, with its fan tracery, the carved stall-ends, the screens, and several beautiful altar-tombs are worth study. The aisle screens are of much interest and richness. There are many peculiarities in the details and mouldings, differences of width and detail in the two aisles. The tower is square, terminated by an octagon belfry and low spire. Tong Castle is also of interest. In the vicinity White Ladies' Priory, Boscobel House, Shifnal, are worth visiting. The ruins of Buildwas Abbey, of the Cistercian Order, should be seen, a few miles from Bridgnorth. At Shrewsbury, the castle, the town walls, and churches are of much picturesque beauty. St. Mary's is a fine church, with lofty spire and cruciform plan, of many styles, from Norman to Perpendicular, and possessing several altar-tombs and fine painted-glass windows. It has a fine oaken ceiling delicately carved—one of the best examples in England. A good list of places is given in Murray's "Handbook." Among other churches, I may note Leighton, Borrington, Shifnal, Market Drayton, Minsterley, Knighton, Hadnall, Wem, Albrighton, Donnington.—G. H. G.

[11207.]—**Oak Sills**.—Yellow deal or pine is only used for sills in jerry buildings. As this wood is much lighter in weight than oak, it is naturally more porous. It is not at all durable in our moist climate. Oak sills should be specified, and if grooved on underneath side, with a corresponding groove in stone sill and a galvanised-iron tongue placed in the groove, and set in white lead, there should be no cause to complain of wet driving under.—W. A. Fryer.

[11207.]—**Oak Sills**.—I am quite aware of what "H. L." tells me, that oak sills are used in all good work. My question was "Are oak sills more durable than good yellow deal?" Many large houses have now yellow deal sills because they are not only cheaper but do not warp. What I want to learn is if any experience is forthcoming as to the respective durability. The water bar or metal tongue is of course necessary, but it is the front edge which first decays, a fact known to the painter in repainting. Thanks for Harry Hems' reply.—Builder.

[11209.]—**Fire-Resisting Cement**.—If "E. A. A." wishes to use a composition which will resist great heat, he should use Stourbridge fireclay mixed with water as mortar is.—H. L.

[11210.]—**Lightning Rods**.—The balloon accident at Aldershot should convince Mr. Clayton that it is necessary to conduct the electric fluid to the earth by an efficient conductor.—H. L.

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New municipal buildings are being built at Brechin, N.B., from plans by Messrs. D. and J. R. McMillan.

Legal.

PRESCRIPTION AND LIMITATION.

It is curious to find how often the two legal principles of prescription and limitation are confused with one another, although they are, of course, essentially distinct, both in their origin and their application. Prescription deals with the acquisition of a right; limitation only bars a remedy. Each, it is true, depends upon the lapse of certain intervals of time, and the loss of a remedy by one party may practically give a right to another. But to understand the working of the various statutes, it is of importance to grasp the different ideas upon which they are based. The theory of the rule as to prescription is that, by the unchallenged use of the property of another in some way or other, the person so using it for a long time acquires a legal right to go on doing so for ever. In other words, the omission of the person whose property is so used to object to its user for a long period gives a prescriptive right to the person so using it, and confers upon him a legal title in much the same way as if that right had been expressly granted to him. Thus are easements acquired by prescription, and when acquired they become as valid and enforcible as if they were based upon deeds of grant. Formerly the periods necessary to give such a right were vague and uncertain, and the old expression was "from time immemorial, or time whereof the memory of man runneth not to the contrary." That old phrase is quoted at the beginning of the Prescription Act, 1832, 2 and 3 Will. IV. c. 71, which is still the only statute dealing with this matter. That Act gave 20 years as the length of time necessary to acquire a right of light and air by prescription, with 30 years for right of way, and other periods for different easements, and that statute has not been repealed or amended in any particular.

As prescription is intended to give a right which would not otherwise exist, so limitation is meant to take away a right which does exist, and, but for its operation, would continue. At common law there was practically no limitation of action, and so it was created by statute. There are numerous Acts going back to the time of James I.; but the latest statute is that of 1874, which came into operation on 1st January, 1879, and which deals with the limitation of actions relating to land. By that Act, the former period of twenty years, during which an action could have been brought for the recovery of land, was cut down to twelve years—as it now stands—with the result that a twelve years' uninterrupted and hostile possession gives a good holding title to land, though it is not one upon which most people would care to buy. But this reduction of the limitation from twenty years to twelve years has nothing to do with the Prescription Act, which still regulates the periods of time required for the acquisition of rights of easement.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

G. M.—Architect.—Certificate.—Forms.—There are no special forms used or required. Each architect draws them as he likes. Fees are usually chargeable when the works are completed.

Syphax.—Lease.—Drains.—Covenant.—The covenant in this lease seems to cover new drainage, and therefore the original lessee would be liable under it, and so also would the existing assignee; at all events, as far as the assets of the deceased would go. The lease could be forfeited for breach of the covenant by non-payment.

Wolver. — Land. — Restrictive Covenant.—Liability.—You are liable upon your covenant in the deed made with the vendor. But you have a right of active user against your purchaser who bought on the same conditions, for breach of his covenant.

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It was reported to the Stockton and Middlesbrough water board on Monday that those towns will be supplied with pure water by the gravitation main now being made from the Hury Reservoir by New Year's Day. Mr. James Mansergh, C.E., is the engineer-in-chief.

At the last meeting of the Bangor Town Council, the city surveyor, Mr. Gill, presented his certificate of the completion of the hospital for infectious diseases, and the members recorded their appreciation of the services rendered by Mr. Gill in superintending the building and keeping the extras on the contract within the amount of £26.

LEGAL INTELLIGENCE.

Builder's Foreman Charged with Fraud.—At Worship-street Police-court, on Monday, William O'Keefe, 35, a builder's foreman, giving his address as Waldegrave-road, Brighton, was brought up on a warrant, charged with fraud. A sworn information set out that the prisoner had been in the employment of a firm of builders engaged in erecting blocks of warehouses at the scene of the recent great fire in Tabernacle-street, Finsbury. He was there as foreman of works, and had power to engage and discharge men. In the usual course, he would make out time-sheets of the hours worked by the men under him, and, there being a large number of men, identification of individuals was difficult. A clerk from the head office went to the works each week to pay the men according to the time-sheets prepared by the prisoner, and in July last another foreman noticed that a man known as "Punch" received money in the name of Martin, and that a man named Steven, who had been discharged on the Thursday, was put down as working up to the Saturday. In consequence of a communication made by that foreman, Steven's demand was disputed, but the prisoner assured the clerk it was all right, and the money was paid. Other sums were paid to the man "Punch" in the name of Green, and after the prisoner had been called on for an explanation, he seemed to have had an interview with the other foreman, to whom he handed a sovereign, saying, "I mean to have some money out of this job, and don't care if I get the 'sack' over it. One job I was at brought me £15 a week." Subsequently, after another pay-day, the prisoner said to the witness, "That came off all right," and handed him 5s. as his share. On the application of the police, the prisoner was remanded, Mr. Corser consenting to accept bail in £100.

Architects' Fees. — Jones v. Morle. — The plaintiff, Mr. J. J. Jones, of 10, Ludon-road, Clapham, sought to recover the sum of 10 guineas for professional services rendered as an architect to the defendant, Mr. W. B. Morle, of 26, Queen Victoria-street. The plaintiff said that he and a Mr. Hunter occasionally did work together as partners. The defendant went to see Mr. Hunter about having some drawings prepared, and then Mr. Hunter handed the defendant over to him (plaintiff). The defendant instructed him to prepare some drawings, which he did. The defendant said he never employed the plaintiff. Mr. Hunter was a friend of his, and he never authorised the plaintiff to do anything. The work which he had done was not wanted by him. He thought that the plaintiff was in Hunter's service. The case was adjourned for the attendance of Hunter. At the adjourned hearing, Mr. C. Val Hunter, C C., said there was no reason for the defendant saying he would only charge him very little. He understood it was an ordinary business matter. He did not embark on speculative work. Mr. Commissioner Kerr said he must non-suit the plaintiff, but he would not give the defendant any costs. The plaintiff might have the case tried by a jury if he liked.

A Pembroke Arbitration.—Brown v. Harris.—In this case, which recently figured in the Court of Appeal, the plaintiff, Louis William Brown, a builder, residing and carrying on business at Pembroke, sued the defendant, William Cowper Harris, also residing at Pembroke, for the sum of £134 7s. 6d., balance alleged to be due for certain work done by plaintiff for the defendant in the erection of a dwelling-house at Pembroke. An order of Court was made referring the action to be tried by a special referee, and the parties agreed to the appointment of Mr. W. Morgan Griffiths, solicitor, Carmarthen. The arbitrator's award now published allows defendant the sum of £71 4s. 3d., and he directs that plaintiff shall pay the costs.

Carpenters Committed for Intimidation.—At Wolverhampton Police Station, on Wednesday, Leonard Nott and Aaron Griffiths, carpenters on strike, were charged with intimidating James Devellen. Prosecutor was a non-society carpenter from Kidderminster, who had come to Wolverhampton and accepted work under Mr. Gough, builder, whose men are on strike. According to his evidence, the defendants told him that if he did not clear out of the town they would make it hot for him, and so frightened him that he took refuge in a barber's shop. The defendants, who elected to be tried by a jury, were committed for trial at the quarter-sessions, bail being allowed.

Building Prosecutions.—In the Pollockshaws Police-court, on the 5th inst., Baillie M'Naught was engaged for two hours hearing two building prosecutions. In the first case, George Allan, of Messrs. G. and G. Allan, builders, Glasgow, the owners of property in Harriet-street, were accused of having, on the 21st of May, permitted houses to be occupied without first having received a certificate that they were in a habitable state, and permitted them to be continuously occupied. It was stated by the burgh surveyor that a certificate had been granted a fortnight later. The Bailie imposed a fine of 20s., with a penalty of 5s. per day from the 21st May until the 13th June. In the other case, the secretary to the Cathcart District Railway Company was charged with permitting houses belonging to the railway company, and situated at Viaduct between Barrhead-road and Rossendale-road, to be occupied without having received the necessary certificate. Mr. Robertson admitted the facts, but said he would plead not guilty in respect that the houses were part of the railway works. They were inhabited by two station masters, and assessed by the assessor of railways. They could not, therefore, be dealt with under Section 180 of the Burgh Police Act. Mr. Mearns, prosecutor, argued that they could, and quoted Section 517 of the Act. Bailie M'Naught imposed a fine of 21s.

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WATER SUPPLY AND SANITARY MATTERS.

Blackpool.—The local authorities of Blackpool, Lytham, St. Anne's, Kirkham, Garstang, and Fleetwood are considering a scheme for the proposed purchase of the gigantic undertaking owned by the Lytham Waterworks Company, which has the sole monopoly of supplying the above-named districts with water. At a recent meeting of representatives from the authorities a resolution was passed that it was desirable that the undertaking should be possessed by a joint water board, composed of representatives of all the sanitary authorities in the area of supply. The subscribed capital of the company is about £345,600, and the market value of the undertaking is at least £600,000. How much above that sum will have to be paid by the authorities will be settled by the Parliamentary Committee before whom the Bill will come, providing no amicable settlement is arrived at. Last year's profits were £20,000, so that the concern, at £600,000, would prove remunerative, considering the great increase in the population of the district of late, more particularly Blackpool.

Glasgow.—The Glasgow Police Board received, on Monday, reports in reference to a proposal for a new drainage scheme for the western, northern, and north-western districts of the city. These reports, the Lord Provost remarked, were very satisfactory as regarded the suitability of the Corporation grounds at Dalmuir for the erection of sewage disposal works, and also as regarded the feasibility of the scheme as a whole. He asked that the committee on sewage be empowered to make borings and to prepare plans and estimates with a view to laying a complete scheme before the board, and, subject to their approval, going to Parliament for the necessary powers to proceed with it. The recommendation was adopted.

Malvern.—The extensive sanitary improvements which have recently been carried out at Malvern College under the direction of Mr. J. E. Willcox, C.E., of Birmingham, are now completed, embracing a thorough reorganisation of the whole of the drainage system and sanitary arrangements at not only all the College buildings, but at each of the masters' houses in the College grounds, all of which have been put into a perfect sanitary condition. The whole of the fittings are of the most modern type, and the work done throughout of a high order. The undertaking, which involved a very considerable outlay, necessitated the employment for several weeks of some 200 men, including 40 plumbers, and was successfully completed without having to close the College. The whole of the plumbing was carried out by Mr. E. France, of Birmingham, and the greater portion of the drainage by Messrs. Wood and Leach, of Handsworth, whilst the structural alterations, new sanitary blocks, and part of the drainage, were executed by Mr. T. Broad and Mr. W. Porter, both of Great Malvern. The sanitary specialities, urinals, latrines, and lavatory ranges, &c., were by Messrs. Adams and Co., of London, York, Birmingham, and other places, the school lavatories being of white glazed ware, and the urinals consisting of white glazed angular backs, with glazed ware capping and base combined in one piece, and special corrugated drip tiles. The flushing grease traps and drain interceptors were supplied by Messrs. Dent and Hellyer, of London, and the pedestal closets used were Twyford's Deluge M. Messrs. W. J. Williams and T. R. Day acted as clerks of the works.

Melbourne.—About 40 members of the Royal Victorian Institute of Architects, accompanied by their president, Mr. A. E. Johnson, F.R.I.B.A., paid a visit one month since to No. 1 section of the North Yarra main sewer at Yarraville (part of the sewerage works for Melbourne), for which Messrs. McCulloch and Co. are the contractors. The contract was let in January, 1893, for the sum of £59,000, a start being made in February of that year. The section commences at the pumping station and extends a distance of 4,000ft., of which 2,300ft. is excavated and 700ft. of sewer completed. It is opened up by seven shafts varying from 44ft. to 70ft. in depth. The Austrian system of tunnelling is generally employed. The ground is shored up by timber bents propped clear of concrete, which is put in in long lengths, after which the brickwork is inserted in 14ft. lengths; the timber is then removed and the work tommed up from centres during construction. The excavation of tunnel is 12ft. 6in. and the diameter of the sewer 8ft. 6in. Some 200 men are kept employed day and night, the entire works being lighted by electricity.

Perth.—The Special Drains Committee, to which consideration of the question of ventilation of sewers was remitted by the police commissioners of Perth some time ago, met last week and resumed consideration of the proposed improved ventilation of the sewers of the burgh, along with abstract of replies as to other towns in England and Scotland. All the members of the committee present, including the borough surveyor and sanitary inspector, expressed their views. After considerable discussion, it was agreed to find and to report ad interim to the commission that, in the view of the committee, a system of ventilation by open manhole is not desirable, but that the ventilation of the sewers in the burgh should be improved by a general system of upcast ventilating shafts, and to recommend the commission to approve of and sanction such a system, the borough surveyor to be asked to submit a scheme showing the positions he would propose for such shafts. Councillor A. Reid dissented, holding that a system of open manhole covers should be adopted for the wider streets and shafts for the narrower streets. At the monthly meeting of the police commission on Monday, the committee's report was brought up for adoption. Councillor A. Reid moved that they should take the opinion of an expert, such as Dr. Russell, of Glasgow. Councillor Smart moved that the matter be remitted to the commission in committee. Dr. Simpson, the medical officer of health, gave his views on the matter. The only method he knew which fulfilled all the necessary conditions of efficient ventilation was the open ventilation by grids and manholes in the centre of the streets. He quite approved of supplementing the ventilation by shafts. After discussion, Councillor Smart's motion was agreed to.

CHIPS.

It is estimated that in the forests in the western district of Minnesota, which were exposed to the recent fires, there were 150,000,000 pine-trees. The timber which remains will have to be cut this year.

The French authorities intend to restore the famous Romanesque church of Notre Dame at St. Dié in the Vosges.

The site of the new offices of the Commission of Sewers in Basinghall-street, adjoining the Guildhall, is now being cleared. The new buildings will be erected at a cost of £36,000, and it is intended that all the departments of the Commission shall be accommodated under one roof.

The town council of Carlisle considered, on Tuesday, a peremptory letter from the Local Government Board refusing a loan for new sewers until a sewage scheme had been adopted which would put an end to the pollution of the Eden. It was pointed out that the money for which application was made was absolutely necessary, and that, indeed, some of it had been already spent. A special committee was appointed to consider the whole question of sewage disposal in a dispassionate manner, and, in the mean time, it was understood that the sewers in course of construction would be completed.

New art schools are being erected at Stamford from the designs of Mr. J. C. Trayler, architect, of that town. Special consideration has been given to the ventilation, the system being that supplied by Messrs. Robert Boyle and Son, Limited, ventilating engineers, London and Glasgow. Messrs. Boyle and Son are also supplying their system of ventilation to South Mimms Church, Barnet, under the direction of the above-named architect.

The Phœnix Supply Stores, Wolverhampton, have just been completed. The Queen-street front is dealt with in a gabled Renaissance design in deep red bricks and white stone, with green slate roof. Messrs. Willcock and Co., builders, of Wolverhampton, have carried out the structural work from the designs and under the superintendence of Mr. Eachus, architect, Lichfield-street, Wolverhampton.

The foundation-stone of a new school-chapel was laid at Selly Park, Birmingham, on Wednesday, by the Right Rev. Monsignor Canon Souter. A plot of 4,000 yards at the corner of the Elmdon and Bournbrook-roads has been bought. On this a school-church and presbytery are to be built at once, the remainder of the site being reserved for a proposed church. The school was designed to accommodate 147 pupils, in accordance with the requirements of the Education Department. The principal room will be 60ft. by 22ft., and adjoining it will be a sanctuary. The chapel will be dedicated to St. Edward the Confessor. The architect is Mr. Lunn, of Malvern, and the builders are Messrs. Love and Flint, of Dudley.

Our Office Table.

The autumn exhibition of pictures at the Nottingham Castle Art Museum promises this year to be exceptionally interesting, the main feature of the display being the works of the Newlyn School, brought together by the curator of the gallery, Mr. G. H. Wallis. Some notable pictures have been sent from the art galleries of other municipalities, while Sir George M'Culloch and other private owners have contributed to the collection. Mr. Stanhope Forbes, A.R.A., will be represented by his well-known picture "The Forging of the Anchor," and by "The Village Philharmonic," and Mr. Frank Bramley, A.R.A., by "Hopeless Dawn," a picture which was purchased by the Chantrey Bequest in 1888, and "Memories." There will be several examples of the work of Mr. Chevalier Tayler, including "The Departure of the Fishing Fleet," "The Summer Dinner Party," and "For Confirmation." Mr. Adrian Stokes will be represented by "Off St. Ives" and "Cornish Cliff." There will also be examples of the work of Mr. C. Napier Hemy, Mr. T. C. Gotch, Mr. Fred Hall, Mr. H. S. Tuke, and Mrs. Adrian Stokes, as well as some water-colour drawings of Mr. Walter Langley. The exhibition, which opens at the end of the month, will be without doubt the most complete collection of works of the Cornish school that has yet been brought together.

"A Country Squire" points out the disabilities under which landowners lie in the matter of using native timber. They are not allowed to sell more than £10 of timber off an estate in one year without making a return to Somerset House, and paying succession duty. This involves the employment of a solicitor and costs out of all proportion to the value of the property sold. No allowance is made by the authorities for replanting. Owners are allowed to use their own wood on the estate for estate purposes without duty, but they have no use for ash, beech, elm, walnut, and many other trees. The trees they can use are larch, sundry firs, oak, chestnut, and poles. But it is really, he asserts, as cheap to buy squared timber from a timber-yard as to cut down one's own, for "top-sawyers" are almost extinct now. If a stable is to be roofed by local timber, the trees must be felled and drawn to the sawpit, and search has then to be made for a man who can be trusted to saw out the stuff, altogether employing two men for a month; whereas, if a note is sent to a timber-yard specifying the quantities, in two days' time all the stuff is delivered of the correct lengths. Wire netting has taken the place of sheep hurdles, and the race of hurdle-makers is as extinct as the race of sawyers.

Councillor Sloan, who took a prominent part in the introduction into Edinburgh of the refuse destructor system, has induced the Streets and Buildings Committee of that city to make an experiment in street paving which may yet have important results—getting rid of clinker refuse. Of this material 15 tons a day are turned out at Powderhall, and the question of its disposal, in respect of the enormous accumulation, has been exercising the minds of the authorities. Recently the idea occurred to Councillor Sloan that the clinker, which can be ground on the premises, might be utilised in forming the upper layers of pavement on the lines of the granolithic industry. That portion of the north side of London-road extending from one end of Hillside-gardens to the other was selected for the experiment, and there the work is now in progress in the hands of Messrs. John Baird and Son, East London-street. Previously the pavement there was "hornised," and the stones have been used as the foundation for the mixture of clinker and cement. Naturally, the clinker is of a darkish colour, but it is rendered somewhat lighter in tone through the use of chemicals, while by the aid of hematite the layers are alternately what may be described as blue and red. The layers are from 2in. to 2½in. in depth. A portion of the work has been already completed, and has been inspected by the Streets and Building Committee. Should this process of street-paving prove in the end to be substantial, the chances are that, as already indicated, a considerable saving will be effected, because, while granite chips cost from 14s. to 15s. a ton, clinker can be supplied at about 1s. per ton. Meanwhile, what is considered of most importance is the disposal of clinker. The substance is strong and firm, and the blending of colour in the alternate layers is at present regarded by the committee as attractive.

A correspondent calls attention to a clause in the conditions for the competition for the new board schools at Hartlepool, which is decidedly unfair:

> "The Board do not bind themselves to accept any plan as sent in, but reserve to themselves the right to require such modifications to be made, without charge, as they may think fit; and it is a distinct condition of this competition that they shall not be debarred from introducing any improvement merely by the fact that it appears as a feature in some plan which has not been accepted, or be required to make any compensation to the architect in whose plan the feature appears. No allowance for unaccepted plans."

In face of this intimation that the Hartlepool School Board means to suck the brains of competitors generally for its own benefit and at free cost, one can hardly imagine the response to the invitation to compete will be a very general one. At any rate, architects who *do* compete know what they have to expect. The "competent assessor" can surely not have been made acquainted with the conditions under which his award is to be made?

While at West Hartlepool the local board have by a narrow majority decided to erect a technical school, in the adjacent borough of Hartlepool the town council has deferred consideration of a similar project. Only in the face of strong opposition has a motion asking powers to borrow for a technical school been carried at Darlington, and the fate of the recent town hall scheme, with its abortive competition, suggests that in the latter town the proposal will probably be abandoned in the long run.

The Battersea Polytechnic has just issued its prospectus for the second session, which opens for day classes on Monday next, the 17th inst., and for evening classes on the 24th inst. The prospectus offers classes for both men and women in technical science, art, and commercial and general subjects, the number of classes being 133 in 71 different subjects. Special features in the prospectus are the formation of "courses of classes," with a view to encouraging continuous and co-ordinated study; the offering of special afternoon classes for apprentices, and special classes in manual training and in science, for teachers only. The prospectus also announces numerous scholarships open to its students, including offers of scholarships from Messrs. Holloway Brothers and Messrs. Archibald Smith and Stevens, of Battersea, for classes connected with their industries. The institute also issues prospectuses of its technical day school for boys, and its domestic economy schools for girls. In all respects the work of the first session is regarded by the governing body as an unqualified success and full of promise for the future. The governors, however, still need substantial additions to the building fund before the original scheme of the promoters can be completed and the full endowment secured—the sum of £2,300 being required in order to complete the sum of £60,000 and secure an additional endowment of £1,000 per year.

The Middlesbrough town council adopted on Tuesday, after a long discussion, and by a large majority, the following resolution:—"That in all future contracts entered into by the corporation of Middlesbrough, it shall be a condition that the persons tendering must declare that they pay the recognised standard rate of wages in their respective trades."

The ceremony of laying the foundation stone of the free library and technical school which Colonel D. Gamble, C.B., has presented to the borough of St. Helen's has been definitely fixed for Tuesday, October 2nd. The buildings are being erected at the corner of Hardshaw and Corporation-streets, near the town hall, and the total cost will be over £20,000. They are being erected from designs by Messrs. Briggs and Wolstenholme, of Blackburn, and were fully described and illustrated in our issue of the 31st ult.

At Monday's meeting of the standing joint committee of the Glamorgan County Council, held at the county offices, Cardiff, it was agreed to adopt the recommendation that a house be purchased or built, with two cells attached, at a cost of about £300, for the purposes of a new police-station at Treorky. It was mentioned that houses and lock-up cells would shortly have to be provided at Clydach Vale, Gilvach, Tonyrefail, Mardy, Tylorstown, Aberdare Junction, Cylfynydd, Llanbradach, Aber (Senghenydd), Nelson, and Ystrad Rhondda.

Trade News.

WAGES MOVEMENTS.

Basingstoke.—A strike has occurred among the carpenters of this town in consequence of the refusal of the employers to concede an advanced ½d. per hour—from 5½d. to 6d.

Navvies and Bricklayers' Union.—The fourth annual conference of the Navvies', Bricklayers', Labourers', and General Labourers' Union opened on Friday at the Club Union Hall, Clerkenwell-road, when over one hundred delegates from London and the provinces were present. Mr. John Ward, the president of the Union, was voted to the chair. An uproarious discussion took place on the report, and a vote of censure was passed on the Executive for overruling a decision of the last conference to discontinue the payment of 1s. to those deputed to visit the branches. A motion censuring the Executive for their conduct during the Norwich strike was lost after an acrimonious debate by an overwhelming majority. At the resumed meeting on Monday, Mr. Ward, the president, again occupied the chair, and there was a full attendance of delegates. Several delegates complained of the manner in which the balance-sheet had been drawn up. An item of £19 1s. 0½d., paid to the president for attending meetings throughout the country, was pronounced extremely excessive. Mr. Robinson, one of the auditors, said he could not agree with his fellow auditor that the balance-sheet was satisfactory. Various resolutions seeking to regulate the calling out of men on strike were proposed and successively rejected, and the rules remained unaltered.

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Mr. Albert Ludovici, of King Henry's-road, London, a well-known member of the Royal Society of British Artists, died at Vevey, Switzerland, on Monday, in his 75th year.

The annual exhibition of the Sheffield Society of Artists was opened on Monday. For the first time valuable pictures by artists of national repute were exhibited, including G. F. Watts, G. H. Boughton, Alfred East, and others. There was a conversazione in the evening, when Professor Herkomer delivered a lecture on portrait painting.

CHIPS.

The great parish church of St. Germans, Cornwall, was reopened by the Archbishop of Canterbury on Wednesday, after a restoration carried out at a cost of over £6,000.

The Great Western Railway Company officially declare that there is absolutely no foundation for the statement that they are giving up Milford Haven in favour of Brean.

Mr. W. J. B. Clerke, M.I.C.E., held an inquiry, on behalf of the Local Government Board, in the Ercall Assembly Room, on Friday, respecting the application of the Wellington, Salop, Commissioners for sanction to borrow £4,000 for sewerage works and sewage disposal, and £1,800 for waterworks. Mr. T. S. Stooke, the engineer to the rural sanitary authority, explained the proposals.

The new hospital which is being erected by the Birkenhead Corporation, from the plans and under the superintendence of the borough engineer, Mr. C. Brownridge, is now nearing completion. It is being warmed and ventilated by means of Shorlands' patent Manchester stoves, with descending smoke flues, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Mr. Yarrow, the torpedo-boat builder, has given £120,000 for the erection of a children's convalescent hospital at Broadstairs.

St. Paul's Church, Hulme, was reopened on Sunday. The interior of the church has been greatly altered and improved. The side roofs have been raised several feet, the entrance has been enlarged, oak choir-stalls, pulpit, and Communion table have been provided, a new plan of lighting and ventilating has been adopted, and the whole church has been decorated. The cost of the work has been about £1,200.

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TENDERS.

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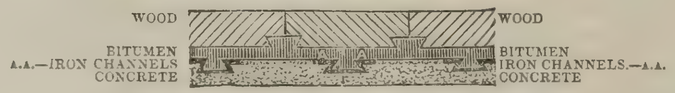

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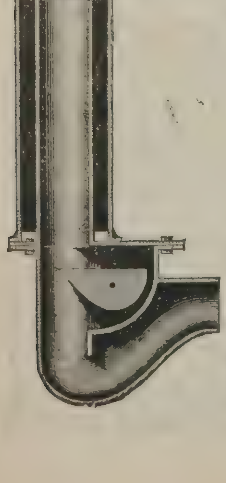

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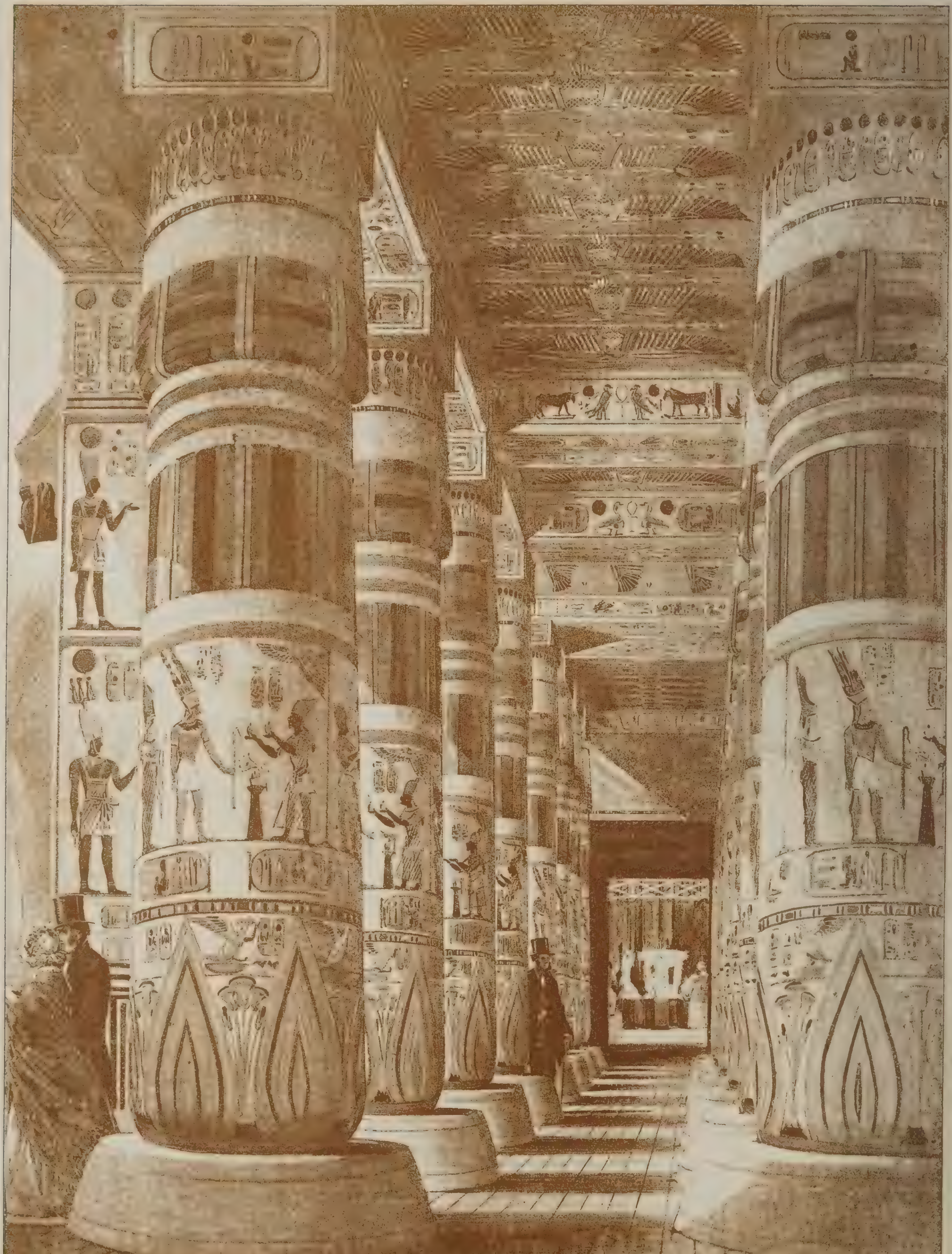

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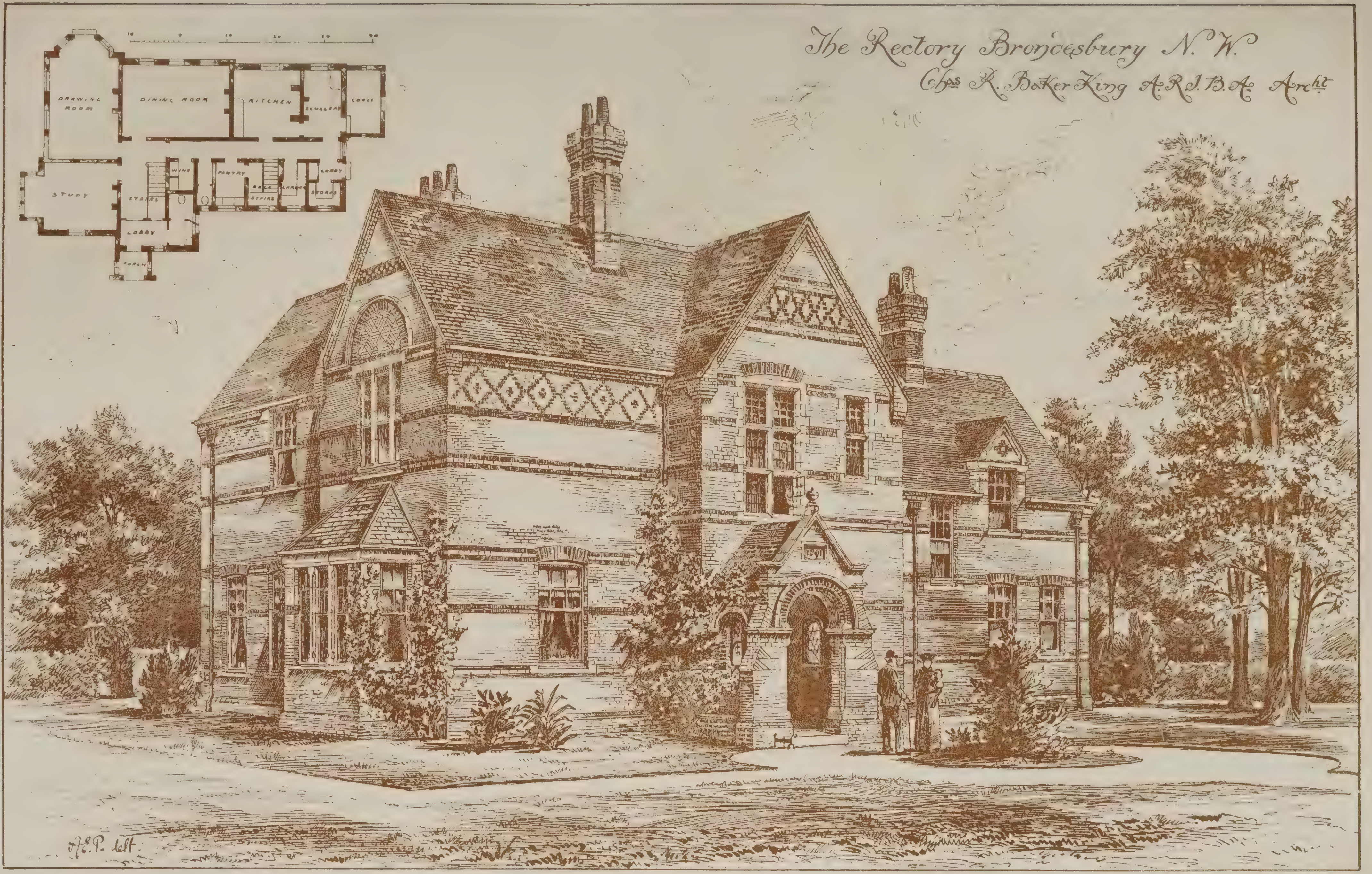

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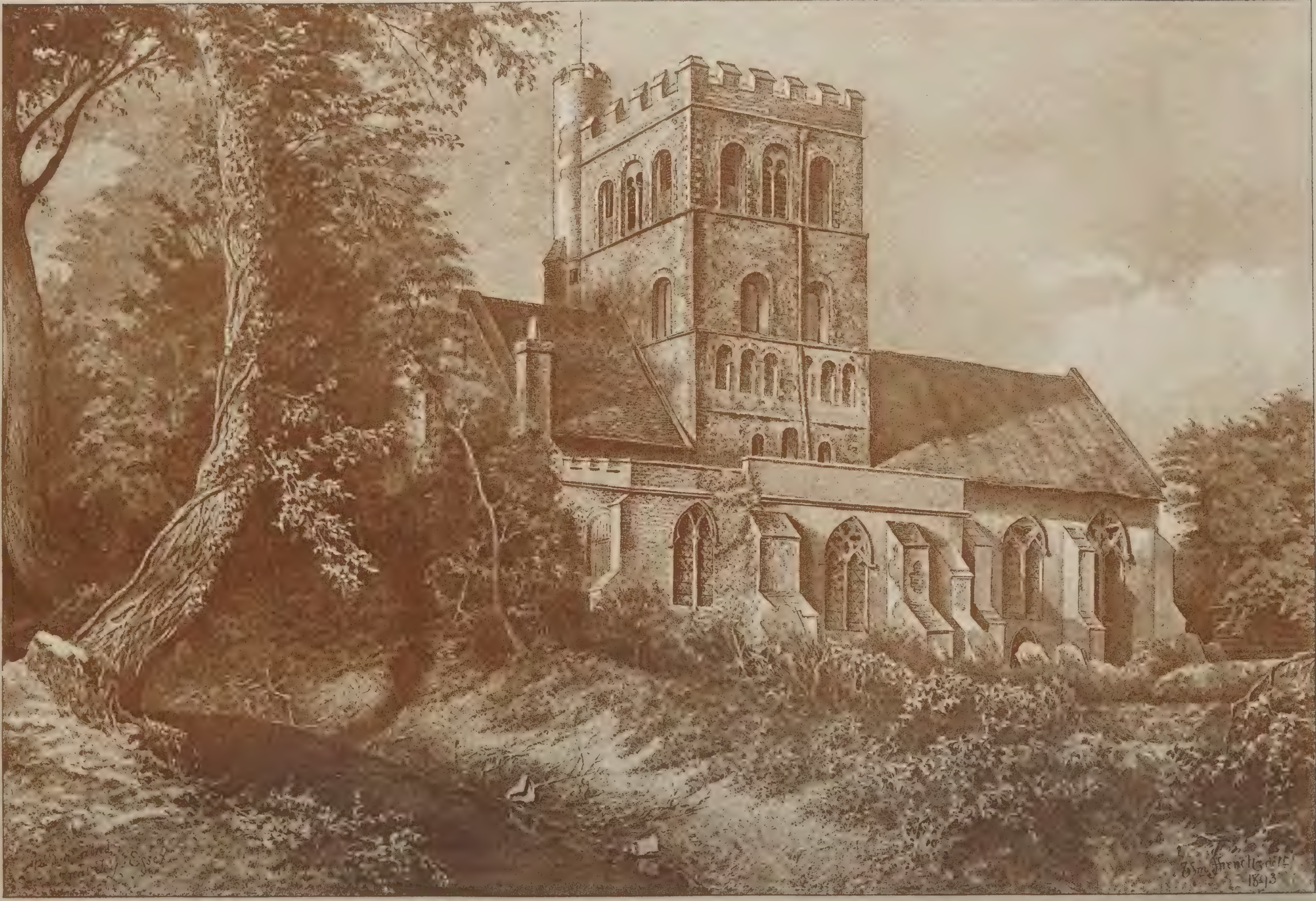

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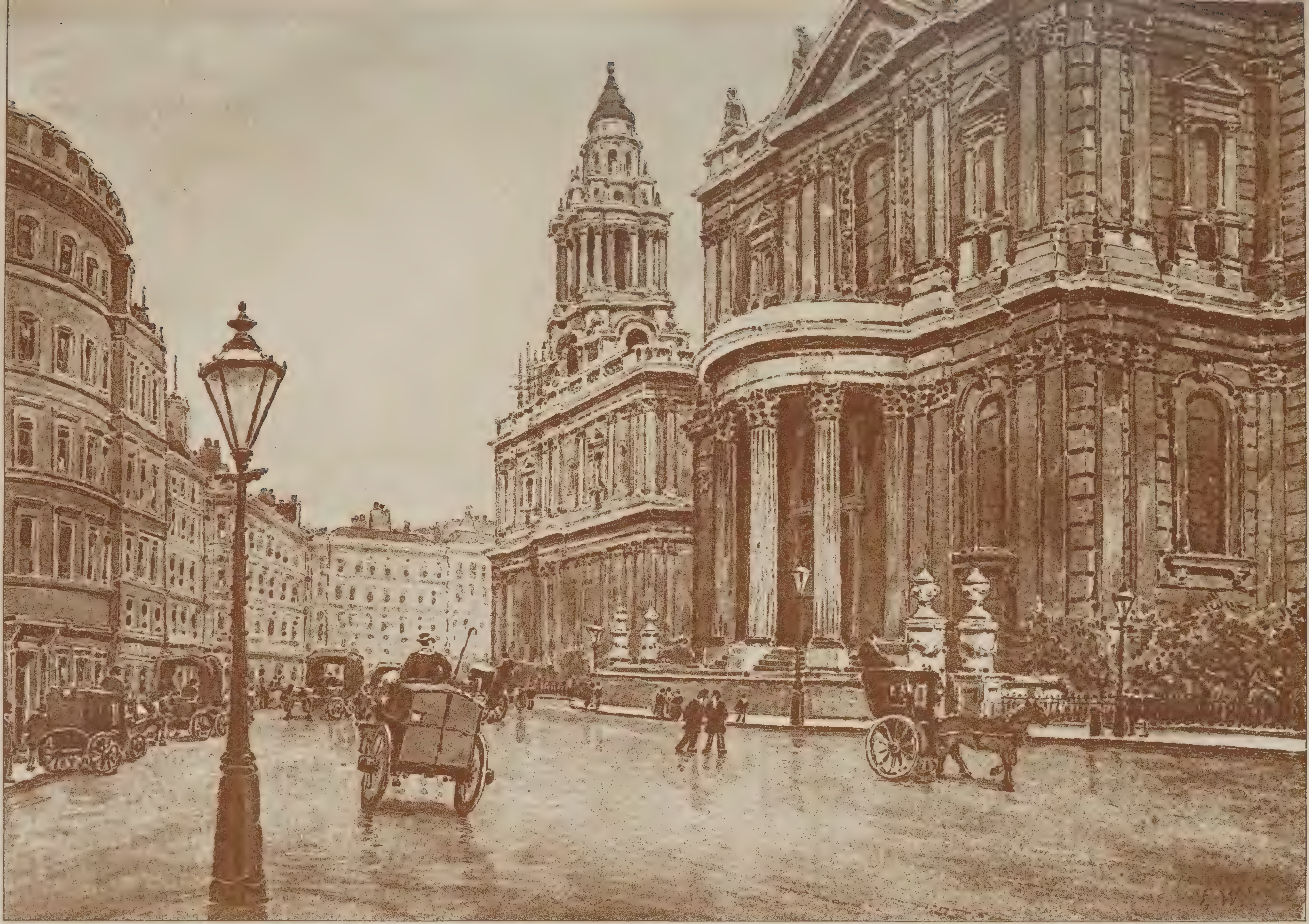

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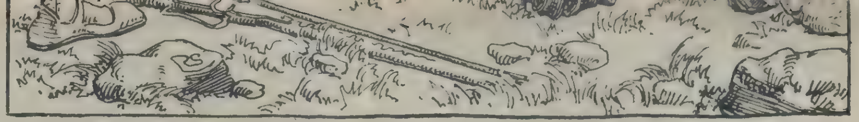

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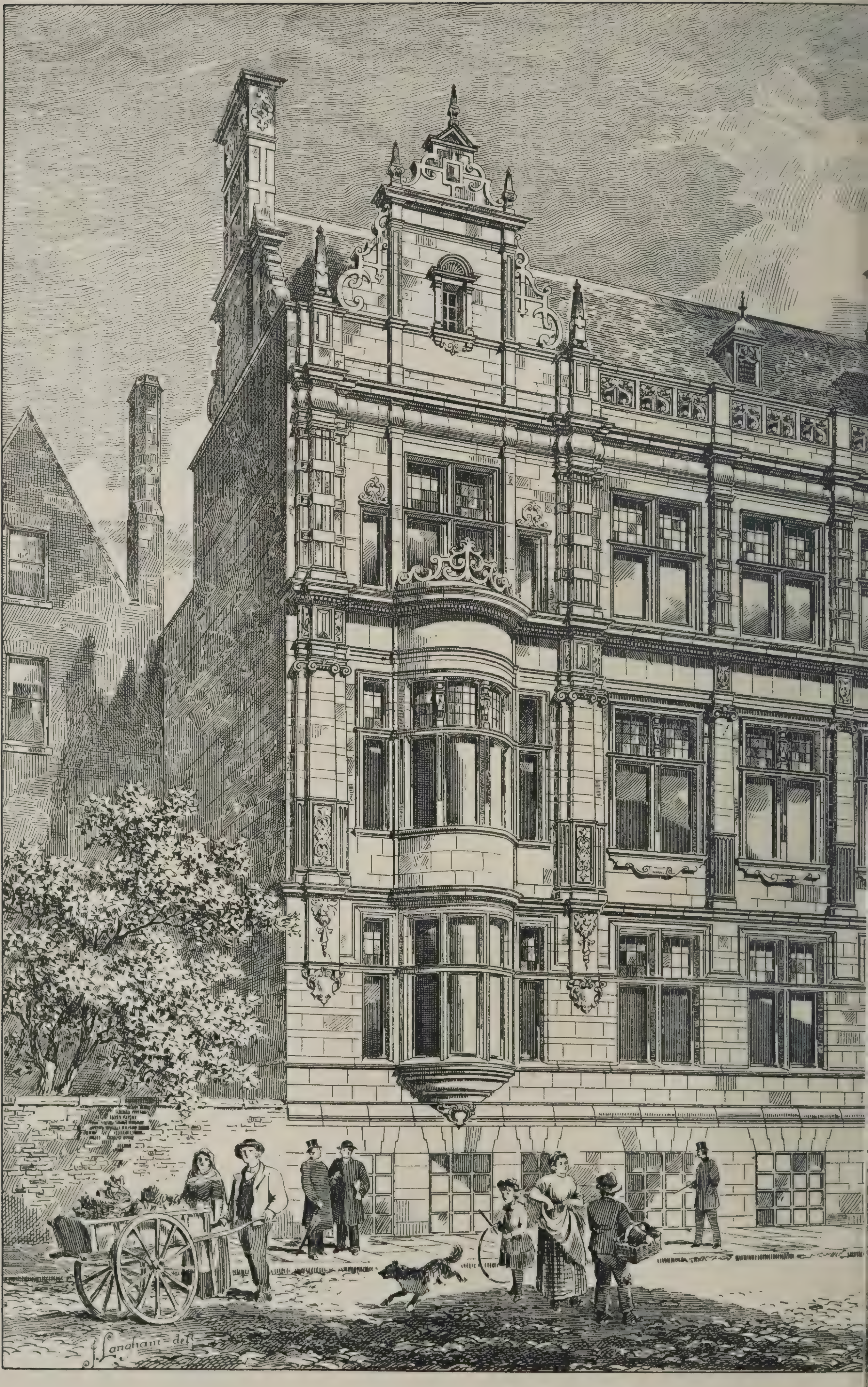

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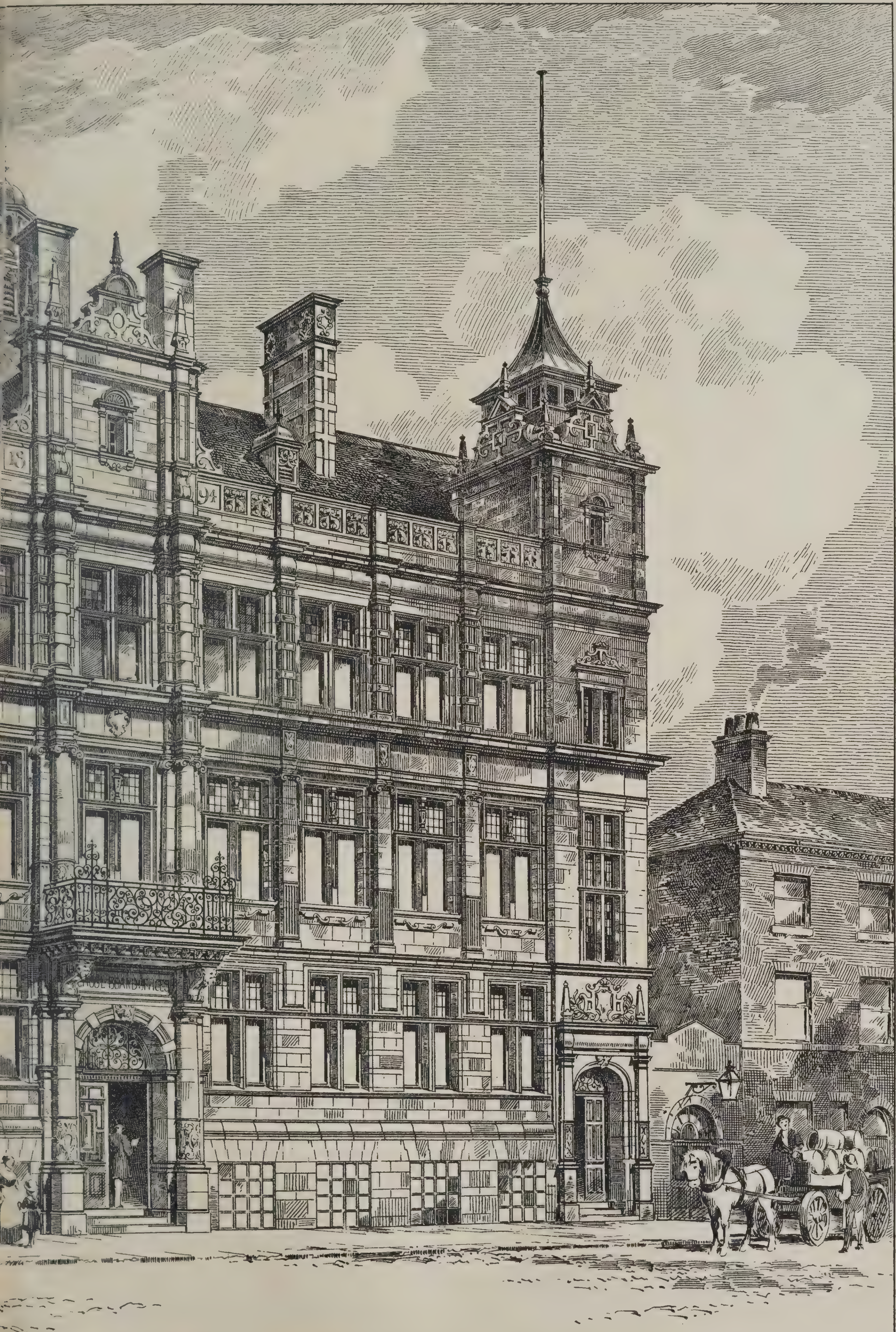

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FRAUDS IN DESIGN.

THERE are few of the arts in which stratagem or deception is not practised. Music, for example, has a wide range of expression, in differences of pitch, its rise and fall, in changes of key, by which the musician can awaken certain emotions, and even reproduce illusively the effects of natural phenomena. The dramatic and emotional effects are as wide and numerous as the human emotions. Tenderness, sweetness, soothing effects, anguish, wailing, and even the roar of the sea and thunder, can be reproduced. A change of key affects us like a change of colour or of movement, and the tones and inflexions of the human voice can be imitated. The Greek forms of music were capable of expressing human emotions in a way which shows an intimate connection between words and melody, according to Mr. Monro, in his work on the "Modes of Ancient Greek Music." This unrivalled power has been called into requisition in the production of operatic and dramatic compositions. In like manner the painter is able to disguise or intensify facts of nature by various artifices and tricks, and in the architect's hands various kinds of deception have been practised for the purpose of impressing the beholder. All these devices are perfectly legitimate, and are used in the service of the highest art. As the variations of accent with those of pitch and time differentiate musical forms, and the movement assume an impressive gravity, a march-like firmness, or playful lightness, each of which has its value, also the architect can reproduce impressiveness, awe, stately rhythm, homeliness, playful and gay effects without being chargeable with having violated the canons of his art.

It is when deception is practised with a view to an unlawful or unfair advantage that it becomes offensive, as when we see an over-strained piece of acting, or a building intended for a commonplace object embellished by Classical orders or Gothic gables and turrets. There were many frauds practised by our forefathers, as when they tacked on to the domestic offices or stables Classical frontispieces to carry on the main elevation of the house, or when they tried to make a groined plaster vault look like a stone one by jointing. These are intentional mispresentations which cannot be condoned. They pass beyond the merely imitational and reproductive architecture of the day, which aimed at building heathen temples and monastic buildings. It was when we saw a stucco residence jointed so as to represent stone ashlar, or a blank window or parapet erected to hide a low hip roof behind, that we revolted against the system. If the stucco had been honestly treated as stucco, and the screen or parapet had been a screen or parapet, and nothing more, we could have tolerated the method. We admit there has been a good deal of stupid sentimentality preached about "shams" in architecture, about the unlawfulness of plaster ceilings and walls; that everything should show the material in its naked plainness, that all disguises are necessarily deceitful, and should be abhorred as a vice, and so on. All these ravings have been discounted at their proper value. But there are worse frauds than these committed every day by the adoption of false styles, by misrepresenting façades, by methods of construction, and the use of materials which are counterfeits.

Frauds of this kind begin in the architect's office. The intention to deceive is present when Mr. Tryster attempts to win a competition by a stratagem. He "cooks" his perspective to show both fronts of his building, to exhibit a tower or a dome where it cannot be really seen, or to make his façades higher or more important than the elevations allow. A constructive expedient or roof which will be an eyesore he artfully conceals or allows to drop out of sight. The sub-contractor or tradesman finds in the scheming architect a useful ally in introducing a substitute for a real material. Drawings etched and coloured often indulge in fictitious representations and exaggerations that sorely deceive the unwary client. The screen, whether in the shape of a façade, a ceiling, the casing of a girder or column, has been a prolific source of fraud in architecture. The old architects used screens as façades on the west fronts of many of our cathedrals. Those of Lincoln, Wells, Peterborough, Salisbury may be mentioned; but they all have a purpose which place them above any desire to deceive. Not one of them can be said to have been adopted with the object of pretending to be a more important front than the edifice behind warranted, and though, in the case of Lincoln and Salisbury, the west front disguises the outline of the roofs, it does so simply as a screen intended for the display of niches and statues. At Peterborough the question was whether the new front should be built down to the already existing roof lines, or should the old Norman structure disappear behind a front more in accordance with Early English design. The argument of difference of style had to be considered in these cases. The Lincoln and Wells fronts were boldly-conceived designs to finish the earlier work, and to give the opportunity for the series of sculptures which adorn them. The sloping lines of the aisle roofs could not be more appropriately finished than by a level front, as at Lincoln or at Salisbury. A raking parapet parallel to the roof would have been meagre, and could not have been treated with so much dignity. The western towers, such as we find at Canterbury, York, Ripon, Southwell, Lichfield, and other cathedrals, provided even a bolder way of stopping the aisles. Instead, if the architect had gabled the end to the lean-to aisle, it would have been really deceptive. We have sometimes seen a pointed gable erected to hide a low-pitched roof behind; of course, as dishonest a mode of finish as possible. It is far better to make the west front level at the top, like Notre Dame, Paris, and many of the Rhenish churches. The screen walls which Wren erected to conceal the aisles of St. Paul's have been taken to task by critics. They are certainly disguises of a very bold kind; they conceal the actual clerestory of the nave and the aisle roofs, and give an appearance of size and width to the building that it does not possess, but they have certain useful structural and decorative functions. We might also find fault with the external dome as disguising the real inner cupola and increasing the apparent height, as also that of the Invalides, Paris, and many other structures; but these are disguises which have their value as external roofs, and may be classed in the same category as the timber roofs over the vaults of our churches. To a certain degree, they may be called "frauds," but they are not intentional; they do not aim at deceiving, but simply emphasise certain parts, and give them external importance.

Greater dishonesty, to our minds, is evinced by an architect who designs a front in a style that has not the slightest fitness for the building, which really is intended to give it a character that it does not possess. For example, a front to a warehouse or a shop more suited to a building dedicated to Euterpe or Terpsichore, large ornamental windows to a bank or a mercantile house, a florid façade to a warehouse, what are these but masks and frauds? How many bare and naked interiors are to be found behind elaborate façades, expanses of plate glass, or leaded stained-glass windows? These are glaring instances of the deceit we are discussing. What is a greater fraud than a blank window or a spacious portico leading to a cramped entrance? Intended to misrepresent, they are really dishonest. There are other modes of counterfeiting not so bad, intended to conceal defects, to disguise the exigencies of construction or to improve external symmetry. And it is of these we must say a few words. Very few architects escape altogether from this kind of misrepresentation. It often saves trouble in design to conceal. There is a temptation to encase an iron column or stanchion with terracotta or decorated tiles, which may be carried to dangerous lengths. There can be no objection to encase an iron column with terracotta designed with an appropriate intention as a column or a support; but if it were made of disproportionate size, either to the meagre proportions of an iron column, or on the contrary to appear as a massive column or pier, the design would in either case be objectionable. It is a real fraud to line a thin partition with faïence, and to insert here and there large pilasters to make people think the wall is thick and massive.

Ceilings and roofs are often disguised in a reprehensible way. We have seen an iron truss encased in wood to represent timber principals, an utterly wrong thing to do. Plaster ceilings with massive beams of plaster running across, or as ribs like a vault, underneath an iron roof, are certainly dishonest, though we see them repeatedly. A plaster ceiling should exhibit clearly that it is an inner covering, and not represent itself to be a stone vault or beamed ceiling. A very common mode of construction is to "cradle" down a straight beam or girder, and make it assume an arch of plaster or wood. If not a fraud it is very like one, and is certainly not honest architecture. The cupola is a feature upon which ingenuity has been exercised. Counterfeit materials have been used to disguise the outer and inner shape, as in those of St. Paul's; but the most objectionable kind of misrepresentation is to make the inner cupola assume the appearance of a massive ribbed dome, or of a totally different form. In the interior there is little to be seen but a flat saucer-like cupola; outside, a lofty and massive dome appears. One is apt to say, "What a fraud!" The casing is a convenient mode of hiding real and often exceedingly ugly things. Who has not often wished to conceal the spiral stair of the iron-founder. There is a gaunt corkscrew-like skeleton of iron right in the centre of the commercial-room of a bank or a shop, or placed against a wall, ornamental it may be with perforated spandrels and risers. The only honest and sensible way of treating it is to fill up the space between the winding stair with open iron or woodwork. Any attempt to conceal the stair as we have occasionally seen is dishonest, especially if the designer endeavours to make it look like something else. A casing is legitimate so long as it does not wholly conceal or misrepresent. Then we see many shams on the outside of buildings, such as false parapets to represent greater height, or to conceal a roof; cornices are often seen in their wrong position, either to make the façade look higher than it is, or below the ceiling level of the upper story. Chimneys are often grouped with dummies to produce balance, and roofs are put in as counterfeits. These modes of counterfeiting or feigning often entail a roundabout way of doing simple things. Many other shams and dishonesties might be pointed to in smaller details if space allowed.

There are many ways of deceiving practised in joinery and plasterers' work to which attention might be drawn. Imitational art and painting are particularly open to the charge. The custom of graining and marbling is utterly repugnant to any sense of honest art. No one can mistake the best specimen of the art for a piece of real oak or maple or marble, and yet the art continues to be practised, in spite of all the remonstrances levelled against it. A deception like this can hardly be condoned upon any rational ground. We can admire a good imitation of a flower on paper or canvas or wood; but we can scarcely tolerate with serenity the covering-up of one wood by a painted imitation of another, however good the imitation may be, for the work has merely the intention of deceiving. It is not a painted imitation for ornament sake, but a deliberate attempt to disguise one material by the semblance of another. Real frauds are those in which there is an intention to deceive—to make things appear other than they are—and in this category must be placed painting, graining, marbling, veneering, and such like simulations, fabrications of other more expensive materials for the purpose of deception and imposition.

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MODERN STREET PLANNING.

ACCIDENT often accomplishes more than design. We seek variety and other sources of artistic effect by rules which nature imparts through the agencies of weather and age. The most strenuous efforts we make to produce the effects of colour or texture are comparatively futile when contrasted with those which time and age impart to our buildings. The beauty of the rain-stained ruin, or the lichen-covered walls, or the weather-toned roof, cannot be imitated by any artificial process. And it is much the same with the plans of the architect and those of the urban authority. The London County Council, in their eagerness to promote street improvements have neglected those opportunities for, and means of, effect that slow growth and age would have insured. Nor have they availed themselves of any substitution for the natural process of street formation. Let us make our meaning clear. A new route is to be opened from A to B, cutting through various old blocks of houses, and intersecting several cross streets. A survey of the neighbourhood is made, and the surveyor sketches the line of the new route, as straight as circumstances permit, with little regard to anything except that of avoiding the demolition of or cutting through property for which heavy compensation would be demanded. This arbitrary choice of a route is naturally to a large extent quite fortuitous; it does not take into account any of the centres of traffic that are crossed; many of them are cut obliquely, and thus acute and obtuse angles are formed, which are awkward for building purposes. Again, the new road is planned of parallel and equal width throughout. Let us contrast this with the old and piecemeal growth of streets such as we see in any of our thoroughfares in London and other cities. No straight or arbitrary line was fixed upon; the houses were added one by one from one centre to another, or along a line that seemed to have been spontaneously chosen for its natural convenience or geographical value. And another characteristic distinguished its mode of development: the street was formed of varying width—some houses were set back, others advanced, till the street assumed a variety of angles and contours which give them so picturesque an effect. The thoroughfares of the Strand, Fleet-street, Oxford-street, and Holborn, and the High-streets of Oxford and many of our ancient provincial towns, exemplify the slow formation of the street according to the old law.

In the laying-out of our modern streets and towns we have sacrificed the above principle of growth to the arbitrary choice of route determined on map, and have, in so doing, lost all that is artistic. To recover the pleasing elements we must now recur to certain principles of laying out which are practically unknown to urban authorities and county councils. In short, we must plan our new streets by the aid of æsthetic rules which were formerly supplied by the exigencies of population and accidental circumstaces. A paper read before the late International Engineering Congress of the Columbian Exhibition by Herr J. Stübben, of Cologne, affords a few hints in this connection which are worth the attention of urban authorities and our London County Council. The author deals first with the practical requirements of traffic, of building, and of health, and secondly with æsthetic principles in laying out. Into the first part we need hardly enter. Adequate supply of air and light in the streets and blocks, and also to the buildings, is, of course essential, and for this purpose the limitation of height is one of the chief necessaries. The new Streets and Buildings Act will to some extent insure these points. Herr Stübben observes that the height of buildings ought not practically to exceed the space between them, which, of course, means that the houses should not exceed the width of the street. Open squares as reservoirs of air at certain intervals are necessary, open courts and gardens in blocks and other open spaces are advocated. These spaces or areas can, it is thought, be formed by the voluntary consent of property owners, or be provided compulsorily by the official city building plan, so that free plazas be kept open in the street system. In London these requirements have been fairly met in a few of the more favoured areas. To keep large blocks free of building is still necessary, as, for instance, in portions of the neighbourhood of Drury-lane, which is now being demolished. Continuous rows of houses might also be prevented. We have too many long, continuous streets. Another feature advocated is the provision of trees for shade. In this respect London has not been behind other towns. The Victoria Embankment, Rosebery-avenue, Kennington-road, and other thoroughfares, are examples of what can be accomplished by the planting of suitable trees. Extra width of street is required for this addition to the hygienic requirement of our towns, and from 65ft. to 98ft. is advocated. One important principle in street arrangement is that a street should not be too long, or, rather, that any great length ought to be relieved by change of direction, by curves, and by variations of width or squares at intervals. A very long street wearies the eye, and causes a sensation of fatigue and discomfort to the pedestrian. Herr Stübben says this unpleasant sensation begins as soon as the length of the same street exceeds twenty or thirty times its width. When a change of direction is undesirable or unattainable, there is the remedy against this tiresome length of varying the width and cross-section. With regard to curves and bends, these ought to be made to conform to natural boundaries, and to the levels of the ground. On hilly and unlevel ground, the straight road is more tolerable than it would be on perfectly level ground, because the natural falls and rises would produce curvature to the eye. We often see new roads formed in straight lines over the summit of a hill. This gives an awkward and unpleasant appearance which can be avoided by bending the street in plan to follow the contour of the surface. The contour levels round hilly and undulating surfaces ought to determine the direction and curvature of every street or road. On the brow of a hill the street should partake of a contour level round it, following, in fact, lines parallel to it, by which the difficulties of level are avoided and unsightly buildings across the summit are obviated. The breaking-up or interruption of a long, straight street by open squares or gardens at the junction of cross roads; the setting back of frontages at intervals, squares, and crescents, are modes of varying our streets which are within the means at the disposal of our municipal authorities. By following these principles, we may do a little to relieve the monotony of our streets, and impart to our modern towns somewhat of that picturesqueness and beauty which were the result of slow growth and age in our ancient cities.

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THE PROPOSED OSTEND AQUARIUM.

WE have come across many curious building sites, but the one selected for the proposed Ostend Aquarium is certainly one of the most exceptional. Situated close to the pier at the northern extremity of the Digue, or favourite promenade on the sea-front, it is practically simply an embankment some 200ft. long, which is at present used for unloading fishing craft. The traffic of this quay is not to be disturbed, nor is the picturesque view from the promenade across the fishing harbour to be interrupted. The central part of the block must also not exceed a certain height, as the line of firing for some guns standing inland is not to be broken. The design which we illustrate is by Mr. Edwin O. Sachs, of 11, Waterloo-place, who has prepared it for what we would, in this country, term a limited competition. His drawings found the most favour of the sets sent in, and we understand that, as far as can be seen at present, there are no obstacles to their being carried out. M. Jules de Hemptinne, of Ghent—a gentleman of great influence in his country—is the originator of the idea of giving Ostend this new "attraction," and it practically rested with him and some non-professional friends to frame the list of requirements, and to decide on the merits of the different proposals put before them. The opinions of several architects and engineers were, however, taken, and their advice influenced the decisions. Mr. Sachs, as will be seen, has overcome the difficulties of the site by practically adopting the principles of a tubular bridge. The whole building rests on two groups of piers, and these stand on either side of the carriage-way of the quay. Visitors on the Digne can practically have the same view as before, and the business operations on the embankment will scarcely be affected. The main floor of the building is reached by a broad flight of steps, on each side of which cunicular lifts have been arranged for. Two ticket-offices govern the approaches. Under the stairs room has been found for the necessary machinery and some offices. The vestibule, which can be approached through double doors from three sides, according to the direction of the wind, leads into the main gallery. Ample space is allowed for some forty tanks and a promenade, without interfering with the access of light or the view. At the further end of the gallery there is a large refreshment room, with a small band-stand. There is a broad balcony surrounding the whole of the part covered in. Ample lavatory accommodation has been provided, and room found for some flower and cigar-stalls. The second floor, if we may so call it, can again be reached by some stairs or two lifts. The hall into which the staircase opens fulfils the requirements of an exhibition room for local sea-scape painters and other artists. The broad roof over the gallery is to be used as an open promenade, with a band-stand; and a large refreshment room, similar to the one below, has also been provided for on this level. The aquarium will have to answer a number of purposes. It is to be open to school children for certain hours in the morning, if they are under charge of teachers, and it is to be at the disposal of *savants*, who will also have a research station close by with minor tanks, laboratories, studies, &c. In the afternoon the block will answer the purposes of a pier-pavilion for the Ostend visitors, and in the evening it will be at the disposal of the local burgesses who do not patronise the Grand Casino. On fête days the aquarium is to be the headquarters of the excursionist.

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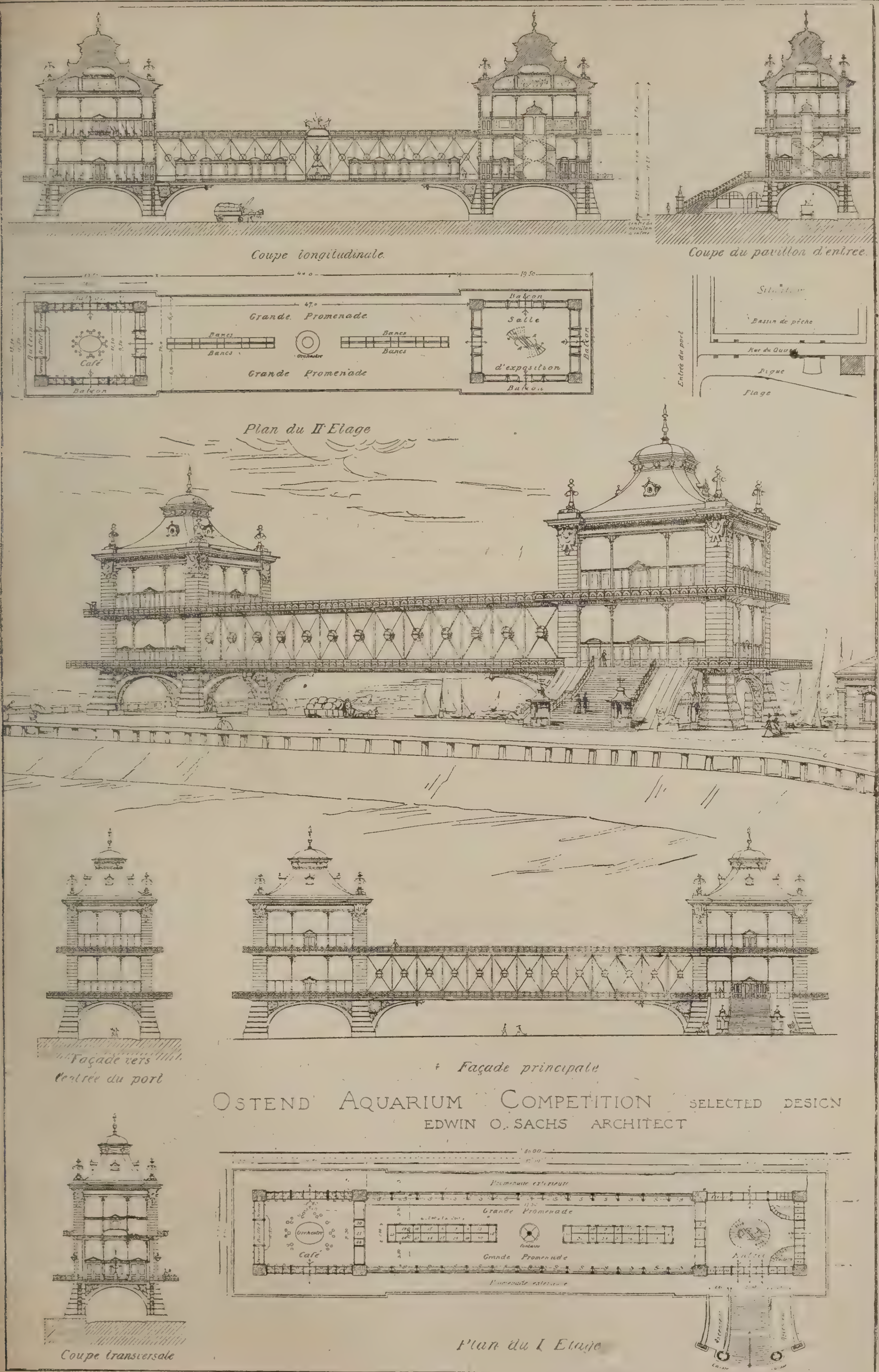
A Masonic hall in Ferry-road, Exmouth, was opened last week. It is built of red brick with Bath stone and limestone dressings, and the lodge-room is 40ft. by 27ft. and 16ft. high to open-timbered roof. The building has been designed by Messrs. Kerley and Ellis, architects, of Exmouth, the contractor being Mr. A. Hayman, of the same town. The cost of the entire work is about £2,000.



OSTEND AQUARIUM COMPETITION SELECTED DESIGN

EDWIN O. SACHS ARCHITECT

THE PLANNING OF FEVER HOSPITALS.

At the International Congress of Hygiene and Demography at Buda Pesth, on Wednesday in last week, Mr. T. W. Aldwinckle, F.R.I.B.A., read a paper on "The Planning of Fever Hospitals." During the outbreak of scarlet fever in London in 1892-3, the Metropolitan Asylums Board found their hospital accommodation so far below the needs of London that they resolved, the lecturer reminded his hearers, to erect their new permanent fever hospitals, each to contain 800 beds. The first was now in course of erection at Shooter's Hill. A committee had visited the best hospitals in Europe, and had drawn up a report which, in the opinion of the experts, formed the best textbook in existence on the subject of the requirements of a fever hospital. The "Brook Hospital," the first of the three to be eventually provided, was the embodiment of the leading ideas of that report. The main principles on which the hospital was designed were:—(1) A separate entrance for infectious and non-infectious patients; (2) separation of staff quarters from the infected buildings; (3) complete separation of diseases; (4) isolation of alien diseases; (5) provision of abundant light and air to all buildings. A nurses' home for 194 nurses was in three separate blocks, and there were separate homes for female servants and men servants. The wards for scarlet fever were placed in eight main pavilions, all of the same type, each pavilion consisting of two floors, the upper floor being entirely cut off from connection with the lower floor. Each main ward contained 20 beds with lineal wall space of 12ft. for each, a floor area of 156ft., and a cubic space of 2,028ft. Similar arrangements were made in separate wards for diphtheria and enteric fever, but the main wards, 90ft. long, would contain only 12 beds. The electric light was used throughout the buildings. A separate ambulance was provided. The cost for the whole would be about £250,000. In the course of the discussion which followed the reading of the paper, Professor Banister Fletcher, J.P., one of the honorary presidents of the congress, said one remarkable point in the able description given by Mr. Aldwinckle of the planning of this hospital was the fact that the cost per bed was higher than in the case of any previous hospital ever built. The maximum cost had hitherto been £250 per bed, and that was the cost in Buda-Pesth, but in the Brooke Hospital it would be £500. There had been a good deal of adverse criticism as to the cost, especially by the Scottish members present in the section. Professor Banister Fletcher thought they ought not to lose sight of the fact that in this case the experiment was being tried of having the very best hospital planning that could be created, and in such an experiment cost should not be too much considered. It was clear that the initial outlay on a building bore little relation to that of its maintenance, and it would often happen that where a building was properly planned the cost of management and maintenance was reduced in consequence. The first necessity was to obtain such a plan that disease could be best combated, in order that the term of the patient's occupany of a bed might be reduced, which in itself would be a saving to the ratepayer.

Among those who subsequently criticised the plans most severely from the point of view of cost was Mr. W. Acworth, the chairman of the Small-pox Hospital Committee of the Metropolitan Asylums Board. Several of the foreign members, as well as the Scottish members of the congress, also criticised the plans.

AUCTIONEERS' CONFERENCE AT NEWCASTLE.

The members of the Auctioneers' Institute met at Newcastle-on-Tyne last Friday for the first time. There was a meeting of the various committees of the institute, held at the County Hotel, in the morning, Mr. Everill, of Worcester, presiding, when amongst those present were Mr. George Brinsley, London; Mr. G. G. Stanham, London; Mr. G. Dobson, Bradford; Mr. Wm. Weatherhead, Keighley; Mr. Chas. Harris, London (secretary of the institute), and others. A full meeting of the council was held in the afternoon, when, as was the case in the morning, the proceedings were private.

In the evening a meeting and conference were held in the County Hotel, under the chairmanship of Mr. Frank Everill, of Worcester, President of the Association.

The chairman said, on behalf of the council, he had to express their pleasure at seeing so many of them there that night. He asked them not exactly to regard that meeting in the conventional sense, but to look upon it more in a social light, and, while he asked them to do this, he said he could not but feel that, at a gathering like that, they were likely to derive much more good by a friendly exchange of opinions than if they stuck to the method of dry formalities. He alluded to the objects of the Institute as being to promote, encourage, and foster personal friendly intercourse, to adopt a proper scale of charges, to protect the general interests of the profession and the public, to discuss the affairs of the profession, to read papers, and so on. So far as the Institute had been enabled to deal with these objects, he might say that it was started in 1886; they struggled hard for about three years; then their difficulties were overcome, and in 1889 the institute was incorporated. Since that time the membership had enlarged very considerably; and there was every sign that it would still further enlarge. But it was not a question only of enlargement in point of members, because the council recognised that one of its first objects was to raise the status of the profession. They did not say to others, "Come to us" merely; but they wanted not only a certificate of character, but a certificate of qualification also. If they did not insist upon this, their objects would be defeated. The object of the Institute was law and order; it was the best form of government, and therefore it was very desirable that they should be all banded together under one controlling power. With regard to how far they had been able to discharge some of the duties for which they were formed, they had, in the first place, instituted a system of examinations. So far, of course, they had not had a large number who had submitted themselves to that ordeal; but those who had done so had passed through it very creditably, and he had no doubt that, in the course of time, they would year by year get an increasing number of persons in connection with the examination. Papers had been drawn up for the examination by men of ability and men of standing. To secure the certificate the candidates must have a good education, and, in the second place, it was requisite that he should possess a considerable amount of ability. The next point that he wished to refer to was the subject of valuations for probate. He was sure they all knew as well as he did how much injury had been done to them of late by the fact that valuations were said to be not required. The necessity of valuations being required had been, indeed, rather pooh-poohed by members of the legal profession; in the highest quarters they had not been insisted upon, and it seemed likely that they would become fewer and fewer year by year. This was a point that affected them very much. Such valuations were of course a considerable source of income to them, and it struck him that the Government should not allow such a lax state of things to exist. It must be patent to them all that, if a valuation was made by an interested party, the Government would get the worst of it. The council had had the importance of this subject impressed upon them for some time past, and they had taken every step they could to bring before the Government the desirability of valuations being made by qualified men. He thought they were right in insisting upon this, not only upon public grounds, but upon professional grounds. They were professional valuers, and should not have these valuations snatched away from them by others who had no license to pay. As the matter stood at present, petitions had been before the Lord Chancellor, the President of the High Court of Justice, and the Chancellor of the Exchequer; and they were endeavouring in every possible way to bring pressure to bear upon Members of Parliament in the different districts, that they might insist upon what that institution was trying to obtain. The Finance Act had been passed this year, and in it was stipulated that the County Council or County Borough Council should appoint valuers to whom any question arising on the value of the estate of a deceased person should be referred. Well, one of the latest things that council had done was to communicate with the County Councils and County Borough Councils throughout the country, asking them to give consideration to any application that might be made by members of that institute for appointment; and he had heard that already one of their members who was there that night had received such an appointment. They would see, therefore, that the influence of an institute like that was bound to be of service to all members of the profession. The Institute had published a capital year-book for the use of members of the profession, and they were establishing a library of suitable books for students who desired to prepare for their examination. After referring to the great activity of the secretary of the institute (Mr. Chas. Harris, of London), the chairman alluded to several remedies required in connection with the profession, and especially mentioned the fact that there were individuals who advertised themselves as auctioneers—individuals who had no license, who never intended to get one, but who got other persons to sell for them when they got a sale. He need scarcely say that this was altogether illegal, and he was happy to say that he was informed by the secretary that between 50 and 60 of these persons in London alone had, through the interference of the institute, been compelled either to take out licenses or paint out the word "auctioneer" from their signboard. This had been done entirely through the action of the institute, and it postulated the truth that they could not work individually so well as they could work collectively. He recommended the benevolent fund to their notice, and urged the necessity of all endeavouring to make the profession as honourable as any profession they had in the kingdom.

Mr. Turnbull, Chester-le-Street, expressed the pleasure he felt at the council having at last come to the North of England. He trusted that some who were there that night would, before they went away, come to the conclusion to join the institute. He was informed by the secretary that there were 12,000 auctioneers in the kingdom, and he thought it would really be strange if at least they could not obtain one-half of that number as institute members. As a means towards that end, he suggested that a local branch of the parent institute be commenced for the four northern counties.

Mr. R. C. Pearce, Darlington, agreed with the remarks of the chairman and of Mr. Turnbull. He held that it was desirable that the status of the profession should be raised, and he was quite in accord with the suggestion for the formation of a branch.

Messrs. Hunter, Garland, Ryan, Wheater, Burlinson, Stanham, Brinsley, and Dobson also spoke on various matters affecting the profession.

There was a feeling somewhat widely expressed in favour of a local branch. Mr. Sanderson undertook to act as sec. pro tem., and the chairman announced that steps would probably be taken to carry the idea into effect.

On the motion of Mr. Slee, Gateshead, seconded by Mr. R. S. Benson, Darlington, a hearty vote of thanks was passed to the chairman for his services.

SANITARY INSTITUTE CONGRESS IN LIVERPOOL.

The 14th congress of the members of the Sanitary Institute will be held in Liverpool next week, opening on Monday and closing on the Saturday. The programme includes conferences of sanitary inspectors, municipal and county engineers, medical officers of health, and of ladies who take an interest in sanitary matters. In addition, there will be an exhibition in the Drill-hall, Upper Warwick-street. The various meetings are to be held at the University College, Brownlow-hill, but an address, to be given to working people by Sir J. Crichton Browne, will be delivered in the Picton Lecture-hall. Sir Francis Sharp Powell, M.P., is president of the congress, and will deliver the inaugural address. The local general committee is a strong one, but, necessarily, the bulk of the work has devolved upon the honorary local secretaries, Mr. H. Percy Boulnois, city engineer, and Dr. E. W. Hope, medical officer of health.

The conference of municipal and county engineers, to be opened on Tuesday, will be under the presidency of Mr. A. M. Fowler, of Salford, and papers will be read by Mr. John A. Brodie, Mr. James Deas, and Mr. H. Royle. Afterwards the members will visit the destructor works in Chisenhale-street, the Hydraulic Power Company's station in Athol-street, the Toxteth-park destructor works, and the Liverpool Electric Supply Company's station in Lark-lane.

The Section of Engineering and Architecture will be opened on Thursday by an address from the president, Mr. G. F. Deacon, M.Inst.C.E., and papers on engineering and architectural subjects will be read on that and the following day.

A series of lectures and demonstrations for sanitary officers, arranged under the auspices of the Sanitary Institute and the Technical Education Committee of the Corporation of Liverpool, will be given. There are twelve lectures, taking a wide range of subjects, and among the lecturers are Dr. Louis Parkes, M.O H. (Chelsea), Mr. H. P. Boulnois, Dr. Francis Vacher, Dr. H. E. Armstrong, of Newcastle, and Prof. A. Wynter Blyth, M.O.H. (Marylebone). In connection with the lectures arrangements will be made for the students to visit various works illustrative of sanitary practice and administration. A conference on the sanitation of the passenger and mercantile marine service will be opened by an address by Sir W. B. Forwood. Arrangements have also been made for visits to vessels in the river and the docks, and to Messrs. Laird's yard. Dr. Charles E. Paget will take the chair at the conference of medical officers of health, and will give an address. Papers will be read on subjects of moment by Drs. A. Hill, J. Priestley, H. Littlejohn, G. Reid, E. W. Hope, and W. N. Thursfield. The conference of ladies will be inaugurated by the Lady Mayoress. It goes without saying that arrangements have been made for pleasure excursions, and a number of places of interest to the members will be visited.

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GRANITE PAVING IN SHEFFIELD.

THE City Council of Sheffield have received a report from the Highway and Sewerage Committee as to granite paving, arising out of a memorial which had been presented, alleging that serious accidents had occurred from the use of granite sets in the city, and further, that certain roads which were mentioned were unfit to drive over, and that Manchester, Glasgow, Edinburgh, and Newcastle were discontinuing the use of granite. The committee point out that similar accidents to horses have occurred in streets paved with other materials, and they append to their report letters from Mr. T. de Courcy Meade, C.E., City Surveyor of Manchester; Mr. D. C. Proudfoot, City Road Surveyor, Edinburgh; Mr. Jno. Whyte, C.E., Master of Works, Glasgow; Mr. W. G. Laws, C.E., City Engineer, Newcastle-upon-Tyne, and from the City Engineer's office, Norwich, where granite is being substituted for wood. The committee add that it is impossible to avoid the conclusion that granite is by far the most economical form of paving, and forms a much more permanent roadway than any other material. They are of opinion that the danger arising from the use of granite sets properly laid on streets of suitable gradient has been very much exaggerated. Granite is not now laid nor proposed to be laid on steeper gradients than 1 in 25, and this could be reduced to about 1 in 30. They recognise the necessity for efficient sanding and watering, and leave it to the city council to determine whether the disadvantages of noise and possible slipperiness are sufficient to outweigh and overbalance the advantages of economy and permanent better state of repair of granite-paved roads over wood, gritstone, or other materials. In comparing with macadam, the serious extra cost of cleansing cannot be left out of account.

Appended is a report by Mr. C. F. Wike, city surveyor, which gives a large amount of information as to the use of granite in Sheffield and other large towns. He states that of the 291 miles of streets and roads within the city, 204 are laid with macadam, 47½ with boulders, nearly 20 with gritstone, and about 20¼ miles with granite, of which five miles, or one fourth of the total length, has been laid during the last five years, the first extensive use of granite in Sheffield dating from the construction of tramways about twenty years ago. The accompanying information based on particulars supplied by the surveyors of 29 of the largest towns in England, Ireland, and Scotland, all of which use granite, shows that 19 towns have granite-paved streets, the steepest gradients of which vary from 1 in 10 to 1 in 20.

Name of Town.	Up to what Gradient Granite Used.	Whether Gritstone Used.	Which Material Preferred.	Life of Granite Pavement in Years.
Aberdeen	1 in 12	No	—	Not less than 20.
Belfast	1 in 37	No	Granite	12 to 15 years without repairs; supposed life, 40 or 50 years.
Birkenhead	1 in 15 and 20	No	Welsh syenite	25 or 30, and perhaps 20 more, with redressing.
Birmingham	1 in 13	No	Granite	Varies. L.G.B. allowed 25 years.
Bolton	1 in 17	Yes, for all but main roads.	Granite where traffic heavy.	Average 30 years, with good bed.
Bradford	1 in 16	Yes	Heavy traffic, granite; light traffic, gritstone.	18 to 25 years.
Burnley	1 in 30 to 1 in 14	In streets without heavy traffic.	Granite	20 years.
Bury	1 in 30	Yes	Granite for main roads.	Cannot say. Paving down 8 years, and not a penny spent; say 30 years, then redressed, and 20 years more, &c.
Carlisle	Whinstone up to 1 in 25. Granite when steeper.	No	Granite for inclines; whinstone for flat grades.	About 30.
Chester	1 in 30	Have experimented. Does not wear well, only four or five years.	—	Some for ever; other kinds for 10 or 12 years.
Clapham, Surrey	1 in 30	No	—	About 20 years.
Dewsbury	On level.	Yes	Granite	50 years.
Dublin	1 in 36	No	—	30 years. Still in fair condition.
Edinburgh	1 in 16	No	—	About 25.
Gateshead	—	No	—	—
Glasgow	1 in 18	No	—	40 years in some cases, and another 30 after redressing.
Huddersfield	1 in 17	Yes	Granite	1st, 16 years; 2nd, after redressing where necessary, ditto.
Hull	1 in 20	Only for crossings under light traffic.	Granite	About 75 with redressing and relaying.
Liverpool	1 in 18	No	—	Depends upon traffic.
Manchester	About 1 in 25	Yes	—	Ditto, 15 to 30 years.
Newcastle-on-Tyne	1 in 12	No	Granite	Ditto, over 30 years.
Nottingham	1 in 10	No	—	Ditto, some laid 25 years ago, now in good condition.
Paddington	1 in 20 5	No	—	12 to 16 years.
Plymouth	1 in 12	No	—	20 years.
Rochdale	1 in 13	In secondary streets	Granite	20 and 25 to 40 years and more.
Salford	1 in 19	Yes	Granite for heavy traffic.	About 25 years; depends on traffic.
Sunderland	1 in 10	Very little	Granite certainly for heavy traffic.	40 years, and then can be taken up and laid elsewhere.
West Bromwich	1 in 16	No	Depends upon traffic and situation.	—
York	1 in 30 (about)	No	Granite	—

Mr. Wike adds that in some of the older granite-paved streets in Sheffield the crossfalls are very quick. This is especially the case along the tram routes, where the longitudinal gradients have been considered to the detriment of the cross sections of the roads. In these cases the crossfall is more dangerous than the granite itself. Quick crossfalls are dangerous with any paving, and every opportunity is taken, when a street is relaid, to flatten the cross section. Some of the old crossfalls were as steep as 1 in 19·25 and 1 in 12·67. The granite recently laid has very flat cross-sections, rarely extending 1 in 30 or 1 in 36. The difference in the cost of granite and gritstone in three leading streets for a period of 25 years—it being estimated that five years may be allowed for the life of gritstone, and 25 years for granite—works out that in a quarter of a century gritstone costs, on an average, per yard from 61s. 6d. to 68s. 4d., against 18s. 4d. for granite, while repairs cost from 2s. 5d. to 2s. 9d. per yard each for gritstone, against about 8½d. for granite. Mr. Wike adds:—When it is considered that a granite street only requires on an average laying once in 25 years, while a gritstone street, with similar traffic, requires relaying five times during the same period, it will be seen that this is a matter of great importance, as frequent disturbance of the street means serious interference with business, loss of trade to shopkeepers, and inconvenience to the public.

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LIVERPOOL WATER SUPPLY FROM VYRNWY.

THE Lord Mayor of Liverpool formally inaugurated at the Kensington reservoir on Tuesday the new main between Prescot and Kensington, by means of which water will be conveyed directly to Liverpool from Vyrnwy Lake without first entering the Prescot reservoirs. The new main will increase the supply of water to the city by about sixteen millions of gallons daily. It has been laid by corporation workmen, under the direction of Mr. Joseph Parry, water engineer, at a total cost of about £62,000. The aqueduct consists of cast-iron pipes 3ft. 4in. internal diameter from Prescot to Knotty Ash, and, with the exception of two short lengths of steel tube, of cast-iron pipes of 3ft. diameter from Knotty Ash to the Kensington reservoir, Liverpool. The Cheshire Lines Railway at Knotty Ash and the London and North-Western Railway at Stanley are crossed by means of riveted steel tubes of the same diameter as the cast-iron pipes. The aqueduct commences with a junction with the Vyrnwy pipes at a distance of 242 yards from the inlet of the Prescot reservoir. There is also a junction with the Rivington aqueduct in the same road, and these junctions are so arranged that water can be turned into the new main either from the Vyrnwy or Rivington works direct, or from the Prescot reservoir. The pipes are laid along the Eccleston and St. Helen's roads to the Prescot lodge of Knowsley Park. They then cross the park, emerging into the public road a little over a mile from Prescot. The pipes continue along the Liverpool and Huyton main road, with the exception of one short deviation, to the corner of Eaton-road, Knotty Ash. Here the 40in. pipes terminate, and a branch pipe of 2ft. internal diameter is taken off to convey water to the intended new reservoir at Breeze-hill, Walton. This main to Breeze-hill has also been completed, with the exception of crossing the Cheshire Lines Railway at West Derby station. The 40in. main is now reduced to 36in., and this diameter is continued along the Prescot-road through Old Swan to the Kensington reservoir The length of the new main between Prescot and Kensington is nearly 7½ miles, and the length of the 24in. branch from Knotty Ash to Breeze-hill is 4½ miles. The whole of the cast-iron pipes employed have been supplied by the Staveley Coal and Iron Company, Limited, Staveley, near Chesterfield, to the specification of the water engineer; and the joints for the most part consist of the kind known as bored and turned, in which one pipe is socketed into the other with asphalte and twine, and without the use of lead or caulking. The minimum thickness of the pipes is 1in., and the maximum thickness used under special conditions is 1½in. The pipes have been cast in 12ft. lengths, and vary in weight from 43cwt. to 57cwt. All the pipes were manufactured under the supervision of an inspector appointed by the Liverpool Water Committee, and were tested under pressure. Every pipe has been coated internally and externally by dipping in a hot asphaltic mixture, to retard corrosion as long as possible. The steel tubes crossing the Cheshire Lines Railway at Knotty Ash were made by Messrs. Fawcett. Preston, and Co., of Liverpool, and the steel tube crossing the Stanley Bridge of the London and North-Western Railway by Messrs. D. Rollo and Sons, Liverpool. The actual expenditure in wages of workmen and salaries of superintendents has been £17,090. To complete the extensions and improvements recommended there still remain to be carried out the following works, which have been sanctioned by the city council: service reservoir on Breeze-hill, estimated cost £35,000; distributing mains from Breeze hill reservoir, £5,000; and new high-pressure engine at Aubrey-street, pumps and boilers, £10,000.

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The memory of the late Primate of Ireland is to be perpetuated by a marble bust to be placed in the cathedral at Armagh, and a stained-glass window in Holywood parish church.

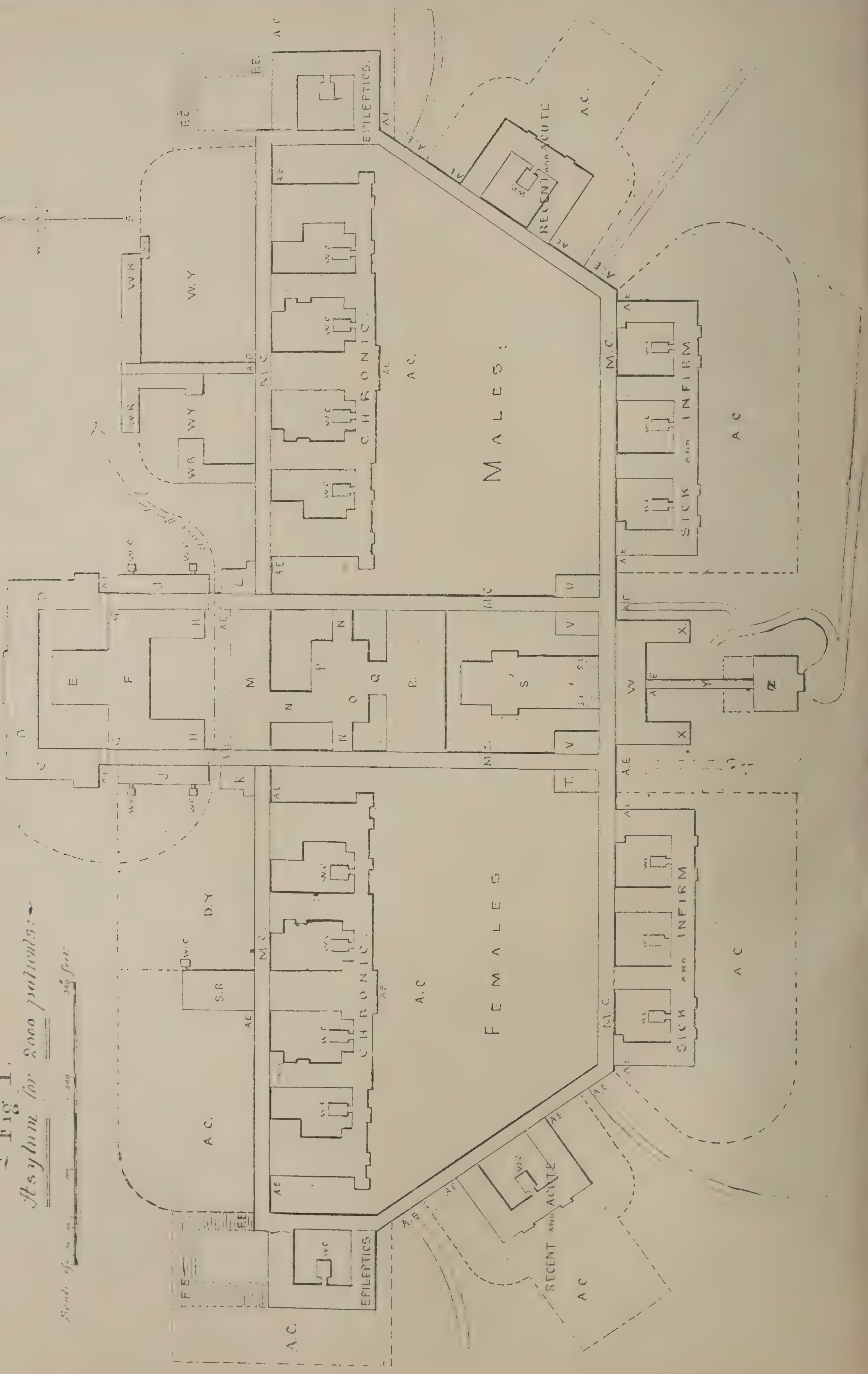

Fig. 1.

Asylum for 2000 patients.

Scale of 100 feet 300 feet

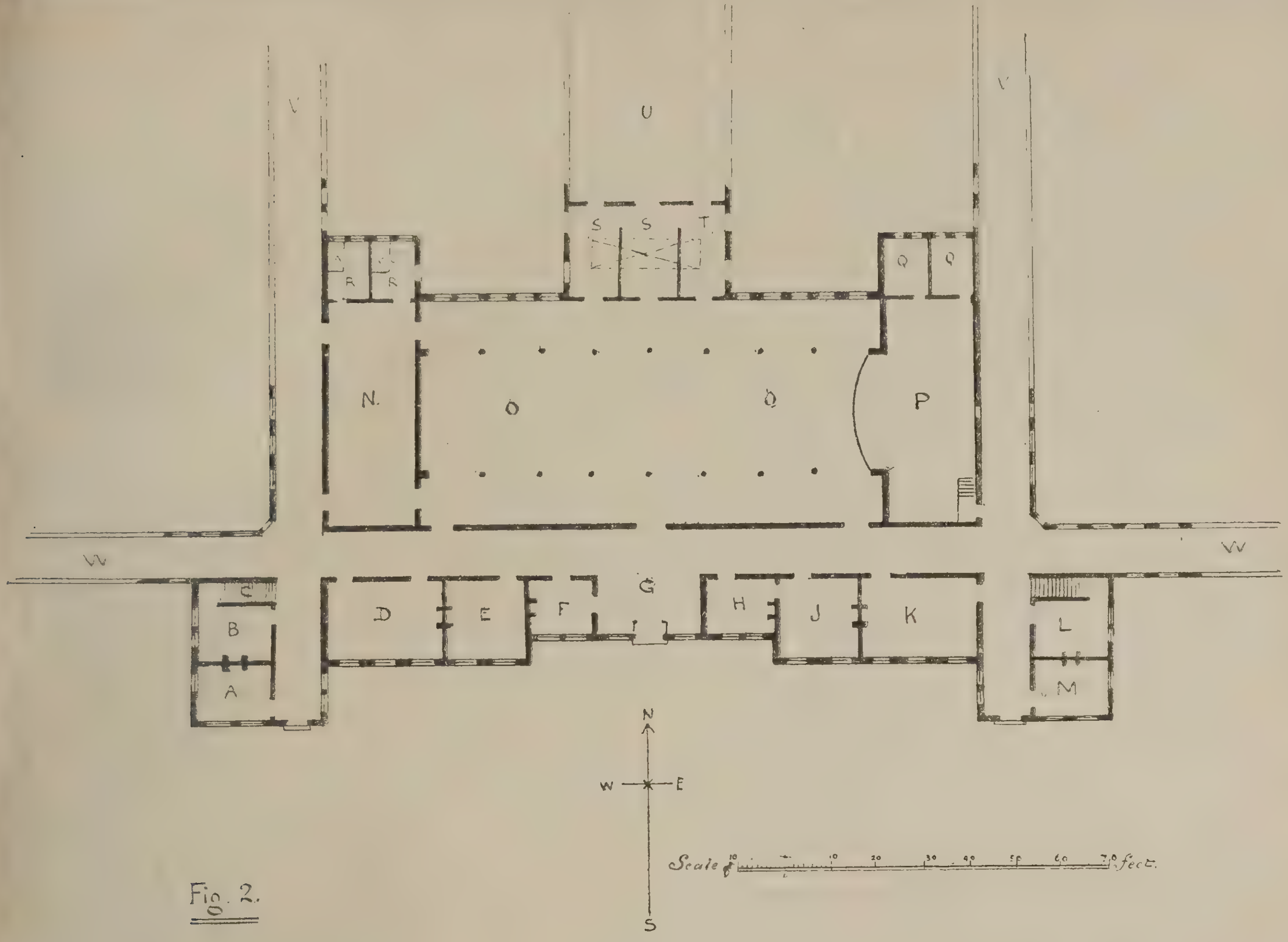

Fig. 2.

COUNTY LUNATIC ASYLUMS.—II.

By George H. Bibby, F.R.I.B.A.

ADMINISTRATION BUILDINGS.

THE asylum architect must carefully bear in mind, while designing the apartments to be occupied by the staff, that the social status of the officers, their mode of living, and salaries vary to a considerable extent, and that he may have to provide accommodation for the professional medical superintendent with a salary of £1,500 per annum, and also for the porter or labourer who may not be paid more than a few shillings per week, in addition, perhaps to his rooms rent free. Provision must be made *pro ratâ* for the accommodation of all classes of officials.

The resident medical officer is the chief officer in all asylums. We will therefore consider, in the first place, what are the best arrangements that can be made in designing and locating his residence in relation to the asylum buildings generally. His residence should undoubtedly be as nearly central as possible, that he may be equidistant from all parts of the institution; the nearer that he can be situated to the infirmary wards the better, for it is in these that his duties are most extensively exercised, and as the medical officer is compelled at all times and in all weathers to visit the asylum, his house should be connected with the main building by a covered and inclosed corridor which might be heated, together with other portions of the buildings, from the general heating system of the asylum.

The medical superintendent's house should contain a large dining-room, a drawing-room, a morning or smoking-room, also a room set aside for official work in the form of a combined study and office (unless such a room be provided for near to the board room or other offices). In addition to the usual kitchens and offices, there should be about seven or eight bedrooms, a good hall and staircase, bathroom, &c.; but the extent of this residence naturally depends upon the actual stipend of the occupant, who, in addition to having his house rent free, has also frequently coals, gas or electric light, milk, vegetables, &c., gratuitously supplied from the asylum stores.

In arranging the plan of the doctor's house, and in choosing the locality for the site, care should be observed that no private-room windows or garden ground overlook the airing-courts to be used by the patients in the institution. The scenes there are not desirable for the continued inspection of a private family.

It might be convenient to place a cloakroom and lavatory, &c., in connection with the corridor, passage, or covered way leading from the asylum building to the medical superintendent's residence; the doctor would then be enabled to change his clothing, or perform his ablutions, after leaving patients or fever wards, &c., before entering his home.

The addition of a good conservatory (from which flowers and plants for the use, not only of the medical officer's family, but perhaps also for the sick and other wards of the asylum) is an item of importance. Cheerfulness and brightness contribute so much towards relieving patients of their various ailments that flowers should when possible be plentifully supplied.

[Referring to Fig. 1, on opposite page, A is the main entrance; B, board room and offices; C, assistant medical officer's quarters; D, male attendants; E, boilers and engines, &c.; F, laundry; G, laundry delivery; H H, laundry reception; J J, bath-houses; K, nurses' mess room; L, attendants' mess room; M, general store room; N N N, kitchen offices; O, kitchen; P, scullery; Q, serving rooms, &c.; R, dining and recreation hall; S, church; S_1 S_2, church "fit" rooms; T, dispensary; U, library; V V, visiting rooms; W, female attendants; X X, matron and assistant matron; Y, corridor; Z, medical superintendent's house; W R, work rooms; W Y, work yards; W C, closets and lavatories; S R, sewing room; D Y, drying yard; A C, airing courts; F E, future extensions; M C, main corridor; A E, asylum entrances.]

The assistant medical officer's (*vide* Fig. 1c) apartments should usually be placed near to the centre of the asylum, but in such a position that due privacy may be secured (*vide* M, Fig. 2). The rooms should be well separated from the lodgings appropriated to the use of the nurses, matron, and other female officials (*vide* W, Fig. 1); special water-closets, lavatories, and bathrooms must be provided for their use. If funds permit (and certainly in large asylums) the architect should contrive to arrange for a smoking-room, or smoking-room and billiard-room combined, for the use of the medical and other superior officers, &c. (Billiard and clubrooms for subordinate officers and patients being, of course, a separate arrangement.)

Occasionally a detached residence is provided for the first assistant medical officer, whose salary being frequently about £250 (in addition to which there are allowances), is not adequate for the support of more than a moderate house, which must be arranged by the architect upon a suitable scale accordingly. The salaries of the junior assistant vary from £100 to £250 with or without board, lodging, washing, &c., and the private sitting-rooms, mess-rooms, &c., differ much in various asylums.

Detached or semi-detached houses or apartments will usually be provided for the steward, chaplain, clerk to the asylum, engineer, matron (vide A, Fig. 2), laundry matron, head gardener, and a certain number of married attendants. These must all, of course, be proportioned in size and style to the emoluments of the officials who would occupy them. As a rule, however, the chaplain, clerk, and steward would require fairly good residences and probably garden attached.

A very large number of officials are employed in asylums; amongst others are the assistant matron, work mistresses and masters, inspectors, day and night nurses and attendants, porters, messmen, gate porters, cooks, bakers, tailors, shoemakers, and many others who should be lodged within or near to the administrative buildings, care being always observed to separate these as to the sexes and also to some extent as to grade.

Large asylum buildings require continual attention in decorative and structural matters, and there is a necessity to maintain a staff of carpenters, bricklayers, painters, plumbers, &c., to keep the asylum in repair; these are seldom lodged in the asylum (unless as labour masters), are paid by the day or week, and provide their own lodgings away from the institution.

Other particulars of the construction and arrangement of apartments (in the patients' wards) specially intended for the use of asylum officials will be given in connection with each ward or block of building, together with some details as to the routine of duties carried out therein.

That the architect may be able to plan an asylum well, it is absolutely necessary that he should have considerable information as to the duties and dangers to be apprehended by asylum officials, and respecting the numerous classes of the insane. Some of the latter require much more warmth than others, and in the most simple matters require the closest attention from the nurses; while others are well able, and willing, not only to work and assist the nurses, but also to produce profitable returns to the asylum. Many patients are very cleanly, and capable of attending to themselves in most things; but these are the minority. There are dirty cases (requiring bathing several times daily), dangerous and dirty cases, noisy cases and quiet ones, and patients of all these descriptions with a variety of complications of bodily and mental defects, aged and young of both sexes, and of all dispositions. The problem for the architect is the provision of accommodation where the various classes may be suitably lodged and cared for, with so much or little contact with one another, as circumstances may require.

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CHIPS.

The four-light window of Flamstead Church, Herts, has been filled with stained glass as a memorial. The subjects are the Nativity, the Blessing of the Children, Christ as the Good Shepherd, and the Resurrection. Messrs. A. O. Hemming and Co , of Margaret-street, W., were the artists.

The Christchurch board of guardians are about to erect a series of cottage homes. The contractor is Mr. J. Chinchen, whose tender has been accepted at £10,500, and Mr. Isaac Graham, of Wolverhampton, is the clerk of works.

The Chorlton board of guardians decided on Friday to purchase an estate at Wilmslow, extending to 192½ acres, at a cost of £20,000, for the erection on a portion of the land of workhouse schools.

A drinking fountain of polished red granite, the gift to the town of Elland by Mr. John Dewhirst, of Woodlands, was erected in the recreation grounds last week. It is quatrefoil on plan, having four basins, with a continuous flow of water issuing from bronze lions' heads, and the whole surmounted by a large Imperial crown, also in bronze. The architect is Mr. W. Swinden Barber, of Halifax, and the work has been executed by Messrs. Earp and Hobbs, sculptors, of Lambeth and Manchester.

A new park has just been completed at Armley, a Leeds suburb. The land, acquired at a cost of £14,500, comprises 24 acres, previously forming part of a farmstead. At the main entrance are three gates, the centre one giving access to a carriage drive, and the others to footpaths. In the centre of the park are some seven or eight acres of grass. Two panels near the front entrance are the contribution of Messrs. Cliff and Sons, of New Wortley. The Leeds corporation have erected two small drinking fountains, occupying a central position.

At Christ Church, Frome, on Thursday in last week, a memorial altar, designed and executed by Messrs. Harry Hems and Sons, of Exeter, was dedicated. It is of oak, 6ft. 6in. long, and 3ft. 2in. in height. The central panel represents our Lord in majesty, with an adoring angel on each of the side panels. The top consists of a solid slab of variegated English alabaster, and the retable has tracery with emblems of the Passion.

The St. Helen's parish church, St. Helen's, Lancs, after being closed for eight weeks for extensive repairs, was reopened on Sunday. The scheme of renovation included the reroofing of the edifice, the decoration of the chancel walls, and the provision of an improved system of ventilation, at a total cost of about £1,100. The plans for the work were prepared by Mr. Wallace Gandy, of St. Helen's, and the contract was given to Mr. John Whittaker, builder, Sutton, who died somewhat suddenly a few weeks ago.

Mr. Thomas Codrington, C.E., one of the Local Government Board inspectors, held an inquiry at the town hall, Newport, Mon., on Thursday in last week, as to an application by the Newport local authority to borrow £10,000—£8,000 for street improvements and £2,000 for the erection of a fire-brigade station. The town clerk said the £8,000 was for the making of Cambrian-road, the new relief street to High-street, and also for the making of Harrby-street, a right-angled thoroughfare from Cambrian-road.

Castlecroft Congregational Church, Bury, Lancs, was reopened on Sunday on the completion of works of renovation, including reroofing, reglazing of all windows, decoration, and improved ventilation. The structural alterations have been carried out by Mr. Charles Brierley, the glazing has been done by Mr. James Mason; the lighting and ventilating by Messrs. J. H. Pickup and Co., and the decorating by Messrs. Hall and Allen, all of Bury.

ARCHÆOLOGICAL.

Man and the Mammoth at Przedmost.—Herr Karl Maschka, the director of the exploration in the Moravian district near Prerau, the most important site of prehistoric human and animal remains existing in Europe, reports that during the past thirteen years most extraordinary deposits of animal remains have been found at Przedmost. The number of mammoth remains can now be counted by thousands, among which are to be seen many complete teeth, parts of the skull, and vertebræ. In all the remains represent at least 300 animals. He has specimens of the ice fox, reindeer, snow hare, horse, cave lion, brown bear, cave bear, elk, snow hen, and many other animals; and, more important, still many specimens of man's tools, axes, lances, and javelins which he used in hunting the wild animals. Herr Maschka traces an increasing sense of the beautiful in the carving on ivory and bone, and in the inscriptions found on the backbone of the mammoth, which was the contemporary of man on earth during this period. Till quite recently he had not come upon the actual remains of man, except in very small fragments, which left him in considerable doubt as to their origin. But in August of the present year he hit upon a grave which had without a doubt served as a burial-ground of several human beings of the diluvial period. This grave contained complete skeletons of eight persons, which were placed with their heads towards the north. One elderly man, distinguished by a very strong physique; an elderly woman; a mature person, whose teeth were in perfect condition; three young people, one of whom had not yet cut his wisdom teeth; a child just losing its milk teeth, apparently between eight and nine years old; and an infant. Some of the skeletons are in a good state of cohesion, but in no case have the skulls, which have low foreheads and deep-set eyes, escaped destruction. With these human remains was found the shoulder-blade of a mammoth.

Roman Remains in the Taunus. — Some interesting discoveries have been made this summer in the Taunus by the German archæologists who are engaged in exploring the "limes," under the guidance of General von Sarwey and Professor Hettner. At Hofheim, between Wiesbaden and Frankfort, Dr. Wolff has discovered and excavated the remains of a Roman fort about 600ft. square, which seems to belong to an early period in the Roman occupation of the district, and which in some points closely resembles the Roman fort at Wiesbaden. It stands in a commanding position, with a wide view over the Rhine Valley, just at the mouth of the pass which leads through Idstein from the Rhine to the lands beyond the Taunus Hills. It was presumably founded at least as early as the reign of Domitian, and was abandoned possibly in the middle of the second century, if the evidence of coins and tiles be accepted as conclusive. On the Pfahlgraben itself Herr Jacobi, the excavator of the Saalburg, has prosecuted his inquiries at three places, with curious results. At Zugmantel, about eight miles north of Wiesbaden, he has found proof that the existing fort is an enlargement of an earlier structure, and that its history so far agrees with that of some other Roman forts in the neighbourhood. Elsewhere he has lighted upon ditches and mounds, connected, as he supposes, with the Roman land surveying system as applied officially to the planning of the camps as well as the frontier lines.

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The Wesleyan chapel at Wolstanton, Staffs, is about to be rebuilt at a cost of £4,500. Accommodation will be provided for 750 persons, and the building will consist of a nave and aisles, with transepts and octagon-ended orchestra. The style will be Perpendicular, and the walls will be of local bricks, with Alton stone dressings. Mr. A. R Wood is the architect, and Mr. G. A. Foster the contractor.

At a meeting of the committee of the school of art at Newcastle-under-Lyme, the head mastership, vacant by the death of Mr. J. P. Bacon, was conferred upon Mr. C. H. Whitworth, of Birmingham. Mr. Whitworth was born in West Bromwich, and received instruction in art in the Birmingham School of Design. For 20 years he has been closely connected with art in Birmingham, and for 10 years was one of the teaching staff of the art school there. Since 1882 his paintings of marine and landscape subjects have annually been exhibited in various galleries, including the Royal Academy. At the reopening of the art school on Monday next, the classes will be held in new premises provided in the Municipal Buildings.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Dundee Institute of Architecture.—The tenth annual report of this body states that the election of two members is balanced by the resignation of two, leaving the total the same—viz., 54. By the withdrawal of 17 associates, the death of three, and the election of four, the total number of associates is reduced from 183 to 167; while from the number of honorary members one has to be deducted (leaving eight). The treasurer's balance in hand is about £17, being a little less than last year. Mr. Robert Keith, M.S.A., has been elected president, and Mr. Leslie Ower, F.R.I.B.A., vice-president for the ensuing year; the members of council being Mr. G. G. Maclaren, architect; Mr. James Foggie, architect; Mr. William Briggs, granolithic contractor; and Mr. William Nixon, solicitor. The honorary secretaries are Messrs. J. J. Henderson and George Jamieson, architects.

East Riding Antiquarian Society. — The annual meeting of this society is to be held at Driffield on Monday and Tuesday next. Proceedings will commence in the Corn Exchange, where a meeting of members will be held at one o'clock on Monday, at which the annual report and balance-sheet will be submitted, and the officers for the ensuing year will be elected. The president, the Rev. Dr. Cox, F.S.A., will occupy the chair. A paper will be read by Mr. Arthur F. Leach, F.S.A., on "Beverley Town Book." The Mortimer Museum will afterwards be visited, and short descriptions of more important features given by the Rev. E. Maule Cole and Mr. J. R. Mortimer. This museum contains by far the best local collection of prehistoric remains in Great Britain. Later in the afternoon the members will proceed to the Driffield Church, the features of which will be described by the Rev. Dr. Cox. The Moot Hill will be visited at four o'clock, and a paper read on "Folk Moots" by the Rev. E. Maule Cole. Then the party will proceed to Little Driffield Church, where a paper will be read on "King Alfred of Northumbria" (who is buried there) by the Rev. A. N. Cooper, of Filey, hon. sec. to the society. Mr. Temple Moore will also comment on the architectural features of the two Driffield churches. After the annual dinner, a conversazione will be held at Highfield House in the evening. Several short papers and addresses will be given, including "Flints in Peace and War," by the president; "The Stocks in East Yorkshire," by Mr. John Nicholson, of Hull; and "The Scandinavian Element in the Dialect of East Yorkshire, especially with Reference to Agricultural Terms." On Tuesday morning a start will be made for Kirkburton, with its unusually fine example of a Late Norman church. Next will be visited Bainton Church, which is chiefly in the Flowing Decorated style, and contains the fine monument of Edward de Mauley. Both churches will be inspected under the guidance of Mr. John Bilson, F.R.I.B.A., of Hull. At Watton Priory the excavations now being conducted will be described by Mr. W. H. St. John Hope, secretary to the Society of Antiquaries.

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The last excursion for the season of the archæological section of the Birmingham and Midland Institute took place on Wednesday week, when the members visited Moreton Old Hall, Cheshire, the largest half-timbered building in the kingdom; Astbury parish church, where Mr. Charles Lynam, F.S.A , of Stoke-on-Trent, acted as guide; and the town hall at Congleton.

Extensive improvements are about to be carried out at Dagnall-street Wesleyan chapel, St. Alban's, the works including reseating and the provision of an organ-chamber and seats for a choir. Messrs. J. and W. Savage, of St. Alban's, are the contractors.

The new municipal buildings for the borough of Coatbridge, erected from designs by Mr. A. M. G. Mitchell of that town, will be formally opened on Thursday, October 4th. We illustrated the buildings, which are of a plain type of Renaissance, and have cost about £25,000, by a perspective and plan in the Building News for July 31, 1891.

Considerable progress is now being made in the construction of subsidiary sewers in the Rhondda Valleys. The whole of the Hafod, Porth, Williamstown, Penygraig, and Llwynypia has been connected with the main sewer. The sections at Pentre, Treorky and Treherbert, and Ferndale are being made, and these localities will also be connected completely with the main sewer in the course of five or six months.

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Our Illustrations.

DR. SCHLIEMANN'S MAUSOLEUM IN THE CEMETERY AT ATHENS.

DR. SCHLIEMANN charged, in the year 1883, the architect-professor, Mr. E. Ziller, with the delineation of his monument, and inclosed the sketch in his last will, because he preferred it to the other sketches presented to him, and because it had the closest connection with his sphere of art. The cost was fixed by stipulation at 50,000 drachmas (about £2,000). The substructure is of grey marble of Pentelikon. The frieze, which is 16 mètres long, and the other parts of the monument, are of white marble of Pentelikon. In the metopes different things found during Dr. Schliemann's excavations are represented. The marble bust is erected between the front intercolumns. This relief is 16 mètres long and 0·60 mètre high; it closes the substructure, and represents the following scenes: Front—In the middle, King Proetos (Προῖτος), in the shape of a man of mature age, has his head adorned by a wreath of flowers. Leaning with his left hand on the sceptre, he turns with outstretched right hand to the Cyclops, who heap up, by his order, colossal quantities of stones in order to raise the walls of the tower of Tyrins. Next to him stands an old man as a representative of his counsellors, and beside this one a woman cowers on the ground with a child on her breast. On the south side.—The sacrifice of Artemis in Aulis. A decorated bull is being led to the scene of action. Behind the sacrificial flame the picture of Artemis is represented on a column. Agamemnon, who makes the sacrifice, lifts his hands imploringly to Artemis. Joined to this scene, on the right, is the fight around the vessels near the banks of Troja. Further on follows the fight for the corpse of Patroclus. The end of this scene is formed by the sacrifice on the grave of Agamemnon made by Electra; Orestes and Pylades assisted in this act. The back is subdivided into three parts. On the left, Nausikäa returning from the shore, and behind her, Odysseus. In the middle Eumæus is sitting on a rock, and the third part represents the murder of the wooers. The northern longside represents the excavations of Schliemann and the principal places of his activity. They follow from the left to the right: Mycæne, Tyrins, Orchomenos, Troja. In the centre of the relief Schliemann stands, reading Homer to his wife. The final group shows how the principal things found during his excavations are led away in a carriage. In composing the last frieze, Professor Ziller consulted the late Dr. Lolling, Conservator of the Archæological Museum, and the sculptor, Karasmy, executed the frieze in marble. The vault was decorated, according to the last will, with Pompeian paintings, and this vault of the tomb, being constructed in white marble, that material furnishes the ground tint or background for the coloured painting. Dr. Schliemann had the inscriptions made during his lifetime by Professor Russoparlos. They are as follows:—On the epistyle of the front side—

ΣΛΙΜΑΝΝΩΙΗΡΩΙ.

On the lintel of the door leading to the vault—

ΕΙΝΡΙΧΟΝΚΕΥΘΩΣΛΙΕΜΑΝΝΟΝΟΥΜΕ-
ΓΑΚΛΕΟΣΤΟΝΣΕΜΙΜΕΙΣΘΑΙΧΡΗΠΟΛΛ
ΑΠΟΝΕΥΝΤΑΒΡΟΤΟΙΣ.

The whole work was executed in one year, under the direction of the architect.

CARDIFF POST OFFICE.

THIS new building is being erected at the angle of Westgate and Park-streets, having frontages respectively of 215ft. and 138ft., and is to contain accommodation for both postal and telegraph work. In the basement will be stores; on the ground, public office 50ft. by 46ft., with offices for the postmaster and his staff, delivery rooms for the telegraph, and a sorting-office, having an area of 9,600 superficial feet. There will also be large cart-yard, engine and boiler rooms, and space for extension of the buildings. The mezzanine will be occupied by rooms for caretaker and women. On the first floor there will be accommodation for the engineer, cloakrooms for the staff, with dining-rooms, kitchen, &c.; and the second floor will be occupied by the instrument room, and the battery room will be placed in the roof. The building will be faced with Portland stone, with brown Shap granite architraves to the street entrance, grey Aberdeen columns to the principal entrance, and Bessbrook granite columns to the first-floor coupled windows. The roofs, which are constructed of steel, will be covered towards the streets with Tilberthwaite green slates. The entrance doors and fittings of the public office will be constructed of teak. The building will be of fireproof construction throughout, with oak or other wood-block flooring; hydrants will be provided in each floor, and the lighting will be by electricity. The architect is Mr. Henry Tanner, F.R.I.B.A., and the builders are Messrs. Turner and Sons, of Cardiff.

THE OLD RATH-HAUS, SCHWALENBERG, LIPPE-DETMOND, GERMANY.

THIS exceedingly picturesque and admirable specimen of 16th-century timber-framed building in Germany is not only exceptionally rich and refined in its detail, but it is unusually interesting on account of the arcaded treatment of the ground-floor story of its façade, giving the building somewhat of the character of an old market-house. Whether this arcade was originally intended to be open to the street is not quite clear, but probably it was built as it stands. The Rath-haus occupies a site in the middle of the ancient town, and is surrounded by similar quaint old half-timber buildings, though none are so rich, of course, in carved ornamentation. The date of 1579 figures in more than one place on the front, and the panel over against the entrance contains a representation of Justice holding the balance. Various inscriptions give enhanced interest to the horizontal timberings, and in a thoroughly characteristic fashion the carved elaborations extend through the joint lines of the construction, no serious attempt being maintained to observe the restrictions indicated by the framings and interspaces. The panels of the principal gable are finished off in plaster, thus giving increased value to the florid work on the smaller gable and lower stages of the structure, which, as a whole, gains breadth and quaintness by the uninterrupted series of windows along the main story. The spirit of Mediævalism pervades the whole design, which, in many ways, is eminently suggestive for modern use, though, of course, the difficulty of a low pitch to the stories, and vast roofing spaces over them, are very real to the architect when dealing with anything like a literal adaptation of the dominating lines of old half-timber buildings to the requirements of contemporary customs and conditions as to cost. We are indebted to Mr. Ernst Wasmuth for our illustration, which is taken from the admirable folio published by him in Berlin, under the title of "Denkmäler Deutscher Renaissance," with notes by Mr. K. E. O. Fritsch.

OFFICES OF THE SCOTTISH TEMPERANCE LEAGUE, GLASGOW.

THESE buildings are now completed on a capital site in Hope-street, Glasgow, from the designs of the architects, Messrs. James Salmon and Son. The walling is throughout of Dumfriesshire red stone, and the roofs are covered with Ruabon red tiles. The builders are Messrs. Shaw and Campbell, and the sculptor is Mr. R. Ferris. The drawing which we reproduce was exhibited by Mr. W. Forrest Salmon, the architect, in this year's Royal Scottish Academy Exhibition.

STALLEN FARM, COMPTON, SHERBORNE.

THIS farm-house is on the estate of Mr. J. R. P. Goodden, near Sherborne. The aspect and position of existing farm buildings largely controlled the arrangement of the plan. The stone used for the walling is from the quarries on the estate, and Ham Hill stone is worked for the windows, doors, strings, and chimneys. Broseley tiles cover the roofs, and oak timber grown on the land is used for the half-timberwork. Mr. Evelyn Hellicar is the architect.

LINCOLN CATHEDRAL FROM THE CASTLE.

THIS view is taken from a small round turret situated in the south-east angle of the castle. The prospect from this point is of the most charming description, as the spectator gets practically a bird's-eye view of the whole of this quaint city. In front of the cathedral we see the Exchequer Gate lying across the road; this is of Late Early English date, with later insertions. It is unfortunately placed, as it screens the west front of the cathedral, therefore making it impossible to obtain more than a very acute view of the whole. To the left of the cathedral can be seen the library built by Sir Christopher Wren in the cloisters; and to the right, amongst the trees, are the ruins of the bishop's palace. In the west front of the cathedral almost every period of English architecture is represented, from Early Norman to Perpendicular.

CHAS. H. HOLDEN.

THE PROPOSED OSTEND AQUARIUM.

(SEE description and illustration of the selected design on pp. 384-385.)

BUSINESS PREMISES, KINGSLAND.

THESE new business premises at Kingsland are from the designs of Mr. C. V. Johnson, architect.

CHIPS.

The Lord Mayor has consented to lay the foundation stone of the new Caxton Convalescent Home at Limpsfield, Surrey, on Saturday, 8th prox. Mr. J. Passmore Edwards, the president, who will accompany the Lord Mayor, has generously given the building.

The Dewsbury Town Council on Friday appointed Mr. J. B. Mitchell, of Bradford, electrical engineer, at a salary of £180 per annum. There were sixty applications.

The Willington local board of health has instructed Mr. D. Balfour, M.Inst.C.E., of Newcastle, to inspect the district and prepare a scheme of sewage disposal to prevent the pollution of the River Wear, under notice from the County Council.

The water and sewers committee of the Swansea Corporation have been engaged during the past week in preparing the case of the corporation in the arbitration over the Upper Lliw Waterworks, where the contractors claim £67,000 as extras. The arbitration was opened in London yesterday (Thursday).

The first cargo by the Manchester Ship Canal to Barton was deposited on Friday at the wharf erected for the Eccles Corporation, and consisted of 150 tons of granite setts from Newry.

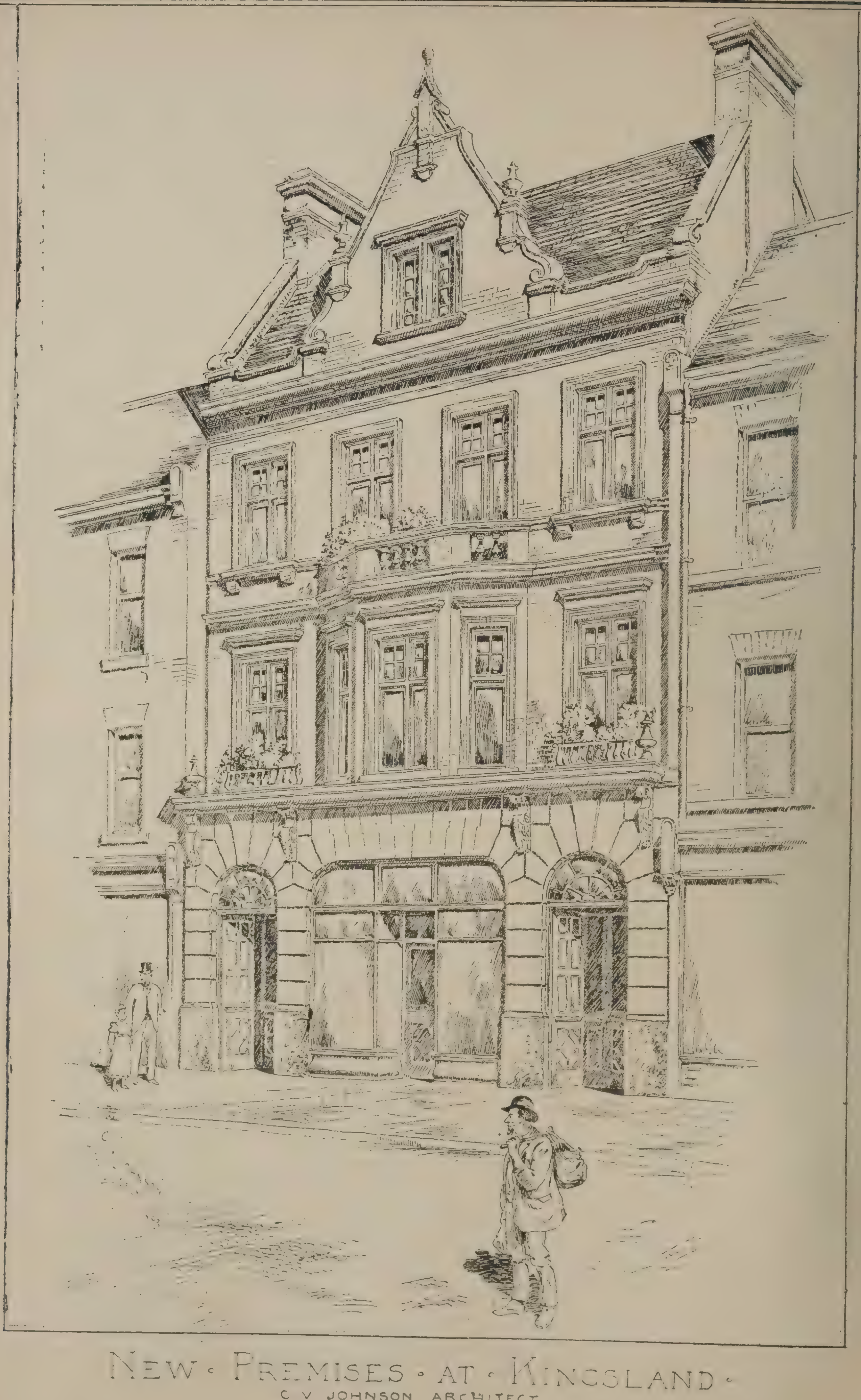
The rural sanitary authority of Tiverton have adopted a scheme prepared by Messrs. Siddells and Barrons for the sewerage of the village of Uffculme at an estimated cost of £1,350.

The Princess Louise will visit the Potteries on October 15th for the purpose of inaugurating the important additions that have been made to the Free Library and Technical Schools at Burslem, which were undertaken as the local celebration of the Queen's Jubilee.

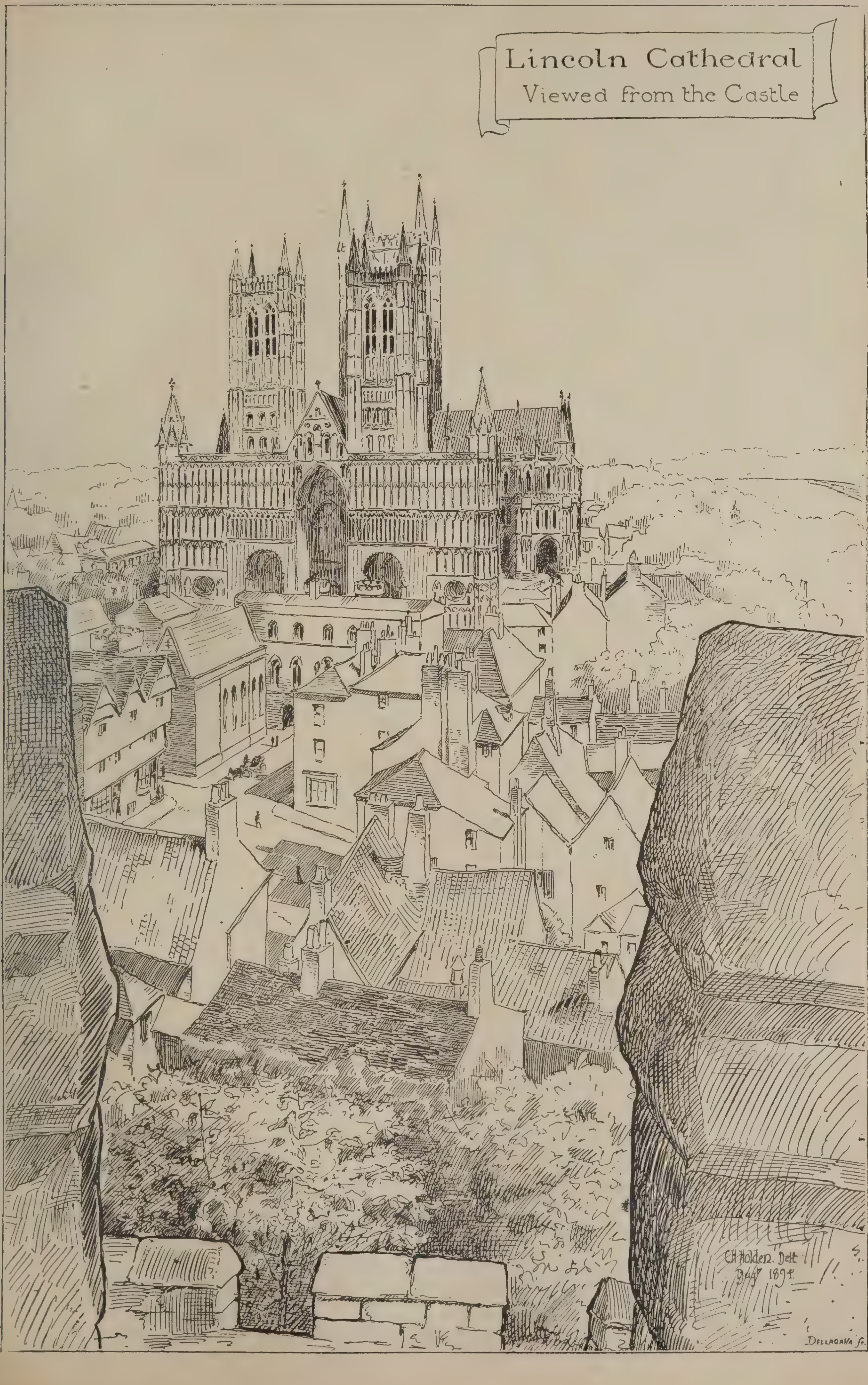
The front hall and staircase at Hawarden Castle have just been redecorated for Mr. Gladstone by Mr. Glyn Edwards, by whom the neighbouring church of Penymynydd was restored last year.

The Taunton Town Council have decided to apply for a further loan of £300, for laying out the park (making a total of £6,000 spent in this direction), and for £5,000 for extending the electric-light undertaking and establishing two sub-stations.

A cricket park, six acres in extent, has just been presented to the burgh of Arbroath by the owner of Lochlands, the town clerk of Arbroath.



NEW · PREMISES · AT · KINGSLAND ·
C V JOHNSON ARCHITECT


Lincoln Cathedral
Viewed from the Castle
C.H. Holden. Delt
Augt 1894.
Dellagana Sc.

WAYSIDE NOTES.

FROM the "house list" nominations just issued by the Society of Architects, I see that Mr. Edwin J. Hamilton, of Brighton, who has served the society on the council and as vice-president, will be the new president in succession to Mr. George Highton, who has proved an excellent and energetic chairman. Mr. George Baines is again nominated to serve as vice-president, with Mr. Ernest Day, J.P., of Worcester; and the suggested names for the council are Messrs. William Allport, C. A. Bassett-Smith, Robert Cruwys,* J. W. Fraser,* H. J. Jones,* Robert Keith,* G. A. T. Middleton, A. Stoner, George Thomas,* Edward Tidman,* and Silvanus Trevail,* an asterisk denoting fresh blood. Mr. Ellis Marsland will be again asked to serve as hon. secretary—no better choice could be made—and Major F. Seymour Leslie, R.E., will take Mr. C. E. Gritton's place as hon. corresponding secretary. Mr. H. G. Quartermain becomes treasurer in succession to Mr. E. Tidman, and Mr. S. C. Johns hon. auditor. Additional nominations for council and officers may be made by any three members, who must send in their nomination, properly signed, to the council before Monday week, the 1st October.

A circular has been issued by the committee recently formed to resist the Bath Tax which the Water Company in Lambeth is attempting to extort from its customers, pointing out to the inhabitants the necessity of subscribing to the fund which has been formed in order to test thoroughly the legality of the extortion. As the Law Courts have decided that the vestries may not devote money to the protection of the ratepayers, the ratepayers must protect themselves. At all events, if they refuse to contribute a small sum to have the question thoroughly decided—for up to the present that has not been done—they must make up their minds to pay not only the ten shillings which the company at present demands, but to be skinned in the near future. The appetite of a monopoly always grows by what it feeds on, and we fully expect to see the London water companies charging a shilling a pint one of these days for the fluid ladled out to their customers, if Parliament or the L.C.C. does not intervene.

The conference upon hardy trees and shrubs, which is to be held in Chiswick Gardens on Tuesday, under the auspices of the Royal Horticultural Society, should prove of value. It is specially wished that specimens in the shape of branches of trees and shrubs not generally known, and remarkable either for their economic value, ornamental aspect, or both, should be well in evidence, the desire being to direct greater attention to the ornament and utility of the trees and shrubs which are to be found growing in the British Isles, and of which many are claimed to have been introduced by the Royal Horticultural Society's collectors. Landscape gardeners and architects are alike interested in this matter.

The almost constant movement of the foundations of the salt district of Northwich was during last week of a most pronounced character, and as a result a startling collapse has occurred in Leicester-street, one of the principal thoroughfares of the town. In the small hours of the morning the gable, back walls, and ceilings of three cottages suddenly fell in with a crash, and the block will require rebuilding. Happily, the tenants were warned the night before, and quitted. On Saturday a serious landslip took place at Lostock, close to Northwich, on the premises of Messrs. Bowman, Thompson, and Co., Limited. One of their three brine-pumping stations entirely collapsed, an enormous body of earth, together with a valuable pumping engine and a quantity of materials, disappearing in a chasm 40ft. in diameter and some 20ft. deep. The occurrence had been anticipated to some extent, and in this case again the loss is confined to property.

Barbarism is as evident in the South American Catholic Churches as in the shrines of the misshapen idols of Hindooism. The weight of the solid silver altar railings in the Church of Our Lady of Guadeloupe, Mexico, is twenty-one tons. A new canopy has just been erected over the high altar, supported by monolithic columns of Scotch granite 20ft. high and 3ft. in diameter. The altar will be ready for dedication in December; but the ornamentation of the church will not be completed for about two years. It is described by a St. Louis newspaper as "palatial," and will undoubtedly be about the most remarkable specimen in the world of misapplied wealth and coarse, barbaric Hispano-American taste.

Professor John Goodman, the head of the Engineering Department of the Yorkshire College at Leeds, in a letter in the *Leeds Mercury*, exposes the common fallacy that stone stairs are safer in cases of outburst of fire than those of wood. As he says, experience shows that stone is often the first material to fail in a structure in the case of fire. As soon as the fire begins to play upon the thin slabs of stone, such as are used for stairs, they crack, and down they come with a crash. At the recent great fire under the Dark Arches at Leeds, it was noticeable that the stone facings had all crumbled away and perished, whereas the surrounding brickwork was but little damaged. Professor Goodman's opinion is that iron or steel stairs, encased with coke breeze or broken-brick concrete, make by far the safest staircase in the case of fire. Strange as it may seem, wood is not infrequently used for protecting iron and steel against the action of fire, and with excellent results.

The suggestions that have been made at various times to open the tumulus on Parliament Hill (the traditional burying-place of Queen Boadicea), to find out what it really contains, may shortly be acted on, as I hear that a committee of the London County Council has been appointed to consider the subject early next month. Archæologists will follow the result of the committee's deliberations with interest. Whether the "British Warrior Queen" lies still in the heights that have been secured for ever as London's northern playground or not, there is little doubt that something of interest will reward the explorers.

The foundation-stone of Embo Pier, near Dunrobin, N.B., was laid by the Duchess of Sutherland on Tuesday. The pier is to be constructed from designs by Mr. Barrow, C.E.

A new Baptist church, known as the Spurgeon Memorial Temple, was opened in Hone-street, South Leith, on Tuesday. The building has cost £2,500. The church is seated for 500, and above it—in the upper part of the building—house accommodation is found for the pastor.

At St. Peter's Church, Draycott, on Tuesday, the dedication took place, by Bishop Bromby, of a chancel screen, given by Miss à Court Beadon, in memory of her father, the late Rev. Richard à Court Beadon, Prebendary of Wells, and vicar of Cheddar. The screen, which was designed by Mr. G. H. Fellowes Prynne, and manufactured by Messrs. Singer, of Frome, is of wrought iron, and is supported on dwarf walls of Pennant stone.

For the vacancy on the Court of Common Council for Bishopsgate Ward, caused by the death of Mr. J. Hammack, architect, there were nominated, on Wednesday, Mr. Albert Edward Pridmore, M.S.A., of Broad-street Buildings, architect, citizen, and freeman, and Mr. W. B. Whittingham, of Bishopsgate-street Within, stationer and printer. Mr. Alderman Davies, who presided, declared the show of hands to be in favour of Mr. Pridmore, whereupon a poll was demanded. A vote of condolence with the family of Mr. Hammack was passed.

The ancient preaching-cross in the High-street of Leighton Buzzard, which has been in undisputed possession of the inhabitants for 500 years, which was restored in 1620 by a levy upon the whole population, and in 1852 by public subscription, has been claimed by the lord of the manor (Sir W. Hammer) who owns the Town-hall close by. Despite the protests of the local Public Lands Trustees, the ancient structure is to be offered for sale by auction, as part and parcel of the Stockgrove estate. The cross is a pentagonal Gothic structure, supposed to have been erected in the reign of Edward III.

Among the Bills which the London County Council propose to introduce to Parliament next session will be one authorising the reconstruction of Vauxhall Bridge. Lambeth Bridge will not be similarly dealt with at the same time, but at no very distant date that will also have to be rebuilt, and the proposal is to put up a temporary wooden bridge across the river, to serve first for the Vauxhall traffic and afterwards for that at Lambeth. This temporary structure will be carried across the river just in front of the National British Gallery which Mr. Tate is building on the site of the old Millbank Penitentiary, and will be about midway between the two existing bridges.

OBITUARY.

Mr. Robert Hutchinson, F.R.I.B.A., of Huntingdon and St. Ives, died on Tuesday, the 11th inst., at his residence in the former town, aged 66 years. He was a pupil of the late C. J. Richardson, and carried out a large number of works in the Fen districts, including laying out the cemeteries and designing the buildings therein at Huntingdon, Ramsey, and Whittlesea, the Militia Barracks and George Hotel at Huntingdon; additions to Hinchinbrook House, the seat of the Duke of Manchester; and many works of church restoration. Mr. Hutchinson, who had held the appointments of county surveyor for Hunts and borough surveyor of Huntingdon, joined the Institute of Architects as a Fellow half a dozen years ago.

Mr. James Rawlence, F.S.I., of Bulbridge House, Wilton, the founder and head of the firm of land agents and surveyors Rawlence and Squarey, of Salisbury and London, died, from acute bronchitis, on Saturday, in his 85th year. Mr. Rawlence, who was widely known for his Hampshire Down sheep, was a member of the council of the Royal Agricultural Society, and had been a Fellow of the Surveyors' Institution since February, 1870.

Mr. A. B. Cross, one of the oldest architects in the Western States, died a fortnight ago in Kansas City. Mr. Cross was born in New Jersey, but settled in St. Louis nearly fifty years ago, and was for a time associated with Mr. Thomas Walsh. Afterwards he went to St. Paul, but soon returned to Missouri, and, after a short stay in St. Louis, moved to Kansas City. Here he had lived for thirty-six years, during which the town had grown from an insignificant settlement to a great city. He was much employed on important work, and was for many years conspicuous in the profession in the West.

CHIPS.

The memorial stones were laid at Stocksfield on Saturday of a new Wesleyan chapel, now in course of erection from plans by Mr. T. Leslie Anderson, M.S.A., Newcastle-on-Tyne.

Mr. G. C. Benn, who two months ago offered to defray the entire cost—estimated at £2,000—of the erection of new schools in St. Andrew's, Rugby, has offered another gift to the town. A number of years ago the parish church was restored; but the spire, which it was originally intended to erect, was not added, and now Mr. Benn has undertaken the cost of completing the chrch with tower, spire, and vestries. The cost will not be short of £10,000.

The Archbishop of York will open the new and extended buildings of the High School for Girls at Hull on Thursday next, the 27th inst.

There was landed on the quay at the Coburg Dock, Liverpool, on Tuesday, a very fine log of mahogany, which has been sent from West Africa as a present for the Prince of Wales. The log, which is about 40ft. long and about 3½ft. in diameter, was shipped for Liverpool at Axim, on the Gold Coast, the shipper being described in the bill of lading as Prince Kueku Edukuma, and the log is a gift to the Prince of Wales. What will he do with it?

The addition to the Chapel Royal, Whitehall, erected from the designs of Messrs. Ingress Bell and Aston Webb, is now structurally complete, and is receiving the curious and closely-packed collection of the United Service Institution, for which it will serve as a museum, as well as providing a technical and general library, a lecture theatre, smoking-room, reading-room, and buffet.

At Manchester Town Hall, on Tuesday, Mr. Rienzi Walton, C.E., held an inquiry touching the application of the city council for sanction to borrow £9,000 for market purposes, and £5,000 for the purchase of land in Mount-street, Red Bank, and the erection thereon of public baths.

It is reported that some Baltimore (U.S.) capitalists have purchased the Eiffel Tower. It is to be removed, and re-erected at Baltimore for the centennial celebration of that city, which is to take place in 1897.

During the progress of the restoration of St. Mawgan-in-Meneage Church, a building chiefly of 15th century date, part of a 13th century lancet window has been found cased up in the south chancel wall. Mr. E. Sedding, the architect, has decided to restore it. A 15th century window in the east wall on the south transept was found bricked up, with a hole left in the middle to take the smoke from a fireplace, belonging to a modern vestry, built against this transept. A stoup of Early 13th century character has also been opened out in the porch.

COMPETITIONS.

Babington, Cheshire.—In a limited competition for proposed Wesleyan church and schools, the plans of Mr. T. Taliesin Rees, A.R.I.B.A., architect, of Birkenhead, were selected, and the carrying out of the work intrusted to him. The style of the buildings is Late Gothic. The materials are of red pressed bricks, with white local stone dressings and tracery. It is the intention of the committee at present only to erect the school-chapel, which contains seating accommodation for 250 adults, minister's vestry, two classrooms, kitchen, w.c.'s, lavatory, &c. The future church has been arranged to seat 600 adults, with church-parlour, vestries, organ-chamber, &c.

Llandudno.—At the last meeting of the Improvement Commissioners, a committee reported that Mr. T. M. Lockwood, F.R.I.B.A., Chester, the assessor, had minutely examined the thirty-three designs submitted in competition for new municipal buildings, and in making his award he had carefully studied convenience and economic arrangement, extent of accommodation, successful treatment as to light, sanitary arrangement, and general adaptability to the municipal requirements, also comparative cost combined with artistic merit, and after taking all these matters into consideration he had selected two. He expressed his opinion that the sum of £10,000, placed at the disposal of the competitors, was not adequate to the accommodation asked for, if the arrangements were to be such as are general in good municipal buildings, and this difficulty had become accentuated by the fact that the particulars governing the competition did not show that the land upon which the buildings would be erected (now used as garden land) is some 2ft. below the level of the adjoining roadway. The surveyor was directed to examine the two sets of plans above mentioned, and to report to the committee thereon, and that the names of the competitors be not disclosed until the board have dealt with the award of Mr. Lockwood — Mr. Caraher protested against the plans selected by Mr. Lockwood being examined by the engineer, who was not an architect.—The Chairman pointed out that Mr. Lockwood was merely asked to recommend one or two of the plans, the final selection resting with the commissioners. The engineer was prepared with his report, which he suggested should be read to avoid further delay in making the award, as the competitors were complaining.—The engineer (Mr. Stevenson) read his report on the two designs, which placed the cost of the first selected by the assessor at £10,800, and of the second, which was not equal to the first as regarded local requirements, although a good plan, at £10,570. He strongly supported the selection made by Mr. Lockwood. —Mr. Caraher considered that both designs were out of court, as the sum of £10,000 had been exceeded.—The engineer said that the author of the first design estimated its cost at £9,939 10s., and that of the second was set down at £10,050. Some of the plans which had been sent in for competition could not, he was sure, be executed for £15,000. The proposal for adopting the assessor's report was agreed to, eight out of the seventeen commissioners not voting. The winner of the first premium of £50 proved to be Mr. T. B. Silcock, A.R.I.B.I., Octagon Chambers, Bath, and of the second Mr. John H. Curry, A.R.I.B.A., Sutton, Surrey.

Woolston and Itchen Ferry.—The South Stoneham rural sanitary authority received at their last meeting a report from the joint committee intrusted with the subject of the drainage of Woolston and Itchen Ferry, near Southampton. It stated that twelve schemes had been sent in, and of these Mr. James Mansergh, M.Inst.C.E., who was called in to advise them, had selected two—"Health with Economy" and "A. Z." These were reserved for further consideration by Mr. Mansergh, whose report to the committee detailed the merits and demerits of each of the twelve schemes. "Health with Economy" proposed a small pumping area, the sewage to be lifted by gas power, and the whole to be treated in precipitation tanks. After the tank effluent had passed through polarite filters the final effluent was to be turned into the gravel near Jurd's Lake, the sludge being pressed into cakes. "A. Z." proposed an outfall 100 yards north of Jurd's Lake, and gravitated the sewage of nearly the whole of both districts there, the sewage to be pumped from the low level at Itchen into the gravitation sewers by gas power, the whole to be treated chemically, the sludge pressed into cake, and the effluent turned into that part of the stream from Jurd's Lake which crossed the foreshore. The cost of the scheme by "Health with Economy" was estimated at £12,312, and that of "A. Z." £12,676. Mr. Mansergh stated that the two schemes were almost identical, but he recommended the committee to accept the scheme "A. Z.," as amended by the author since he had communicated with him, as he believed it would have the best chance of success with the Local Government Board. The committee recommended that the report of Mr. Mansergh be adopted, subjected to the confirmation of the Local Government Board. The report was adopted, and on breaking the seals it was found that the author of "A. Z." was Mr. F. Wentwood Shields, of Brentwood House, Sholing, Herts, and that of "Health with Economy," Mr. H. J. Weston, M.Inst.C.E., of Southampton.

CHIPS.

The town hall of Verdun, France, containing many valuable works of art, has been destroyed by fire. The museum, situated in a wing of the building, was almost completely burned out, but the records were saved.

On Tuesday week, at the offices of the local board, Kingston, Mr. T. Codrington attended and held an inquiry as to the board's application to the Local Government Board for sanction to borrow £650 for the purpose of relaying and enlarging the water-mains in the town.

A marble bust representing the late Mr. J. R. Pine-Coffin (1842-90), of Portledge, near Bideford, has been placed on a granite pedestal and fixed in the garden at the south-east corner at the end of the Bideford Bridge, immediately on entering the town. The bust has been executed in Sicilian marble by Mr. F. J. Williamson, of Esher. The pedestal was made by Mr. Baker, of Bideford. The unveiling ceremony was performed on Wednesday week by the Lord Lieutenant of Devonshire, Lord Clinton.

"Old Antwerp," which is one of the great successes of the present Antwerp Exhibition, is to be permanently rebuilt in brick and stone between the old Palais de l'Industrie and the Southern Railway Station. The necessary capital of £120,000 has been subscribed, a concession for sixty years has been secured, and 160 buildings, large and small, are to be erected, chiefly after the plans of M. Eugène Geefs, the architect of the present "Old Antwerp." The existing Palais des Fêtes, which will be included, will be turned into a Civic Historical Museum.

The partnership heretofore subsisting between R. Dickinson and A. S. Paterson, architects and surveyors, John-street, Adelphi, W.C., under the style of Dickinson and Paterson, has been dissolved.

The directors of the West Highland Railway Company have resolved to deposit a Bill in Parliament next session for the extension of the West Highland line to Inverness.

The Board of Trade return for September states that, on the whole, a slight improvement is observable in most branches of the building trades, though, as a rule, the painters and plumbers are still moderate. The percentage of unemployed in unions connected with these trades has fallen from 3·6 to 3·4. The furnishing and woodworking trades remain moderate in most branches, the percentage of unemployed in unions making returns having risen from 4·4 to 4·8. Only twelve disputes are reported to have occurred in the building trades during the past month.

The monument erected in St. Stephen's Cathedral, to commemorate the raising of the Siege of Vienna by John Sobieski, the King of Poland, in 1683, was inaugurated on Friday in presence of the Emperor Francis Joseph.

Major-General Phipps Dacre, Local Government Board inspector, held an inquiry at Southport on Thursday in last week, in regard to an application by the Southport Corporation for power to borrow £2,900, for the laying out of a new recreation ground and other purposes. The town clerk explained that the recreation grounds were to be established at the Duke and Crowlands end of the town. The population of the borough was 45,000. No opposition was offered to the application.

Memorial stones were laid on the 13th inst. in the new Sunday-schools being built for Albany Primitive Methodist Chapel, Shaftesbury-avenue, Bristol. The buildings will comprise a schoolroom 45ft. by 30ft., capable of seating 250 adults or 300 children in classes, an infant school, 20ft. by 15ft., and several classrooms, some of which can be thrown into the large room by the removal of partitions. The total cost of the structure, for which Mr. J. H. La Trobe, F.R.I.B.A., of 20, Clare-street, Bristol, is architect, will be about £1,000.

Engineering Notes.

The Proposed Manchester, Newcastle, and Glasgow Railway.—A meeting of the provisional committee in connection with the proposed railway from Manchester to Glasgow *viâ* Newcastle and Hawick was held at Carlisle on Friday. There was a very full attendance, and after a prolonged discussion it was decided to instruct the engineers in chief to go over the proposed route, starting on Monday. Immediately on their reports being received the surveyors will be started, and the deposits lodged with the Parliamentary agents by the 30th of November. It was agreed to increase the preliminary expenses fund, in order that the bill for the entire line may be prepared. The engineers who are inspecting over the route this week are Sir George Barclay Bruce, Sir Douglas Fox, Mr. Robert Elliot Cooper, Messrs. James Livesley and Son, London, and Mr. Charles Forman, Glasgow.

Cessnock Docks, Glasgow.—About three-fourths of the works in connection with the new docks at Cessnock, for the Clyde Trustees, have now been completed. The undertaking, which has been four years in progress, comprises the formation of four basins and a new graving dock, which latter, when finished, will be the largest in the world. The total area occupied by the docks is about seventy-five acres; thirty-five acres being taken up by water space and forty acres by quayage and dry dock. Of the four basins—one an outer canting basin 1,100ft. long, and three inner basins, each 1,200ft. long—the north basin of the latter group, the one nearest the river, has been complete for about ten months. The centre basin will have its quayage complete in about a month's time, and four months subsequently the basin will be dredged out and ready for the reception of shipping. In this way 9,000ft. of additional quayage accommodation will be available at the harbour of Glasgow. The quay wall forming the west boundary of the group of basins is now also complete, and sheds are being erected upon it, as well as the foundations for the Trust's new 130-ton crane recently ordered from Messrs. Cowans, Sheldon, and Co., of Carlisle. The remaining, or south, basin has also been begun, and will be finished in about two years. In the completed north basin there is a depth at low water of 20ft., and at high water of 31ft. The centre and south basins are to have a low-water depth of 25ft. and a high-water depth of 36ft. In the outer or canting basin, through which approach is had to the several other basins, the depth is to be 28ft. at low water and 39ft. at high water. The several quay walls, which are constructed on the concrete cylinder principle, are founded in sand mostly at a depth of from 55ft. to 58ft. below the cope level. On the top of the concrete cylinders is a superstructure of granite, 20ft. in height, faced with concrete and granolithic. The contract for the hydraulic machinery has been taken by Messrs. Fullarton, Hodgert, and Barclay, of Paisley. Work at the docks has been kept going night and day, the number of men employed being about 600. Since the beginning of operations two and a-half millions of cubic yards of earth have been dug out, and some three million cubic yards more will have to be dug and removed ere the works are complete. The new graving dock is to have a total length of 900ft., a width at the entrance of 83ft., and a depth of water on the sill at high water in spring tides of 27ft. The body of the dock will be 115ft. wide at top, 74ft. wide at bottom, and have a depth of 28ft. The length of dock will be 880ft. The two present graving docks are only 560ft. and 575ft. in length respectively, and 72ft. and 65ft. across the entrance, with a depth of water of 23ft. The total cost to the Clyde Trustees of the Cessnock Docks works is expected to amount to £1,250,000. The works are being carried out by the Clyde Trustees' own workmen, under the direction of Mr. James Deas, civil engineer to the Trust, and his assistant, Mr. A. Hamilton.

The Sheffield and London Railway.—The contracts for the construction of the new railway which is to connect the Manchester, Sheffield, and Lincolnshire system, from a point a few miles south of Sheffield, with the Metropolis have now been let, and the work on the whole length will be immediately started and hurried forward. There were in all six contracts for the 92 miles of railway, and a seventh comprised the works within London. No. 1 contract commences with the existing Sheffield Railway at Annesley, and terminates a little south of East Leake, extending for about eighteen miles, and passing through the town of Nottingham, where the railway will be in tunnel through rock. This length has been let to Messrs. Logan and Hemingway, Sheffield. The next 15 miles, comprised in No. 2 contract, begins at East Leake, and passing through Loughborough and Leicester, where there are heavy works, terminates at Ayleston, a few miles to the south of the latter town. This part is to be constructed by Mr. H. Lovatt, Wolverhampton. The third contract, undertaken by Messrs. Topham, Jones, and Railton, Great George-street, S.W., carries the line 19 miles further south from Ayleston, through Lutterworth, to within a short distance of Rugby. These three contracts, extending to about fifty-two miles, will be under the direct control of Mr. Edward Parry, M.Inst.C.E., Nottingham, while Sir Douglas Fox himself and Mr. Francis Fox will personally direct the works on the remaining 40 miles to Quainton-road, as well as the works within the Metropolis. From Rugby to Charwelton, a distance of about fifteen miles, the line will be constructed by Mr. Thomas Oliver, Totley, near Sheffield. On this length there is at Catesby a tunnel about 3,000 yards long, while at Rugby there is a large viaduct over the main line of the London and North-Western Railway. The two contracts comprising the work between Charwelton and Quainton-road on the Aylesbury and Buckingham line of the Metropolitan system —a distance of about twenty-five miles—are to be carried out by Mr. J. T. Firbank, of London Bridge. The terminus in London is to be in Marylebone-road, and a connection from the Metropolitan system is to be carried through St. John's Wood and Lord's Ground, the length being about four and a half miles, which is entirely in tunnel or cut and cover, costing about £550,000. The contract for this length, including the terminal station and hotel, is about to be let, and this difficult part of the work will at once be proceeded with at various points. It comprises also a heavy bridge over the Regent's Canal.

Surrey Commercial Docks.—Important improvements are about to be made to these docks to fit them for modern requirements, the ultimate cost of the entire scheme being estimated at £220,000. The canal lock of the Surrey Company, which was built in the early part of the century, will have to be reconstructed, owing to the altered character of the vessels using the docks. In former years the timber trade—for which the docks on the south side have always been the home in the Port of London—was carried on exclusively in sailing ships, and it was not until 1872 that steamers were employed in the trade. Since that year the tonnage of vessels entering the Surrey Docks laden with wood has increased from 2½ per cent. to about 75 per cent. of the total tonnage. The works now contemplated include the reconstruction of the Greenland Lock (formed in 1808) with a wider outlet to the Thames, and the making of a new canal lock to complete the junction of the two systems commenced by the construction of the Canada Dock. In July last the Royal assent was obtained to a Bill which sanctions these works and empowers the directors to raise further capital to cover the estimated outlay. It is proposed to carry out the improvement in sections, the new canal lock being the first to be undertaken. Plans have been prepared by Mr. J. A. M'Connochie, the company's engineer, and the contract, which will involve an expenditure of between £50,000 and £60,000, will be forthwith entered upon.

The members of the Hampshire Field Club made their last excursion for the season on Friday, the 14th inst., when the Roman city of Silchester was visited, and also Bramley Church, which contains some interesting mural paintings.

The local board of Whitworth, near Rochdale, are about to carry out extensive works of sewerage, from plans by Messrs. Hinnell and Murphy, of Bolton, including the construction of an intercepting sewer from Tonnacliffe to Shawforth, and main and branch sewers in Whitworth, Facit, and Shawforth.

At a meeting of the Willington local board of health, Mr. J. Allison presiding, it was agreed to ask Mr. D. Balfour, M.Inst.C.E., of Newcastle-on-Tyne, to inspect the district, and prepare a scheme of sewage disposal to prevent the pollution of the river Wear, under notice from the county council.

Building Intelligence.

Bamber Bridge, Preston.—On Saturday afternoon Dr. Moorhouse, the Bishop of Manchester, laid the foundation-stone of the church of St. Aidan, Bamber Bridge, to be erected at an estimated cost of £5,000. The building, which was illustrated by plan, section, elevation, and perspective in the Building News for Feb. 23 of this year, is being built from designs by Mr. R. Knill Freeman, of Bolton and Manchester, selected in competition. The style is Late Decorated, and at present the east end, transepts, and first three bays of the nave will be built. The walling is of Yorkshire stone parponts, with designs of red Rainhill stone, and the roof will be covered with green tiles. The internal walls of chancel will be plastered, while in the other portions of the church red brick will be used for facings.

Bury, Lancs.—The technical school which has been built by the Bury Corporation between Broad-street and Moss-lane was opened by Earl Derby on Saturday. The building occupies an area of 1,830sq.yds., and adjoins the proposed art gallery and library. The treatment is Classic, with Renaissance ornamentation, and the main façade is of dressed Cullingworth stone, the side fronts being of red pressed bricks from Accrington, with stone strings and dressings, and the roofs are covered with Westmoreland slates. Over the windows in the principal façade are four stone panels of large dimensions, filled with sculpture in bold relief, representing various manufactures, the arts and sciences, history, painting, geography, shipbuilding, and different industries. In the centre of the building at the rear is a campanile shaft 100ft. in height. In the basement are the physical laboratory, science lecture theatre, dye stuffs and plumbing classrooms, and the gas-engine and dynamo rooms. On the ground floor are the chemical lecture theatre, the largest room in the building, cookery lecture theatre and kitchen, mechanics' and carpenters' instruction room and textile instruction room, women's lecture hall, and committee-room. On the first floor are the art classrooms, 74ft. by 24ft., and three other classrooms, and over these are another art classroom, 46ft. by 23ft., and a modelling room. On the main staircase is a Lancashire window of thirty large lights filled with coats-of-arms and badges of families connected with the county. Mr. J. Cartwright, C.E., the borough engineer, has designed and planned the buildings, &c. The various works have been let under separate contracts. The bulk of the work has been executed by Bury contractors. Appended is a list of the chief contractors:—Brickwork, Mr. Cammack Dennis, Bury; stonework, Mr. F. Nuttall, Whitefield; joinery and carpentry, the Bury Sawmill Company, Bury; plumber's work, Mr. R. Caton, Bury; plasterer's work, Mr. J. Ramsden, Bury. The other contractors are: Concretor, Mr. R. L. Lowe, Farnworth; electric lighting, Messrs. Heywood Bros., Manchester; gas-engine, Messrs. Andrews and Co., Stockport; wood block floors, the Wood Block Floor Company, London; fireplaces, urinals, lavatories, and faïence work, Messrs. Doulton and Co., London; ventilators, Messrs. J. H. Pickup and Co., Bury; mosaic floors, Messrs. Minton and Co., London; pavement lights, Messrs. Hyatt and Co., London; mica flap ventilators, Messrs. Hayward and Co., London; stained and painted glass, Messrs. Seward and Co., Lancaster; iron girders and roof, Messrs. J. Webb and Son, Bury; desks and seats, Mr. John Heywood, Manchester; ornamental staircase, the Coalbrookdale Co.; carving and sculpture, Mr. J. B. Whittick and Mr. J. J. Millson, Manchester. The excavations, &c., have been done by the corporation's own workmen. Mr. George E. Smirk was the clerk of works. Exclusive of cost of land and furnishing, the outlay has been £16,000.

Cheetham Hill, Manchester.—The memorial stones of a new Wesleyan church which is being built in the Wilton Polygon, facing Bury Old-road, Cheetham-hill, were laid on Saturday afternoon. The church—of which Messrs. William Waddington and Son, St. Ann's-square, Manchester, are the architects—is designed in the style of English Gothic which prevailed at the end of the 14th century. The main gable will be flanked by octagonal buttresses terminating in pinnacles, and the porch will also be in projection. The church is being built in stone, and will consist of a broad nave with lateral arcades, and there will be transepts to the north and south, and a spacious chancel, and a spire rising to the height of 150ft. Within the building will be included a minister's vestry, a choir vestry, two classrooms, a large lecture hall, and a church parlour. The church will seat about 900 people, and the total cost is estimated at £11,000. Messrs. R. Neill and Sons, of Salford, are the contractors.

Craighall, Perthshire.—Important structural alterations and additions have recently been made to Craighall Mansion, the seat of Lieut.-General Clerk-Rattray, C.B., from plans prepared by the late Mr. Andrew Heiton, of Perth. Hitherto the principal front of the house has been exceptionally plain, the chief façade being that overlooking the river Ericht. This has been remedied, as a massive battlemented tower has been added at the west end of the building, both back and front. Beneath this tower, and towards the centre, is the principal entrance, which is subdivided by two stone pillars. The lower part of the tower is built of red stone from Keithick Quarry, and the battlements at the top of a lighter red stone from Dumfries, the remainder being whinstone from Newburgh. The additions extend round to the back, and add in a striking manner to the appearance of the building, perched upon the top of a rock some 250ft. above the river Ericht. The increased accommodation afforded by the additions include, besides servants' rooms, a smoking-room and entrance hall. A new entrance to the stables and other improvements have also been effected. This is probably the fourth important addition or alteration made upon Old Craighall since the family removed there from Castlehill, Rattray, over 300 years ago.

Falkirk.—On Saturday the memorial stone of the new church at present being erected by the Falkirk Free Church congregation was laid. The church, which is being built in New Market-street, from plans prepared by Mr. James Strang, architect, Falkirk, is in the Gothic style, and will have a spire of about 130ft. in height. Accommodation is to be provided for 940 sitters. There will also be attached a hall 51ft. by 25ft., which will be seated to accommodate some 300 people. The session house will be 23ft. by 19ft., while the vestry will be 11ft. by 12ft. There will be two waiting rooms—one 19ft. by 14ft., the other 14ft. 6in. by 13ft.—which will also be suitable as classrooms. The estimated cost is £5,700.

Fenton, Staffs.—The chairman of the Stoke-on-Trent School Board recently opened a large block of new schools which have been erected at Heron Cross, Fenton. The site is an elevated one, situated on the Grove-road. The schools have been erected on the central hall plan, and at present accommodation is provided for 660 children; but five more classrooms can be added, giving further accommodation for 300 children. The central hall is 89ft. long and 44ft. 6in. wide, and is flanked on each side by three classrooms, whilst at one end four more classrooms are provided, each of the classrooms accommodating 60 scholars. Head teachers' rooms and cloakrooms are also provided. The buildings are of brick, relieved with stone dressings, with tile roofing. Inside, the ceilings and walls are plastered, the latter having also a tiled dado round them. The schools are heated on the high-pressure system, and are ventilated on the automatic system with Tobin tube inlets and Boyle's extractors. They are artificially lighted on the Stott system. The total cost has been about £6,300. The architects were Messrs. R. Scrivener and Sons, of Hanley, and the contractors Messrs. H. and R. Inskip, of Longton. The tiles for the dados were supplied by Messrs. Minton, Hollins, and Co. of Stoke, the heating apparatus by Messrs. Jackson and Sons, of Birmingham, and the general fittings by the Bennett Furnishing Company, Glasgow.

Leeds.—A new Wesleyan chapel to be known as Trinity, in Roundhay-road, Leeds, was formally opened on Saturday. The structure, including the site, has cost £8,320; it is faced with pressed bricks, and is in the Italian style. Mr. G. F. Danby, of Leeds, is the architect, and he has also superintended the execution of the work. The church, 80ft. by 56ft. and 38ft. high, accommodates 900 persons. The vestibule is 31ft. long and 8ft. wide. The centre seats are straight, those at the sides circular, while the choir-stalls are on either side of the pulpit. The chancel is separated from the rest of the chapel by a moulded and carved stone arch, supported by granite columns, with carved caps and bases. The minister's vestry, a church parlour, and a ladies' workroom, are to be built hereafter between the school and the chapel. The contractors were Mr. Thos. Hannam, builder; Mr. Joseph James, joiner; Messrs. Lazenby and Co., plumbers; Mr. T. Moore, plasterer; and Messrs. J. and H. Smith, ironwork and warming.

Prestolee.—The large spinning mill which has been erected by the Irwell Bank Spinning Company, Limited, at Prestolee, was the scene of an interesting ceremony on Friday, when Earl Derby named the engines which had been put in by Messrs. E. and J. Wood, of Bolton, and which were described as the largest in any cotton mill in England, being of 1,800H.P. The mill will contain preparation machinery and 133,000 spindles in 116 mules, four-fifths of which will be used for twist and one-fifth for weft. The main building is 269ft. long by 133ft. wide, and six stories high, in addition to the basement. The total floor area of the building is 34,750 square yards, or over seven acres. The mill is fireproof throughout. The height of the mill from the surface of the river Irwell is 120ft. Messrs. Stott and Sons, of Oldham, were the architects, and Mr. Jonathan Partington, of Chadderton, was the contractor. The following are the sub-contractors:—Mason, Mr. Thomas Bebbington, Oldham; plumbing, glazing, and painting, Mr. John Kershaw, Heywood; plastering, Mr. Rothwell, Oldham; iron fixing, Mr. Thomas Ramsbottom, Rochdale; asphalting work, Messrs. George Atkin and Co., Liverpool; cast ironwork, Mr. George Chatton, Little Lever; and rolled steel girders, Messrs. Dorman, Long, and Co., Middlesbrough. The mill is heated by steam; there is an installation of Witter automatic sprinklers, and the lighting is entirely by electricity.

St. Germans, Cornwall.—The parish church of St. Germans, formerly a cathedral, was reopened by the Archbishop of Canterbury on Thursday in last week, after restoration. The church, which was illustrated by a sketch of the sedilia and stoup by Mr. H. A. Gribble in the Building News for June 17, 1870, contains work of every period from Norman to Perpendicular, and the works have been in hand over some six or seven years, and carried out under the direction of Mr. J. Piers St. Aubyn. The west end was dealt with first, and the two towers which flank the Norman porch were freed from ivy and restored, and a ribbed roof placed over the end of the nave. Next the south side was renovated, and a new roof of the old West Country wagon-headed type, with carved bosses and ribs, placed over the main fabric. Now, after an expenditure of some £6,000, the last stage of the restoration has been reached. The old pews have all been cleared out, and the floor has been lowered 14in., so as to display the bases of the Norman pillars of the arcade. The floor, which now rests upon 3in. of concrete and 1in. of cement, gives a height to apex of roof of 43ft. The span of the roof is 26ft. in the nave, and 28ft. in the south aisle, the arcade nearly dividing the church in two. A discovery made during the restoration shows that the south aisle was added to the old church, for on the wall space above the Norman arches were the remains of two clerestory windows, outside which there was formerly the lean-to roof of a smaller south aisle. The span of the roof of the chancel aisle on the south is some 7ft. short of the nave aisle, a fact which presented an architectural difficulty to the restorers. The whole of the structural work has been carried out by Messrs. T. Lang and Son, of Liskeard, and under the active superintendence of Mr. H. G. Luff, of Devonport, representing the architect. The church is seated throughout with chairs, the chancel aisle being specially arranged as a chapel for early morning and week-day services, with its own altar. The chancel is paved with a marble mosaic by D. Grill, Houndrett, and Co., of Wall-street, London; and the morning chapel is paved with marble by Goad and Sons, Plymouth, the passage-way being of white and black marble laid diamond-wise, and the steps being of Devonshire marble. The morning chapel is divided from the chancel of the church by a parclose screen, which, with the west roof bosses (all differing), choir stalls, and other carved work now inserted in the church, is the work of Messrs. Harry Hems and Sons, of Exeter.

Sydney, N.S.W.—The new portion of the Hospital was opened by Sir George Dibbs on August 10th. The hospital has a frontage of 360ft. to Macquarie-street, by a through depth of 346ft. to the Domain, its area being about three acres. The old buildings consist of the Nightingale block, the women's block, the kitchen and laundry blocks. The women's block is all that now remains of the buildings erected in 1857. It is of stone, two stories in height, and has accommodation for 72 beds. The Nightingale block was erected in 1868 to provide accommodation for the nurses, but has recently been utilised for male patients. The kitchen and laundry blocks were erected in 1881 as part of the new hospital scheme. The new buildings just completed consist of five blocks, designed on the pavilion system. The administrative block occupies a central position fronting Macquarie-street. To the left and right are the north and south blocks, and to the rear of the administrative block and on the central axial line are the east block and the operating block. The space between the various blocks is from 16ft. to 24ft., spanned on the upper-floor level by bridges and balconies. The administrative block has a frontage of 80ft. by a depth of 72ft. A stone staircase ascending from right and left in front gives access to the first floor, where are located the chief offices of the institution. The greater part of the ground floor of this block is appropriated to the out-patients. Here is the casualty ward, with waiting and examination room, and near by is the general lift, 9ft. by 7ft., which gives access to all the floors of the administrative block, and by means of the balconies and bridges, spanning the drive-ways, to all parts of the hospital. The principal entrance, a vestibule or loggia 15ft. by 10ft., recessed from the front wall of the building, is three stories high, and reached by a broad flight of steps. On either side of the entrance-hall are the board-room and office, each 35ft. by 25ft., and on the floors above are offices and bedrooms for the staff. The north and south blocks are 102ft. long, the east is but 87ft. 4in., being two bays shorter. The lavatories, bath-rooms, nurses' rooms, and staircases form externally transverse projections at each corner of the ward blocks, and between them extend the verandahs and balconies. The staircases are 6ft. wide, and are of wood, with brass nosing and rubber tread, newels, balusters, and handrail of cedar. The wards are eight in number, three in the north and three in the east block, and two in the south. Each ward of the north and south is 82ft. by 26ft., and accommodates 22 beds. Those of the east are 68ft. by 26ft., and contain each 16 beds. The total number of beds in the new buildings is 158. The height of the wards is 15ft. to 17ft.; the width of wall space is 7ft. 5in., and the cubic allowance per bed about 1,500c.ft. The windows are 2ft. 6in. wide and 7ft. high to the transom, which is fitted with double-hung sashes. Above are fanlights 2ft. high, pivot-hung. The lavatories contain each three w.c.'s, fitted with Jennings's pedestal vase closet. Verandahs and balconies extend along each side of all wards. Dust and linen shoots are provided for each ward block, and are placed on the balconies and verandahs. The whole of the floors of the three ward blocks are fireproof, being constructed with iron girders, trægerwelbleck and coke concrete. Other ceilings are of zinc, subdivided by mouldings. Tobin tubes are introduced with inlets 8ft. from the floor in each ward, and one of Verity's hydraulic fans is fixed in each ward block. Wenham lamps are also used throughout the wards. The wards on the top floor have perforated centres, communicating by galvanised iron flues with Boyle's ventilators on the roof. The new operating block is of two stories, built of brick and cemented externally. The chapel has a floor space of 32ft. by 30ft., and over this is the operating theatre of like dimensions, and is lighted from a domed ceiling. Mr. T. Rowe, F.R.I.B.A., of Sydney, whose designs were selected in competition, was the criginal architect for the extension, but owing to the increase of cost over the original estimate and political differences, Mr. John Kirkpatrick was appointed architect, and the work has been completed under his direction.

The members of the Selby Local Board of Health, together with the workmen employed in the gas department, and officials and friends, assembled at the Londesborough Arms Hotel, Selby, on Saturday evening, in order to commemorate the completion of the new telescopic gasholder recently erected by Messrs. Ashmore, Benson, Pease, and Co., contractors, Stockton-on-Tees. The works have been carried out under the supervision of Mr. M. Dunn, the gas manager and engineer to the local board.

Correspondence.

SHOULD ARCHITECTS ADVERTISE?

To the Editor of the Building News.

Sir,—A good deal of *sentimental stuff* is written on this subject, and also upon the remuneration of architects, and I presume "Observer" (in your last issue) is a young man who feels that he would like to have more work to do; but that it is *infra dig* to let people know that such is the case! At one time I could have had more sympathy with him; but after twenty-five years' experience I have arrived at the conclusion that everyone is justified to use all legitimate means of gaining his living so long as he does not act in any dishonourable manner to his neighbour! I have never advertised for work myself, as I do not think it would do any good; in fact, I believe it would do me more harm than good in *this* city. I know that a good deal of *touting* is done by a few men in the profession, and of one well employed man, who attends regularly at the Courts when publicans are applying for licenses, and who does not hesitate to solicit work from any of the applicants who are likely to require their premises improved or altered. Well, I do not suppose he would spent his time in doing this if it did not pay. As for remuneration, I am afraid that architects, like many more professional men, have sometimes just got to take what they can get. I know that firms in a Scottish city who have the best work and rich clients do not hesitate to put plans out of their offices for a remuneration of one per cent.—I am, &c., Honesty.

Sir,—I think "Registrationist" will find that very few architects of repute advertise in the manner named; the ones who do so being principally found amongst those who were originally carpenters or builders, &c. In fact it is very rarely that a good architect is sufficiently pleased with his work after its completion to have his name upon it in any shape or form. About two or three years ago I was rather amused at reading a report of the opening of a new board school wherein it was stated that the architect had his name upon a plate fixed in the lantern light; I cannot say I was surprised, as I have heard that the architect in this case was originally a carpenter.—I am &c., Non-Advertiser.

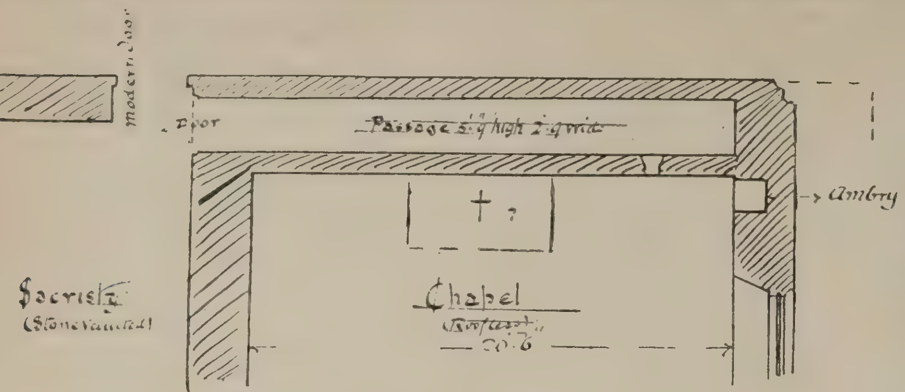
THE REGISTRATION OF CIVIL ENGINEERS.

Sir,—All educated civil engineers who have served as pupils, and studied their profession will be delighted at the information contained in your issue of the 7th, that the initials "C. E." have at last got a legal status as given by your correspondent "H. L." I am often asked by members of the legal profession what "C. E." means, and now I can inform them. Seriously, why should not civil engineers, like members of other professions, be registered, and the misuse of the title "C. E." made illegal? The Institution of Civil Engineers whilst being the leading professional body, although protecting itself, has not seriously moved to purge the whole profession of outsiders and quacks, who have neither served a proper term of pupilage, or gone through a college education in the profession. Some day or other the State may interfere, when it will be worse for those who now practise on the ignorance of the public and waste public money on public work. It ought therefore to be the business of all bonâfide civil engineers to have a Registration Bill for the United Kingdom, and a fixed course for all who are not on the register before 1896.—I am, &c.,

Alpha.

ST. LEONARD'S COLLEGE, ST. ANDREW'S, N.B.

Sir,—In the eastern gable of the ancient and ruined chapel of St. Leonard's College here, there are two passages, one above the other, in the thickness of the wall which are a standing puzzle to local ecclesiologists. The accompanying sketch shows a small part of the eastern end with the lower passage entering from the sacristy. The upper passage is immediately above, the separation medium being stone flags which form the floor of the one, and the roof of the other. Near the southern end of each there is a narrow opening into the chapel about 4in. wide and 2ft. high, which appear to have been glazed. The entrance to the upper passage is not at present very obvious, but may yet be found.



There is just a suggestion of a seat at the southern ends—especially in the lower one—and from these (if they did exist) the sitters could see into the interior through the small openings. What purpose did these curious passages serve, and can any fellow subscriber to the Building News say if anything similar exists elsewhere?

By way of explanation it may be said that in the beginning of the 12th century, we read of a hospital as belonging to the Culdee Community. By-and-by that was (somewhat by force) transferred to the Augustinian Canons, and used by them for the reception of pilgrims who came to worship the relics of St. Andrew in their wonder-working days. These ceased to draw, and by the middle of the thirteenth century we find the hospital dedicated to St. Leonard and filled with old women. They too became obsolete, and in 1512 the hospital and its property were taken *inter alia* to found a college for poor scholars. There appears good reason to believe that the eastern end of the chapel in which these passages occur was built at that time, as the arms of the founder Prior John Hepburn are on a buttress at the function of the older or hospital chapel and this new extension. It is conceivable that they were used for the purposes of espionage, but perhaps some reader can say?—I am, &c.,

David Henry, F.S.A.Scot.

St. Andrew's, September 10th.

CHIPS.

Mr. A. H. Franck-Clarke, assistant to Mr. C. Nicholson Lailey, C.E., Westminster, has been engaged by the Ystradyfodwg local board for main sewerage work in the Rhondda Valley.

The church schools, St. Anne's-on-the-Sea, are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

At the last meeting of the East Grinstead local board a resolution was passed to apply to the Local Government Board for sanction to borrow £3,500, to build an infectious hospital, according to plans prepared by Mr. William Willis Gale, their surveyor; and also for £500 for works of permanent improvement on the main road.

The new Presbyterian church on the New-walk, Leicester, was formally opened on Tuesday week. As rebuilt, there is seating accommodation for 400 in the body of the church, and 50 in the gallery. The whole of the work, including the furniture of the church, the organ screen, and the table and chairs at the east end, which are in oak, has been carried out by Messrs. Hinson Bros., of Stamford, from the designs, and under the superintendence, of Mr. A. R. G. Fenning, F.R.I.B.A., M.S.A., of London.

An inquest was opened at Derby on Friday on the bodies of the five workmen who were killed on the 5th inst. through the fall of a floor during the process of pulling down the old Derbyshire Infirmary. The survivors of the men working with the deceased explained that, while they were in the basement of the corridor, the upper floor, composed of several tons of concrete, collapsed and buried them. It was alleged that the vibration caused by breaking the concrete floors induced the walls to bulge and the floors to collapse. One of the witnesses said the walls ought to have been shored, which precaution was not observed, whilst all agreed that it was dangerous to any men to work in the basement. The inquiry was adjourned.

The great exhibition of arts, which is to be held at Vienna in 1895, will be opened on March 22 of that year. A prize of £400 and two of £200 will be offered. The transport of works of art to the exhibition will be free.

Intercommunication.

QUESTIONS.

[11215.]—**Moorish Wall Decoration.**—I have recently visited Spain, and seen the Moorish art at the Alhambra, Seville, Cordova, &c. I shall be obliged to any reader who will inform me as to makers of tiles, Anaglypta fibrous plaster, &c., copying Moorish designs for wall decoration.—J. R. Collins, Bodmin.

[11216.]—**Flat Roof of Concrete.**—I have to construct a large cement concrete roof, about 25ft. span, in a country district where skilled labour is difficult to obtain. It is important that the roof be thoroughly watertight. There is plenty of broken stone for the aggregate of a sparry nature. I propose putting on a thickness of 6in. of concrete, floated with 1in. of cement mortar. Portland cement to be used in all cases. My experience of concrete roofs is that they crack in the neighbourhood of the girders. Would it be possible to put the roof on without them? Any practical hints that will enable me to construct an efficient and economical roof will be thankfully received. How much bullock's blood should be put to a bushel of cement to give a good colour for finishing cement floors?—Enquirer.

[11217.]—**Discharge of Pipes.**—Will one of your correspondents kindly show what would be the actual discharge of short 3in. pipes (*a*) as a vertical outlet from a tank (*b*), as a side outlet from a tank, each having 4in. of head?—Waterman.

[11218.]—**Plus Threads and Minus Threads.**—Will any reader kindly explain, by sketches and description, the difference between a "plus V-thread" and a "minus thread," as given in Science and Art examinations in building construction? Screw coupling joints, &c., had to be drawn half full size, with plus and minus threads.—Thread.

REPLIES.

[11210.]—**Lightning Rods.**—"Fassnacht Clayton," Manchester, is rightly informed that lightning conductors are sometimes dangerous. They certainly are when improperly put up and have insufficient earth connections, when they are badly insulated, when they are fixed near any ironwork without proper connection with the earth (all ironwork should be "earthed" independently), when there is only one or two points. No perfect safety can be insured unless the building is lined or protected by metal conductors carried along all ridges and gables. The reason is that an insufficient or improperly insulated conductor diverts the electric current and draws it to the building and thus invites damage.—G. H. G.

[11211.]—**Old Oak Furniture.**—It is rather curious that although many thousands of pounds worth of worked oak is made, and passes through my place every year, none of which is wet stained, so many good people seem to think I am a passing authority upon staining wood. "Old Oak" says he owns a piece of black oak furniture. If this is an accurate description, the colour is not natural, but acquired. The only black oak we have is the bog-oak, found largely in Ireland, and sometimes in this country. A good deal was dug up not long ago near Manchester, and quite recently near Peterborough, quite a submerged forest of oak-trees (the wood as black as night), has been discovered. It must not be concluded, however, that the so-called bog-oak brooches and nick-a-nacks sold as Irish relics, are really oak. As a rule, they are simply carved in sycamore, and other kindred woods, and afterwards ebonised. This can readily be discovered by looking into them closely, when it will be seen, in nine cases out of ten, there is an entire absence of grain or "clash." One does not quite grasp how the black furniture "Old Oak" possesses has grown "whitish" in places, without it is that the light parts are sap! If oak *must* be stained (I am the last man to advocate such treatment), there is no doubt but that toning it down by the fumes of water of ammonia is the most artistic and best way. It is practically almost impossible to tell oak thus coloured from real 15th-century oak. I doubt, however, if the chemical in question does the material any good. It brings on premature old age, for if, after thus staining, the plane or chisel is applied, the stuff seems to cut very dead. It would appear to me that as "Old Oak's" furniture has been already stained, he cannot do better than use for the light parts the ordinary stains advertised, to be procured at any shop that makes a speciality of that sort of thing.—Harry Hems.

* * *

The floors of the new board schools recently erected at Acomb, near York, from designs by Messrs. Demaine and Brierley, of York, have been laid by Mr. Roger L. Lowe, of Farnworth, near Bolton, with his patent redwood block flooring.

Legal.

CONTRACTORS' LIABILITIES.

Under the pressure of competition, it really seems that contractors for large works can be got to undertake almost any liabilities, and to sign contracts rendering themselves responsible for unknown amounts and undefined possibilities. This was lately exemplified once more in the recent case of "Kellett v. City of York" (*Times*, 8 Aug.), which arose out of a contract for the construction of new sewers at York. Besides the usual clauses making the contractor liable for all damage arising to property out of his contract and the like, he also agreed to restore and make good all houses and buildings that might be injured in the course of his work. He was further to take all risk of floods, and of the breaking through of the present sewers into the new work. After the work was done, there were, of course, disputes and an arbitration, and it appeared that during the carrying out of the contract certain houses and buildings had been disturbed and injured. Under the first head of damage there was a claim for injury to the foundations of certain houses, which had made it necessary to pull down and rebuild them. This damage arose from the fact that just beside a shaft which the contractor had sunk in the course of his work there was an old sewer, whose existence was unknown to the contractor and to the engineer and all the other officers of the corporation. While this shaft was open an unusually high flood occurred, which burst and overflowed the old and the new sewer, and washed away the soil, so bringing down the foundations of the houses.

It was argued for the corporation that as under the contract the contractor took all risks of floods, and was bound to make good all damage to buildings, he was liable even for this catastrophe. But a Divisional Court, composed of Mathew and Kennedy, J.J., held that the existence of the old sewer was unknown to all the parties under and at the time of making the contract, and that when the flood occurred it was the bursting of this old and hidden sewer which really caused all the mischief. But the contractor was not liable under this head of damage. He was not an insurer against whatever accidents might happen during or in consequence of the construction of the works. He was, however, held liable for various damages to other houses and their foundations arising from settlements of the soil while making the new sewers and in the course of their construction. It is, of course, possible for a contractor to calculate to some extent the risk he runs in this way; but it is almost impossible for him to provide for the possibilities of damage by the bursting of unknown old sewers along his line of work.

Fred. Wetherfield, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Preston.—Architect's Authority.—I am obliged by your letter and your suggestions, and will see what can be done at an early date.

* * *

An additional supply of water for Gorebridge district was turned on on Friday, the opening ceremony being performed by Mr. Robert Dundas, of Arniston. The work has been completed at a total cost of about £2,000.

To the Sunday schools in Burlington-road, Ipswich, attached to London-road Baptist Chapel, a new infants' room, class-rooms, kitchen, and Dorcas meeting-room are being added. Messrs. Eade and Johns, of Ipswich, are the architects, and Mr. Catchpole, of Ipswich, has taken the contract. The cost will be over £1,100.

At St. Martin's Vestry-hall, on Tuesday, Mr. Troutbeck held an inquest on John Burns, aged 53 years, a "housebreaker," who was fatally injured on Friday last while he and a number of other men were engaged in pulling down the Duke of Cleveland's mansion at the corner of St. James's-square and King-street. Burns fell from the top of a wall 35ft. high on which he was working, and died in Charing-cross Hospital from a fractured skull and a broken leg. In trying to prize some bricks he overbalanced himself, and in his descent he struck a dormer and then bounded on to a hoarding. The jury returned a verdict of "Accidental Death."

LEGAL INTELLIGENCE.

Building Bylaws.—Important Case at Coventry.—Considerable interest was taken in a case at Coventry on Monday, when George Blakeman, builder, Cope-street, was summoned for infringements of the building bylaws, the court being attended by many persons associated with the trade. The town clerk (Mr. L. Beard) conducted the prosecution, and said the informations (there were three) related to a house defendant had built in Queen's-road. Plans for the house were sent in on July 22, 1893, and were reported upon by the surveyor as not being in accordance with the bylaws, and the General Works Committee of the corporation did not recommend them for adoption. Subsequently the plans were amended, and brought before the committee, who approved of them, and they were then passed by the Council, and the building proceeded with. On August 10, on receiving notice that the house was ready for occupation, the surveyor sent and had it inspected, when it was found that a room had been built which was not shown on the plan as finally approved. The bylaws also required that every habitable room in a domestic building should be at least 9ft. high from floor to ceiling; but this room was not half the height for about half its area. Mr. Masser, for the defendant, said that his point would be that the room was not meant to be inhabited. The town clerk argued that it might be so used, and the corporation would have no control over the tenants of the house in this respect when it had been once approved and inhabited. The room had been built in such a way that there was an obvious temptation to put a bed therein. Mr. Blakeman, when seen on the subject, said the room was only to be used as a box-room; but he (Mr. Beard) submitted that defendant had committed a serious infringement of the bylaws in building this room without showing it on the plan, and in building it an improper height, and without ventilation. Mr. E. J. Purnell, city surveyor, proved the receipt of the plans in question, and of sending defendant notice that the building was not in accordance with them when completed. In examination by Mr. Masser, witness said he did not consider the room fit for habitation. Mr. G. E. Jenkins, assistant surveyor, explained that the room at its highest point was 9ft., and it was 14ft. 3in. long by 12ft. 6in. wide. Mr. Edmund Purnell said he inspected the house, and found a room at the back on the top floor which was not shown on the plan. There was no fireplace in it, but there was an ordinary window. He called defendant's attention to the fact that no ventilation was provided for, and was told it was only a box-room. After a legal argument as to the meaning of the word "habitable" in the bylaw, the magistrate's clerk ruled that it must be left to the Bench to say whether the room was habitable within the meaning of the bylaw. Mr. Masser, in defence, submitted that all the objections raised to the original plan had been met. The room was only intended to be used as a box-room, and assuming that the building was carried out substantially in accordance with the plan, he contended there was no case against his client. No objection, he urged, had been taken against the upper room. As to the room being habitable, his client had made no provision for its being so, and if the owner chose to use it, the duty of the authorities was to give notice calling upon the owner to close it. The Bench, after retiring to consider their decision, said the case was a most important one. They considered all the charges proved, and fined defendant £7 in all, and expenses £1 17s. 6d.

Arbitration at Cardiff.—The dispute which has arisen between the Llangeinor School Board and Messrs. D. C. Jones and Company, contractors, of Gloucester, with reference to the erection of the Tynewydd Board Schools in the Ogmore Valley, has recently formed the subject of a prolonged arbitration, lasting over 20 days. Mr. Robert Richards acted as arbitrator, and the proceedings were conducted at the Park Hotel, Cardiff. The claim was by Messrs. Jones and Company, for about £1,600 for extras and variations, and there was a counterclaim by the board for about £700 for omissions and deductions, but certain items were admitted on both sides. Among the witnesses called on behalf of the claimants were Messrs. J. F. Lambert (former architect to the board), W. McGaul, Bridgend, Mr. Rooney, and Mr. Taylor, of Cardiff, and a number of Gloucester gentlemen; while evidence for the board was given by Alderman Jones, Cardiff; Mr. George Thomas, Cardiff; Mr. P. J. Thomas, Bridgend (present architect to the board); Mr. Jacob Jenkins, and a number of local witnesses. The award will be made early in October.

Arbitration Case from Southampton.—Mr. P. E. Squarey, F.S.I., has sat as umpire at the Surveyors' Institution, London, to determine the value of 26 perches of land, situate at Southampton, compulsorily acquired by the London and South-Western Railway to enlarge the station at Southampton West. A claim was made on behalf of the trustees, under the will of the late Mr. James Whitchurch, the arbitrator for whom was Mr. Alfred Andrew Burnett, F.S.I., 2, High-street, Southampton (of Messrs. Burnett and Son), while Mr. Edward Bance, surveyor, Southampton, acted in a like capacity for the company. The land, it was stated, was freehold, and had a frontage of 162ft. to Blechynden-terrace, and a return frontage of about 60ft. to Blechynden-street, which, however, tapered down to 33ft. Mr. A. A. Burnett, F.S.I., of Southampton, said that his valuation was £1,437 10s. In his view, 15s. per foot, or £8,000 per acre, was a strictly moderate estimate of the value. Mr. William Burrough Hill, F.S.I., of Southampton, stated that he had sold land in the immediate neighbourhood at Blechynden at £10,000, and in Southampton at £35,000 per acre. His estimate of the value of the land came to £1,498 7s. 6d. On behalf of the company, Mr. Edward Bance gave the estimate of value at £495, which worked out at £2,828 per acre. The whole of the land was reclaimed foreshore. Mr. W. H. Mitchell, of Southampton, valued the land at £558 5s. The umpire reserved his award.

CHIPS.

Lieut.-Col. W. H. Hayden, R.E., Executive Engineer, Bombay Public Works Department, has permission to retire from the service, with effect from December 17 next.

At Glasgow Dean of Guild Court on Friday, the University Court were granted authority to erect a two-story building in Queen Margaret-crescent, Kelvinside, to be used as dissecting-rooms and lecture-hall for the medical classes at Queen Margaret College. The extension is estimated to cost £5,000.

The first intermediate school established in Montgomeryshire under the Welsh Intermediate Education Act was opened on Saturday at Llanfair-Caereinion. The building, of corrugated iron, resting on brick supports, was erected by Mr. J. Lee, of Manchester, from his own drawings, as approved by the Charity Commissioners. The cost of the work was £150 only, and the room will accommodate 45.

Colonel Charles Seely, in retiring from the position of Unionist candidate for Lincoln, has offered to defray the cost of a Unionist club in that city, estimated at £8,000.

Mr. George Hutchinson, of Wesley-street, Southport, died on Thursday in last week from the effects of an accident sustained four years ago. Deceased, who was over sixty years of age, had long carried on business as a builder in the borough, and was, indeed, among the first to embark in extensive building enterprise in Southport.

By permission of the Duke of Westminster, the picture galleries at Grosvenor House were visited by 4,542 persons on Sunday afternoon, in connection with the National Sunday League.

The death is announced of the Italian Senator, Signor Ariodante Fabretti, of Turin, a Professor of Archæology, born at Perugia in 1831. He was exiled for his Liberal opinions in 1848, and settled in Turin, where he became director of the Museum of Antiquaries, and Professor of Archæology at the University.

The first of the ninth annual winter course of lectures in connection with the professional examination of the Surveyors' Institution will be delivered by Mr. Philip E. Pilditch, F.S.I., on Tuesday, October 2, at 7 p.m., for Associates; and on Friday, October 5th, at 7 p.m., for Fellows, at 2, Duke-street, Charing Cross.

The place of M. Edmond Guillaume, as architect to the Palaces of the Louvre and the Tuileries, has been filled by the appointment of M. Paul Blondel.

Kingsteignton Potteries Brick and Tile Works, situated about a mile from Newton Abbot, were almost destroyed by fire on Tuesday. The main building, containing several thousand pounds' worth of machinery and partly-manufactured goods, was greatly injured, and the damage done amounts to £40,000 or £50,000. The works belong to Messrs. Hexter, Humpherson, and Co. About 200 hands will, in consequence, be thrown out of employment for several months.

At present Messrs. R. and W. Phillip are engaged in repairing parts of Linlithgow Palace. Some of the lintels forming part of the old towers have been repaired, and at other parts of the building the wall heads have been renewed. A good deal of cement work is also being done for the Secretary of State for Scotland.

The Duke of York public gardens and pleasure grounds at Grimsby were publicly opened on Friday. The pleasure gardens occupy an area of over four acres. The work has been carried out by Mr. A. Walker, of Leeds, at a cost of £2,075. The fencing and gates have been supplied by Messrs. Lockerbie and Wilkinson, of Birmingham, and Mr. H. Marrows, of Grimsby, has built the caretaker's lodge for £392.

WATER SUPPLY AND SANITARY MATTERS.

Ashbourn.—At the last meeting of the Ashbourn Local Board, the Water Supply Committee reported that the sinking of the well on the Derby-road for the Ashbourn Waterworks had made good progress; the depth now reached was 73ft., and the kerb was now resting on the sand rock. The daily yield was 12,000 gallons; but this was not sufficient for the supply of the town, and the work of excavation would have to be continued. The water had been analysed and found to be a harder water than that at Sturston Spring, and quite fit for drinking purposes. The total cost of the well was £341 18s. 9d. Mr. Radford, C.E., Nottingham (the Board's engineer), stated that he had gone through the accounts and settled with the contractors. The committee recommended that the work now to be undertaken should be done by the Board with a clerk of the works to superintend it. A member moved that work be let by contract, and that tenders be invited for the same. A long discussion took place on the subject, and it was ultimately decided that the Board should undertake the work. It was decided to seek powers to borrow an additional £1,000 for the water supply, making a total of £1,800.

Skelton and Brotton Sewage Disposal.—A Local Government Board inquiry was held yesterday at the Local Board Offices, Skelton-in-Cleveland, by Mr. W. J. B. Clerke, M.I.C.E., Engineering Inspector. There was a large attendance, including representatives from the Saltburn Local Board, who some time ago obtained an injunction at the County Court to prevent the Skelton and Brotton Local Board from polluting with sewage from their district the Skelton Beck, which flows through Saltburn. The inquiry was held to obtain the sanction of the Local Government Board to borrow £14,500 for works of sewerage and sewage disposal, which will prevent this pollution. The scheme, which is of a complex and difficult nature, is from the designs of Mr. D. Balfour, M.I.C.E., F.G.S., Newcastle-on-Tyne, and comprised about ten miles of 21in., 18in., 15in., 12in., and 9in. sanitary and iron pipes, with manhole and lamphole shafts, flushing chambers, and iron-pipe valley crossings. The work consists of a combined intercepting scheme for conveying the whole of the sewage from the ten villages comprised in the Board's district to a point at top of the cliffs on the coast called Cranedale Spout, where the high cliffs, 200ft. in height, will be bored and lined with iron pipes, which will be jointed at the bottom with iron pipes having easy bends laid in a heading driven from the beach, and then by means of cast-iron pipes laid in a cutting in the rock, of which the beach is composed, the sewage will be delivered at lowest point of the furthest ebbing tide. The scheme was explained, and other evidence given on behalf of the engineer, after which the inspector visited the whole of the district.

Stamford.—A special meeting of the Stamford Town Council (in committee) was held on Monday to consider a report upon the drainage of Stamford, and the water-supply of the town, prepared by Mr. Robert H. Bicknell, C.E., of London. He reported that the cost of excavation would be somewhat high, owing to the drains having to be laid for the most part in rock. A system of ventilation by means of man-holes, or lamp-holes, is provided, and Mr. Bicknell proposes to construct five arterial mains, which would take in the whole of the storm-water, utilising as far as possible the existing drains for that purpose. He recommended the adoption of the International system of purification at the outfall works. This system provided for the removal of the greater part of the impurities in the sewage by a chemical precipitant—ferozone—and the filtration of the liquid through filter-beds containing polarite. With regard to the water-supply, Mr. Bicknell says there is abundance of water in the neighbourhood, which, however, is at present only partially used. Mr. Bicknell estimates the cost of carrying out his drainage scheme at £30,000; while the estimated cost of the recent scheme by Mr. Lawford was £54,000.

West Hartlepool.—On the 12th inst., Mr. John Bird Clerke, A.M.I.C.E., one of the Local Government Board inspectors, held an inquiry consequent upon the corporation having made application for sanction to borrow £12,000 for technical school, £6,000 for public abattoirs, £3,976 for works of sewerage and footpaths, and £3,000 for the erection of public library. The plans and schemes were explained by the borough engineer, Mr. J. W. Brown, the whole having been prepared by him, except the technical school and lecture hall, which are the work of Mr. H. A. Cheers, of Twickenham.

◆

The late Mrs. Ellen Barton, of Caldy Manor, Cheshire, has left directions in her will that her diamonds shall be sold and the proceeds applied in placing a Paradise window, by Kempe, in the chancel of Bishopstoke Church, as a memorial of her late husband.

Our Office Table.

The annual report on the Irish National Gallery issued by the director, Mr. Walter Armstrong, who has now completed 2½ years of work there, speaks of continued progress. The director cannot afford, with the limited grant at his disposal, to purchase modern pictures, but he has been able to buy during the past year fourteen works including an English landscape by John Constable; a landscape in Wales, by J. D. Harding; Irish landscape, by Bartholomew Colles Watkins; Interior of a Flemish Mansion, by Nicholas Giselear; Farm-house Interior, by D. Teniers; Portrait of an Italian Gentleman, by Andrea Solario; a portrait of a gentleman by an unknown artist of the Dutch School. A Martyrdom of the school of Guadenzio Ferrari, a chalk study by François Boucher, and a pencil drawing by Antonio Moro. The Constable was bought for £125, the Andrea Solario portrait for £552, and the Dutch portrait of a gentleman for one hundred guineas. It will be seen that many schools and masters are represented in the additions just made to this small but interesting collection.

Birmingham does not at first sight appear the most appropriate locale for an exhibition of works by living English marine painters; but the very fact that it is so centrally situated in the heart of England gives its citizens a keen appreciation of the sea, and it is probable that Mr. Whitworth Wallis's endeavour to bring together at the Birmingham Municipal Art Gallery by Monday week, the 1st October, a thoroughly representative collection of modern British seascapes and court scenes will be highly successful. Among the artists whose works will be hung at Birmingham are Sir Oswald Brierley, Messrs. Henry Moore, R.A., J. C. Hook, R.A., John Brett, A.R.A., Colin Hunter, A.R.A., Stanhope Forbes, A.R.A., A. W. Hunt, C. Napier Hemy, Edwin Ellis, Frank Brangwyn, Tom Henry, Tom Graham, Hamilton Macallum, W. L. Wyllie, C. W. Wyllie, H. S. Tuke, David Murray, A.R.A., Edwin Hayes, R.H.A., E. M. Hale, W. H. Bartleet, Albert Goodwin, Walter Langley, R. W. Macbeth, A.R.A., W. Small, Nelson Dawson, J. Fraser, &c. Among the contributors are also the Corporations of Manchester, Liverpool, Maidstone, Leeds, Oldham, Preston, and Sunderland; the Queen, the Prince of Wales, the Duke of Coburg, Sir J. E. Millais, Sir Donald Currie, his Honour Judge Bacon, Colonel Hargreaves, Messrs. J. P. Haseltine, H. Tate, George Macullock, W. S. Caine, S. Pope, Q.C., J. T. Brunner, and others.

A temporary loan collection of pictures has been brought together in the new Technical Schools at Bury, Lancs, opened on Saturday last. The display organised by Messrs. Thomas Agnew and Sons, of Manchester, includes some five hundred pictures. The best portrait is that of Tom Wrigley, by G. F. Watts. The landscapes include "Lake Como," by Clarkson Stanfield, a Nile scene by W. Müller, and works by Old Crome, while among the living masters represented are Williams, Leader, G. Clausen, Anderson Hague, and F. W. Jackson. The Duke of Devonshire lends two pictures by Landseer, "Bolton Abbey in the Olden Time," and "Laying Down the Law," both well known from engravings. Other exhibits of interest are "Swine," by George Morland; Marcus Stone's "Lost Bird," F. W. Shipworth's "Roman Holiday," Heywood Hardy's "Disputed Toll," an elephant at a turnpike gate, and W. L. Wyllie's "Port of London."

So manifest has been the benefit to Richmond and Kingston of the new lock and bridge, and so much has the value of property for at least four miles above that point been improved by the maintenance of a clear and level stream, that a movement is on foot for forming a similar half-tide weir lower down the river, probably at Putney or Wandsworth, and possibly as low as Battersea. Hammersmith has actively taken the initiative in seeking a remedy, and, desiring to associate in the movement all the other parishes interested, organised an investigation from a steamboat of the water-way from Chelsea to Teddington. Over a hundred delegates from the local and vestry authorities took part in a trip up the river on Tuesday. No definite plans or schemes have at present been put forward for adoption or discussion. The parishes more or less affected are Isleworth, Brentford, Wandsworth, Chiswick, Fulham, and Hammersmith on one side of the stream, and Kew, Mortlake, Barnes, Putney, and Wandsworth on the other. At the same time, the construction of the Richmond lock has not been an unmixed benefit, for it is alleged that, owing to the damming-up of the stream, there has been a serious loss of waterway below Richmond, the lessening of the depth varying from 8in. to 12in. at Hammersmith to 15in. at Kew. In self-defence the districts affected are quickened to take action by erecting another weir farther down the stream. A conference of all the bodies interested will shortly be held to ascertain if joint action can be agreed upon.

The eighteenth London course of lectures and demonstrations for sanitary officers will be given this autumn under the auspices of the Sanitary Institute at the Parkes Museum, Margaret-street, Oxford-street, W., on successive Mondays, Wednesdays, and Fridays, at 8 p.m. The first of a series of 24 lectures will be delivered on Wednesday, Oct. 17th, when Mr. J. Castell Evans will give an introductory address on "Elementary Physics," and among the other lecturers are Sir Douglas Galton, who will treat, on Oct. 29, upon "Warming, Ventilation, and Lighting"; Mr. H. Law, who will explain, on Oct. 31st, "Principles of Calculating Areas and the Interpretation of Plans and Sections to Scale"; Mr. Keith D. Young, who will speak, on Nov. 5th, on "Sanitary Building Construction"; Mr. J. Wright Clarke, on Nov. 9th, "Details of Plumbing Work"; Professor Henry Robinson, on Nov. 14, "Sewerage and Sewage Disposal"; and Dr. Louis Parkes, who is to give the last lecture of the series on December 3rd, his topic being "Sanitary Laws and Regulations Governing the Metropolis."

The National Association of Master Builders have been in communication with her Majesty's Office of Works with the object of getting quantities made part of the contract for the building works of that department. Mr. Primrose stated that the Commissioners absolutely declined to do so, but he has promised to make the following recommendations to the Commissioners: That a paragraph should appear in the advertisements in future to the effect that although the Office of Works would not be responsible, yet the measuring surveyors held themselves responsible for the accuracy of the quantities, that the name of the surveyor or surveyors should appear in the advertisement, and that in works of £20,000 and upwards two surveyors should be appointed, one by Her Majesty's Office of Works, and the other by the Institute of Builders.

The fifth annual congress of the district councils of Scotland in connection with the registration of plumbers, under the auspices of the Worshipful Company of Plumbers, took place on Tuesday in the Town Hall, Inverness, Provost Ross presiding. He was supported by Sir Stuart Knill, the master of the Plumbers' Company; Professor Glaister, of Glasgow; Professor Matthew Hay, of Aberdeen; Professor Macadam, of Edinburgh, and others. In his opening address the provost welcomed the congress to the Highland capital, and said he had no doubt the congress would do much to forward sanitation in the north. Sir Stuart Knill, in acknowledging the welcome, said he had always felt a deep interest in the subject of sanitation, especially in regard to plumbers. As master of the Plumbers' Company, he was desired by his fellows in the governing body to attend there to pay respect to the plumbers of Scotland. The object of his visit was also to ascertain for the benefit of his company what were the wishes and proposals of the plumbers of Scotland. Among the resolutions passed at the congress was one pledging those present to do everything to secure the passing of the Plumbers' Registration Bill, and another instructing each district council to endeavour to establish classes in suitable centres for apprentices and journeymen.

The town council of Louth received at the last meeting a report from the sanitary committee stating that the Local Government Board had been urged to take some action towards altering the law with regard to house drainage, in order that the great and unnecessary cost and inconvenience likely to be imposed upon sanitary authorities through the recent decision in the Queen's Bench Division in the case "Travis v. Uttley," might be mitigated. The decision declared combined house drainage, whether in private grounds or under buildings, to be public sewers, and maintained by the sanitary authorities. No action was taken on the matter other than to adopt the report.

The American Institute of Architecture will hold its twenty-eighth annual convention in the rooms of the Architectural league, in New York City, on Monday, Tuesday, and Wednesday, October 15, 16, and 17. The business of importance to be brought before the convention will include the relation of the chapters to the Institute, new proposals as to providing for the admission of all practising members of the chapters to membership in the Institute, and putting the business of the conventions into the hands of delegates from the chapters.

CHIPS.

The memorial stone of the new club-house of the Helensburgh and Gareloch Conservative Association was laid on Saturday. It is situated in Sinclair-street, Helensburgh, within a few minutes' walk of the station, and is being built from designs by Messrs. Honeyman and Keppie, of Glasgow. The building, which is already in progress, is being constructed of red freestone, and is to be two stories in height. The ground floor will be apportioned out in shops, and the first floor is to be divided into reading and recreation rooms, with a hall holding 200 people at the back. The cost is to £3,500.

A committee appointed to advise the Bristol City Council on the question of improved accommodation between Hotwells and Bedminster, have decided in favour of a scheme prepared by the docks engineer for a bridge across the Avon by Clift House, giving a wide roadway and two footpaths, with a 90ft. span, which would allow of two vessels passing easily. The approach on the Gloucestershire side would be by an easy gradient of 1 in 53, while on the Somersetshire side it was proposed to have two approaches, each 42ft. wide. The estimated cost, exclusive of land, would be £34,500.

A special meeting of the Bolton Town Council was held on Wednesday week, to consider the advisability of spending £75,000 in a sewage undertaking, rendered necessary by the Mersey and Irwell joint committee enforcing their powers under the Rivers Pollution Prevention Act. Eventually a large and representative committee was appointed to go thoroughly into the matter, and, if necessary, obtain the best technical advice procurable.

A serious fire occurred on Monday morning on the premises of Mr. W. Warden, sawmills proprietor and timber merchant, of Regent's-row, on the banks of the Regent's Canal at Dalston. The buildings involved comprised the boiler-house and sawmills—a building about 70ft. by 60ft. Six stacks of timber, commanding an area of 100ft. by 40ft. in height, were destroyed, and other stacks were greatly injured, as well as adjoining premises.

Arrangements are being made for the rebuilding of the English church at Grindelwald. The old site near the Bear Hotel will again be used, but the building will be of stone, and will accommodate more worshippers than the church destroyed in the fire of 1892. The cost will reach about £1,600.

Major-General Phipps-Carey, on behalf of the Local Government Board, held an inquiry at Southport Town Hall, on Friday, into the application of the corporation to borrow £2,900 for public recreation grounds. Mr. J. Crabtree, borough surveyor, explained that the expenditure was on account of a greenhouse at Hesketh Park and the laying out of two recreation grounds, one at Crowlands and the other adjacent to the cemetery.

The Newcastle-on-Tyne Finance Committee have unanimously agreed to report to the Council that they recommend the formation of a deep water quay, running from the end of the present one opposite the grain warehouse to be joined on to the deep water quay finished last year, west of the same. The total length of the new quay will be 351ft., and the estimated cost is £24,000. The work is proposed to be carried out by the Corporation under the superintendence of Mr. Laws, who will have the assistance of Mr. Messent, chief engineer of the River Tyne Commissioners.

Memorial stones were laid on Saturday of the new Albany Sunday School in Shaftesbury-avenue, Bristol. The new building will comprise a schoolroom, 45ft. by 30ft., seating 250 adults or 300 children in classes; an infants' school, 20ft. by 15ft., and two classrooms, each about 13ft. square, all with separate entrances. On the right-hand side of the schoolroom are three smaller classrooms, separated from the large room and from each other by revolving partitions. Pitch pine dadoes, open-boarded roofs, and tinted windows are adopted. The architect is Mr. J. H. La Trobe, of Clare-street, Bristol.

Trade News.

WAGES MOVEMENTS.

Bolton.—A general meeting of the members of the Bolton Master Builders' Association was held on Friday. Mr. F. W. Briscoe, the secretary, presented a statement as to the position of the several matters in dispute. As to the plumbing branch, the men had withdrawn entirely their condition as to those who were to be employed in the office by the masters. The only point now in dispute was the fines which the men proposed to inflict upon the employers in the cases where strikes had taken place. The operatives had been told that under no such circumstances would such fines be recognised, especially seeing that the dispute had arisen upon the office question—now conceded by the workpeople. The men's representatives had, however, reaffirmed their decision as to the fines. In reference to the stonemasons' strike, as the men had agreed to the introduction of machinery, and several employers had arranged for having machines put down, there was really very little in dispute. At an interview with the men, the employers agreed to forego their conditions as to the sawn stone rule, and that being so, the matter in dispute was at an end. However, the operatives handed in a letter objecting to the free use of machinery, and wanted to stipulate that where machines were put down they should only be allowed to be worked according to the hours worked by the operatives. The masters could not recognise any such condition, and as the operatives had intimated their adherence to the previous resolution on the point, there was no settlement to report. It was decided to adhere to the position taken up.

Coatbridge, N.B.—The plumbers in this district are out on strike in consequence of the refusal of the masters to sign the Association rules fixing a standard wage for all workmen, irrespective of efficiency. The masters have a pressure of work.

York.—The strike of the operative plumbers of York has been settled. The matters in dispute were submitted to arbitration, and the award grants to the men the increase from 7d. to 7½d. an hour in their wages—the latter being the standard rate—which they had asked for.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Bournemouth.—For the erection of a new ward block and additions to the administrative block at the Sanitary Hospital. Mr. F. W. Lacey, A.M.I.C.E., borough engineer and surveyor:—

Hoare, F., and Sons	£4,347	0	0
McWilliam, J., and Son	3,985	0	0
Whitaker, S.	3,975	0	0
White, J. (accepted)	3,750	0	0

(Two informal tenders were received.)

Bovey Tracey.—For building a Constitutional Club:—
Winsor, J. (accepted).

Bradford.—For house and shop in Whetley Hill, Bradford. Rycroft and Firth, architects:—
Masonry:—Brown and Craven.
Joinery:—Bogg, W. G.
Plumbing:—Wood, J.
Plastering:—Bolton, T.
Slating:—Hill. W., and Son
Painting:—Walker, T. L.
(All of Bradford. Total amount, £607.)

Chelsea, S.W.—For the erection of a doctor's house and nurses' quarters at the infirmary, Cale-street, Chelsea. Messrs. Lansdell and Harrison, 12, Compton-terrace, Highbury, N., architects. Quantities by Messrs. Northcroft, Son, and Neighbour:—

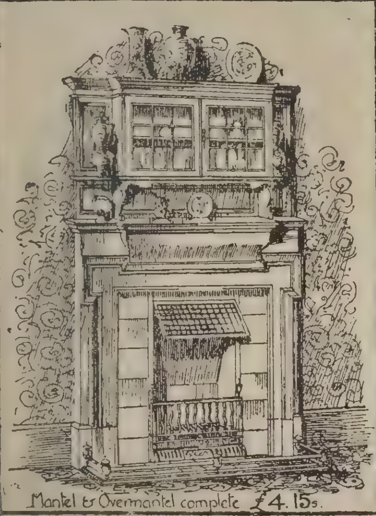
				A.		
Britton, F. W., Highbury	£11,200	0	0	£80	0	0
Wade, G., Chelsea	10,700	0	0	50	0	0
Newman, J. H., Bloomsbury	10,500	0	0	60	0	0
Batley, Sons, and Holness, Old Kent-road	10,447	0	0	100	0	0
Nightingale, B. E., Albert Embankment	10,389	0	0	150	0	0
Dupont, F., Colchester	10,097	0	0	110	0	0
Bulled, E. P., and Co., Croydon	9,880	0	0	45	0	0
Norton, W., Chelsea	9,731	0	0	50	0	0
Higgs, F., and H. F., Loughborough Junction	9,875	0	0	225	0	0
Holloway, H. L., Deptford	9,643	0	0	—		
Minter, G., Westminster	9,670	0	0	45	0	0
Lorden and Sons, Tooting	9,069	0	0	79	0	0
Smith, W., Eldon Works, Harleyford-road, S.E.*	9,125	0	0	125	0	0

A.—Credit for old material. * Accepted conditionally.

Chelsea.—For two residences, Exeter-street, Chelsea, S.W. Mr. J. J. Stevenson, architect. Quantities by Mr. W. H. Elsmore:—

Stephens, Bastow, & Co., Ltd., Bristol	£7,700	0	0

(Accepted.)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Christchurch, Hants.—For the erection of cottage homes, for the board of guardians :—

Chinchen, J. (accepted)	£10,500	0	0

(Lowest tender but one, that from J. White, the lowest, having been withdrawn after acceptance.)

Church Stretton, Shropshire.—For additions to the hotel, for the Stretton Hotel Company. Mr. John R. Withers, Shrewsbury, architect :—

Bickerton and Maddocks	£640	0	0
Morris, T. (accepted)	488	0	0

[Both of Shrewsbury.]

Clungunford, near Craven Arms.—For the restoration of and additions to St. Cuthbert's Church. Mr. E. Turner, Leicester, architect :—

Whitingham, E., Newport, Salop ..	£2,430	0	0
Smith, H., Kidderminster*	2,335	0	0

* Conditionally accepted.

Crofton Park, Kent.—For the erection of a detached villa residence, for Mr. G. Hayward. Mr. John Jas. Downes, 11, The Parade, Lewisham High-road, S.E., architect :—

Jackson, Lewisham (accepted) ...	£450	0	0

[No competition.]

Devonport.—For erecting stores, for the Stonehouse Pool Improvement Company's new quays, Richmond-walk, Devonport. Mr. H. G. Luff, 64, Chapel-street, Devonport, architect. Mr. J. M. Gritton, 6, Athenæum-street, Plymouth, quantity surveyor :—

Doidge, C. V.	£3,110	5	0½
Lapthorne and Co., Plymouth ...	3,023	0	0
Greenslade, T.	2,820	12	0
Littleton, W.	2,746	18	0
Taylor, T., Stonehouse	2,730	0	0
Shillabeer, G., Plymouth	2,700	0	0
Smith, G., and Son	2,699	15	0
Crockell	2,574	2	11
Jenkins and Son (accepted)... ...	2,550	0	0

[Rest of Devonport.—To be completed in four months.]

Devonshire.—For carrying out the first section of the plans for enlarging the county pauper lunatic asylum, for the Devon County Council :—

Dart and Son, Crediton (accepted).

Falmouth.—For building a hopper barge, for the town council :—

Burt and Son, Falmouth	£442	0	0
Penpole, Flock	440	0	0
Thomas, W.C., Falmouth (accepted)	430	0	0

Falmouth.—For drainage extension in Eresby-terrace, for the town council :—

Goldsworthy, W. G.	3s.	6d.	per yd.
Skinner, E.	3	2	„
Corder and Barnicott (accepted) ...	3	2	„

Gailey-cum-Hatherton, Staffs.—For partly rebuilding and enlarging the National Schools. Messrs. J. R. Veall and Son, Wolverhampton, architects :—

Reynolds, J., Cannock	£277	0	0
Gough, H., Wolverhampton ...	270	0	0
Gilbert, A., Penkridge (accepted) ...	260	10	0

Hanham, Somerset.—For a new pulpit in Bath stone, for the parish church :—

Jones and Willis, London and Birmingham £61 (Accepted).

Heywood, Lancs.—For the supply of iron pipes for sewerage purposes, for the town council :—

Firmstone, C. E., and Brothers (accepted).

Kingsbridge, Devon.—For sewer extension from Waterloo-road to Wallingford, for the local board :—

Lidstone, J.	£100	0	0
Veale, R.	99	9	0
Andrews, G. B. Ivybridge	98	0	0

Launceston.—For the supply of 781 tons of cast-iron water mains, for the town council. Messrs. Jenkins and Son, of Liskeard, engineers :—

Shaw and McInnes, Firhill Works, Springbank, Glasgow (accepted), at £4 10s. per ton for ordinary sizes, and £8 10s. for special castings.

London.—For alterations to No. 123, Cornwall-road, W. Mr. W. Wonnacott, A.R.I.B.A., 106, Lancaster-road, architect :—

Wilkinson, G. W., and Sons ...	£460	0	0
Williams, J. P. (accepted)	419	10	0

London, N.—For alterations to Nos. 192 and 193, Upper-street, Islington, for Mr. W. J. Lewis. Mr. Edmund J. Harrison, 12, Compton-Terrace, Highbury, N., architect :—

Ward and Lamble, Holloway ...	£245	0	0
Gardner and Hazell, Canonbury ...	202	0	0
Milroy, J., Clerkenwell	193	0	0
Houghton, E., and Sons, Stroud Green (accepted)	148	0	0

London.—For alterations, additions, and general repairs to Nos. 593-5-7, Old Kent-road, S.E., for Mr. R. A. Langford. Mr. John Jas. Downes, 11, The Parade, Lewisham High-road, S.E., architect :—

Herring, Peckham	£975	0	0
Lacke, City	896	0	0
Lorden, Tooting	867	0	0
Powditch, King's Cross	830	0	0
Champion, Peckham	705	0	0
Best, S. R., New Cross (accepted)...	689	0	0

Merton, Surrey.—For alterations to Merton National Schools, for the trustees. Mr. H. G. Quartermain, Kingston-road, Merton, architect :—

Bowyer, J. and S. (accepted) ...	£750	0	0

Merton, Surrey.—For the erection of a school of science in Kingston-road, for the trustees of the Rutlish Charity. Mr. H. G. Quartermain, M.S.A., Kingston-road, Merton, architect. Quantities by Mr. W. H. Dearle, 6, John-street, Adelphi, W.C. :—

	A.	B.	C.
Patman and Fotheringham ..	£5,392	£1,781	£7,173
Lawrence, E.	5,048	1,652	6,700
Parsons and Townsend ...	5,039	1,598	6,600
Higgs and Hill	4,874	1,510	6,384
Killby and Gayford	4,757	1,513	6,270
Smith and Son...	4,745	1,496	6,241
Oldridge	4,679	1,548	6,227
Holliday and Greenwood ...	4,647	1,488	6,135

A.—School building. B.—Plumber's shop and lecture hall. C.—Total.

[Two other tenders received late.]

Merton, Surrey.—For alterations and new latrines at Abbey-road infants' school, for the trustees. Mr. H. G. Quartermain, Kingston-road, Merton, architect :—

Parsons and Townsend, Wimbledon (accepted) £435

Milnrow, Lancs.—For fencing in the old mill yard, for the local board. Mr. C. Rothwell, surveyor to the local board :—

Leach, J. (accepted).

Newport, Mon.—For the erection of leading lights, for the harbour commissioners :—

Langmaid (accepted)...	£153	3	2

Rickmansworth.—For the erection of a detached villa residence, for Mrs. T. E. Nobbs. Mr. Edmund J. Harrison, 12, Compton-terrace, Highbury, N., architect :—

Brown and Sons, Harefield... ...	£800	0	0
Holland, J., Rickmansworth ...	799	0	0
Green, J., Northwood (accepted) ...	741	0	0
Eames, Rickmansworth	725	0	0

Stafford.—For carrying out sewerage works in the borough, and also the Backwalls North Section, for the town council :—

Tempest, E., Newchurch, near Manchester £20,326 (Accepted).

Swindon.—For the erection of the Bell and Shoulder of Mutton Inn, Swindon. Mr. W. H. Read, M.S.A., Corn Exchange, Swindon, architect :—

Williams, C.	£1,237	0	0
Wiltshire, G.	1,235	10	0
Barrett, T.	1,228	10	0
Williams, J. (accepted)	1,187	17	0

(All of Swindon.)

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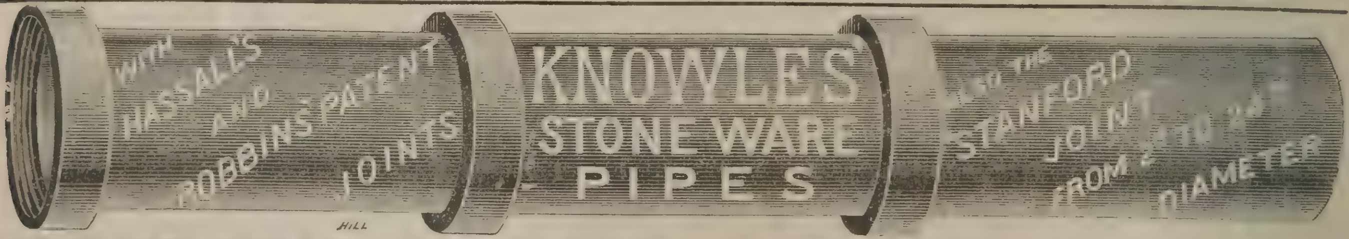

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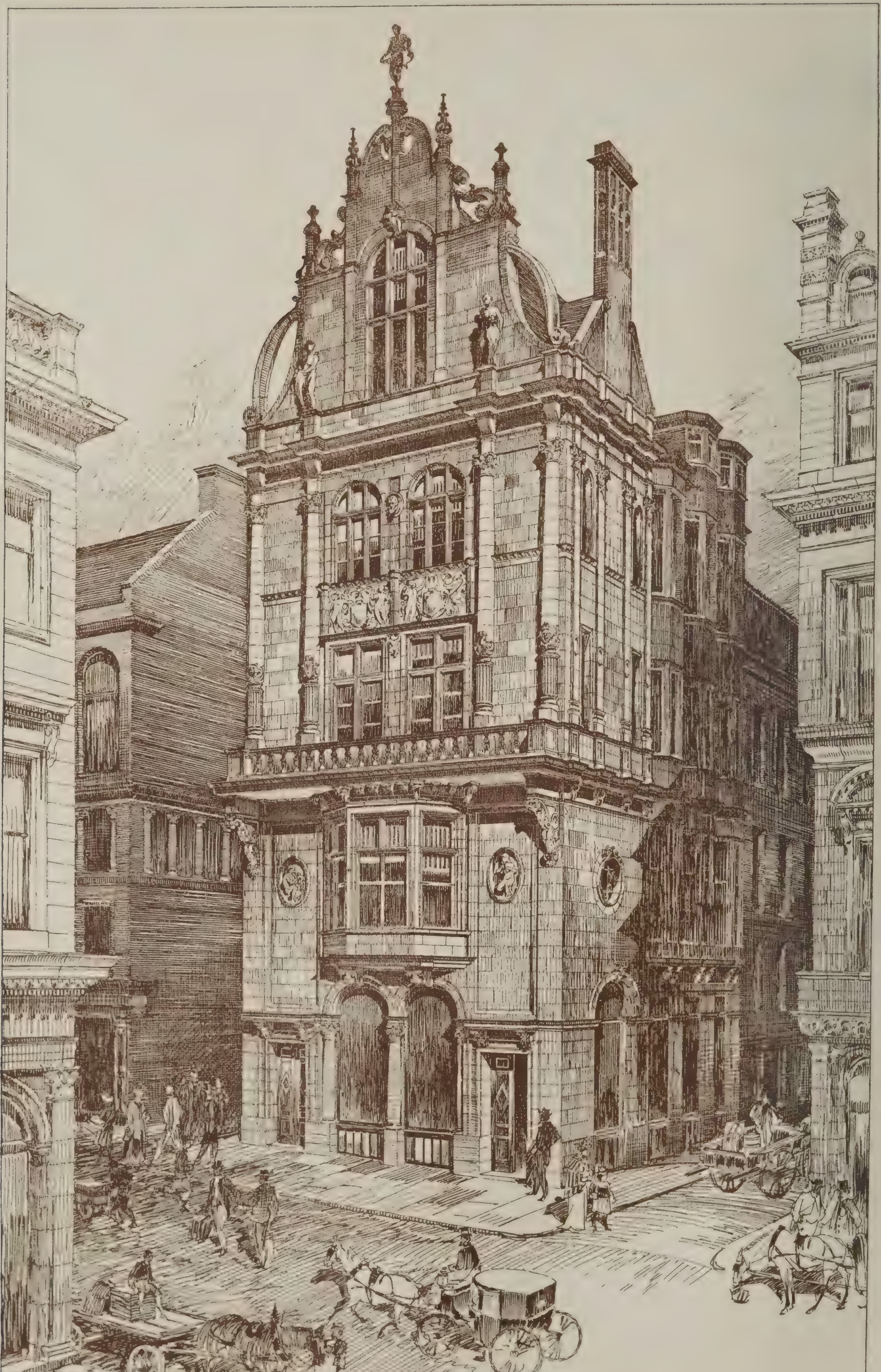

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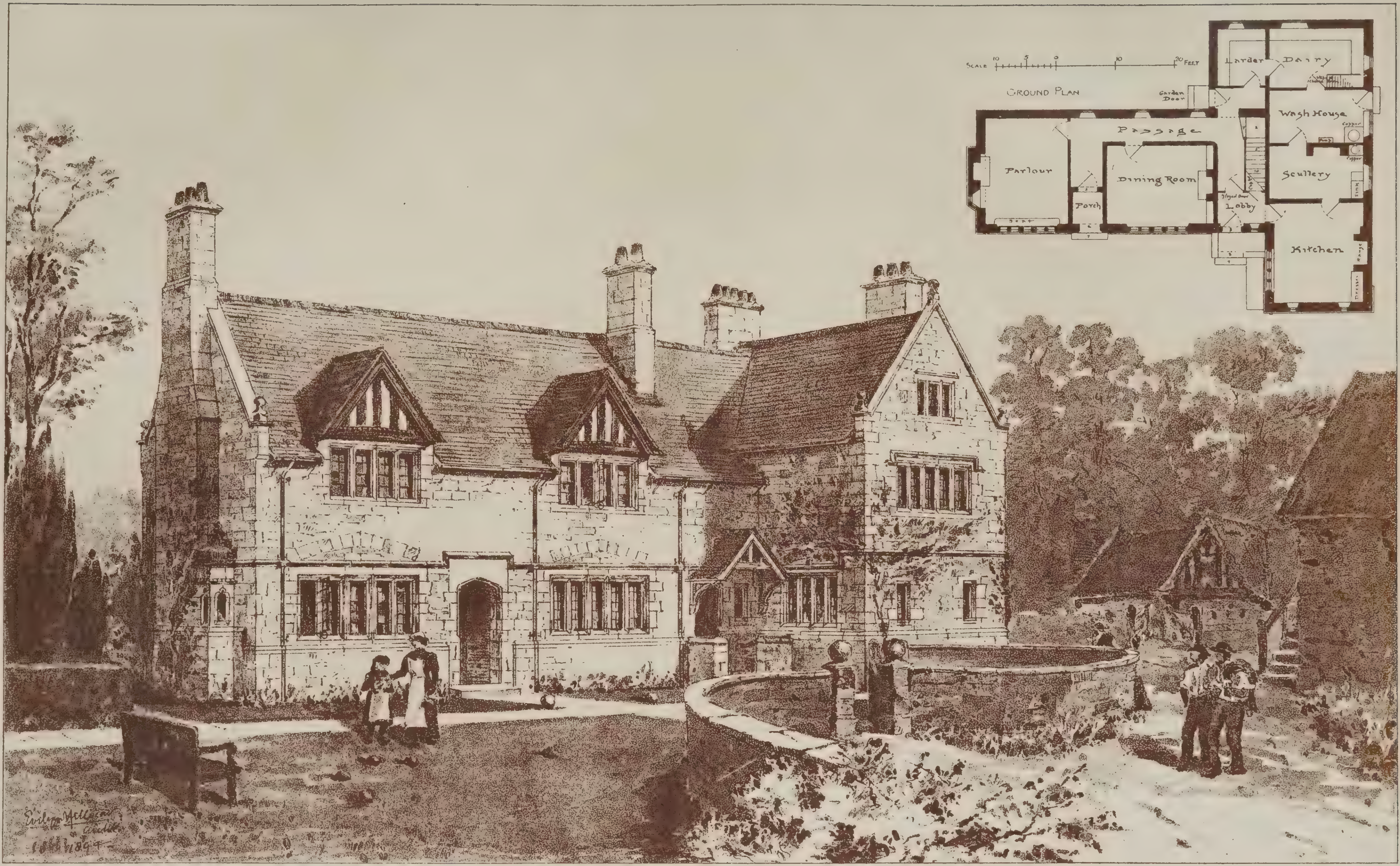

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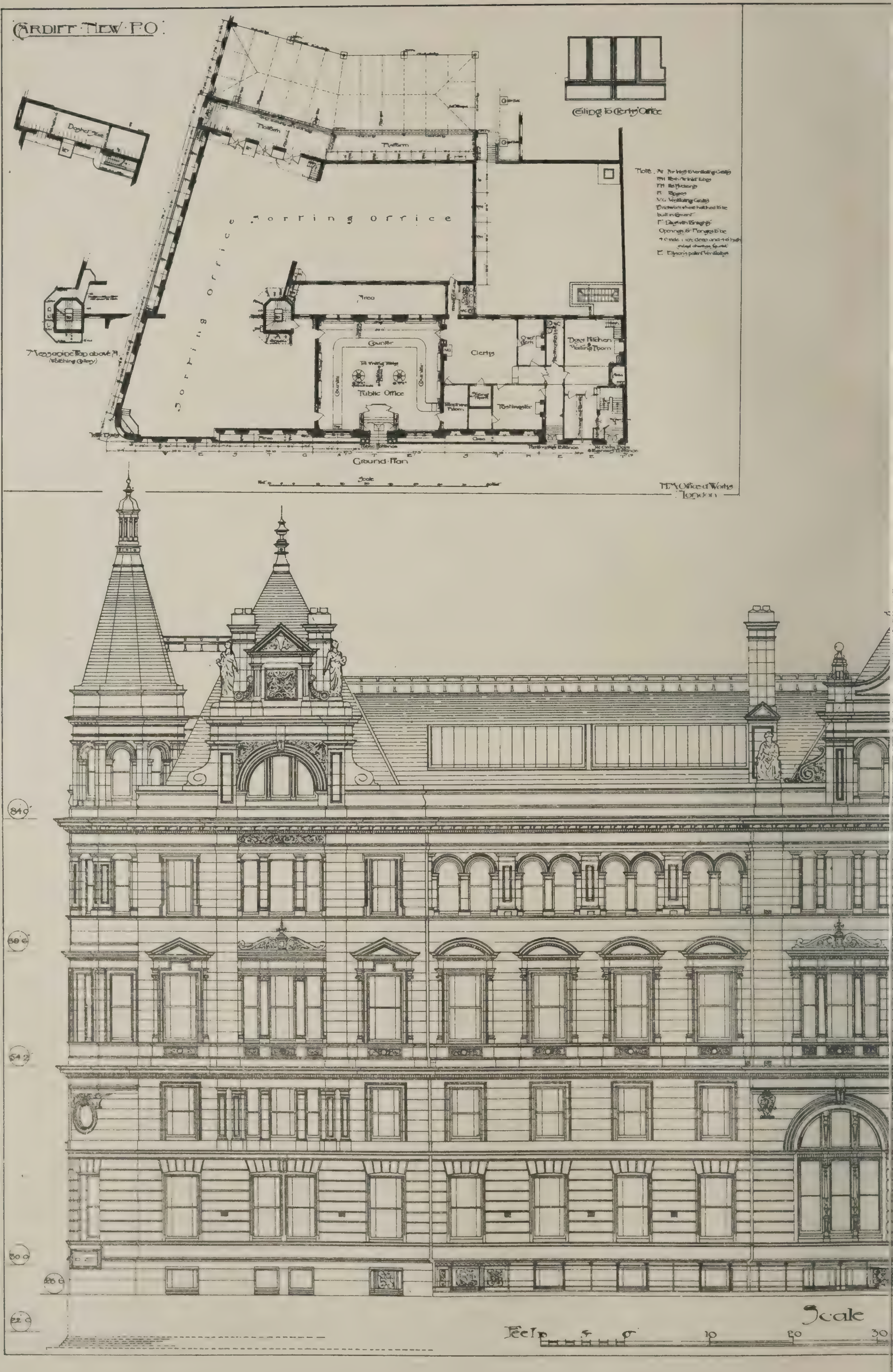
Cardiff New P.O.
Ceiling to Clerks' Office
Platform
Platform
Sorting Office
Sorting Office
Area
Counter
Public Office
Clerks
Postmaster
Day Kitchen & Waiting Room
Mezzanine Plan above A (Watching Gallery)
Public Entrance
Postmaster's Entrance
Ground Plan
Scale
Note.
Brickwork where hatched to be built in Cement
Openings for Flanges to be
E. Ellison's patent Ventilators
H.M. Office of Works London
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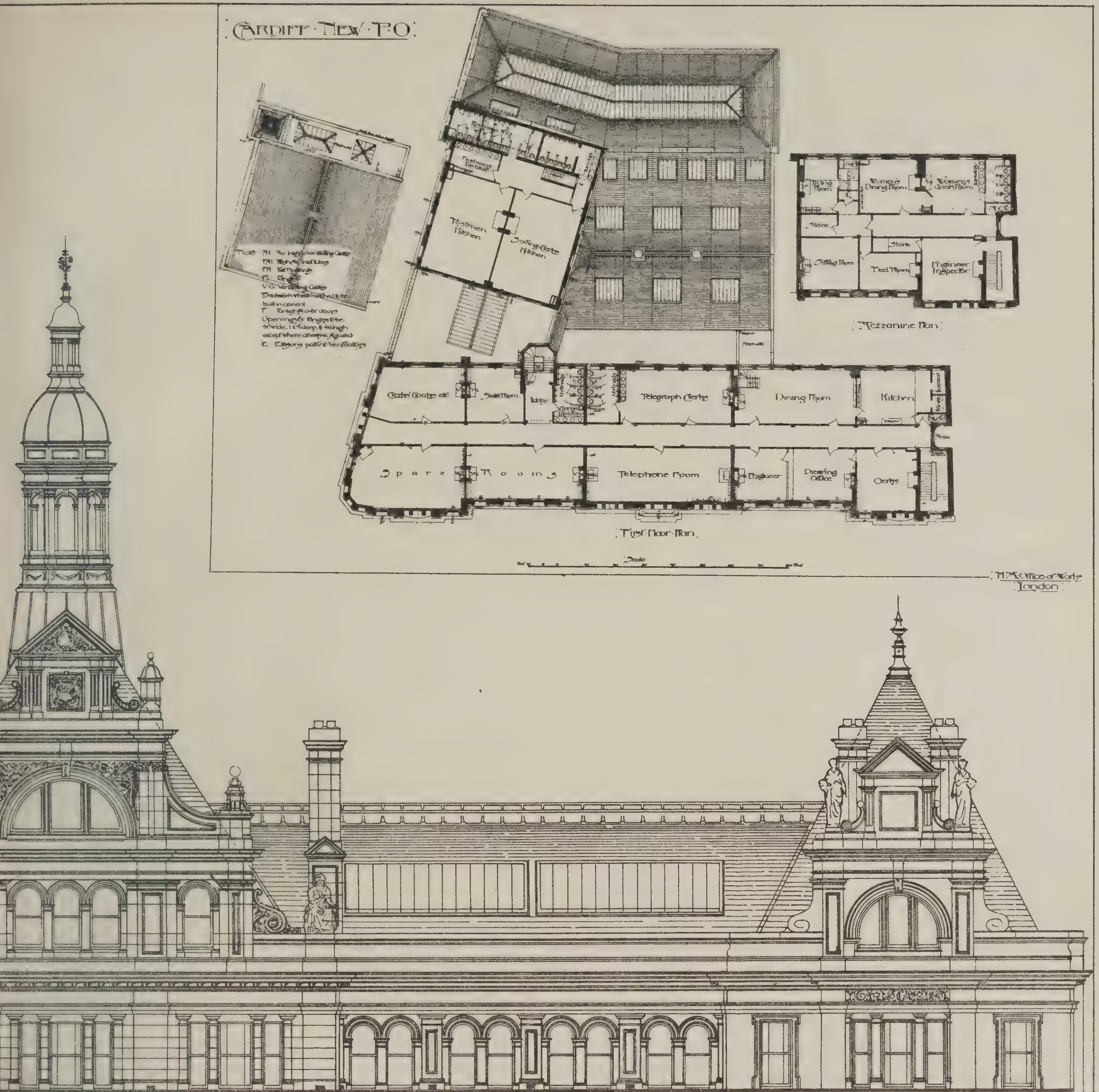

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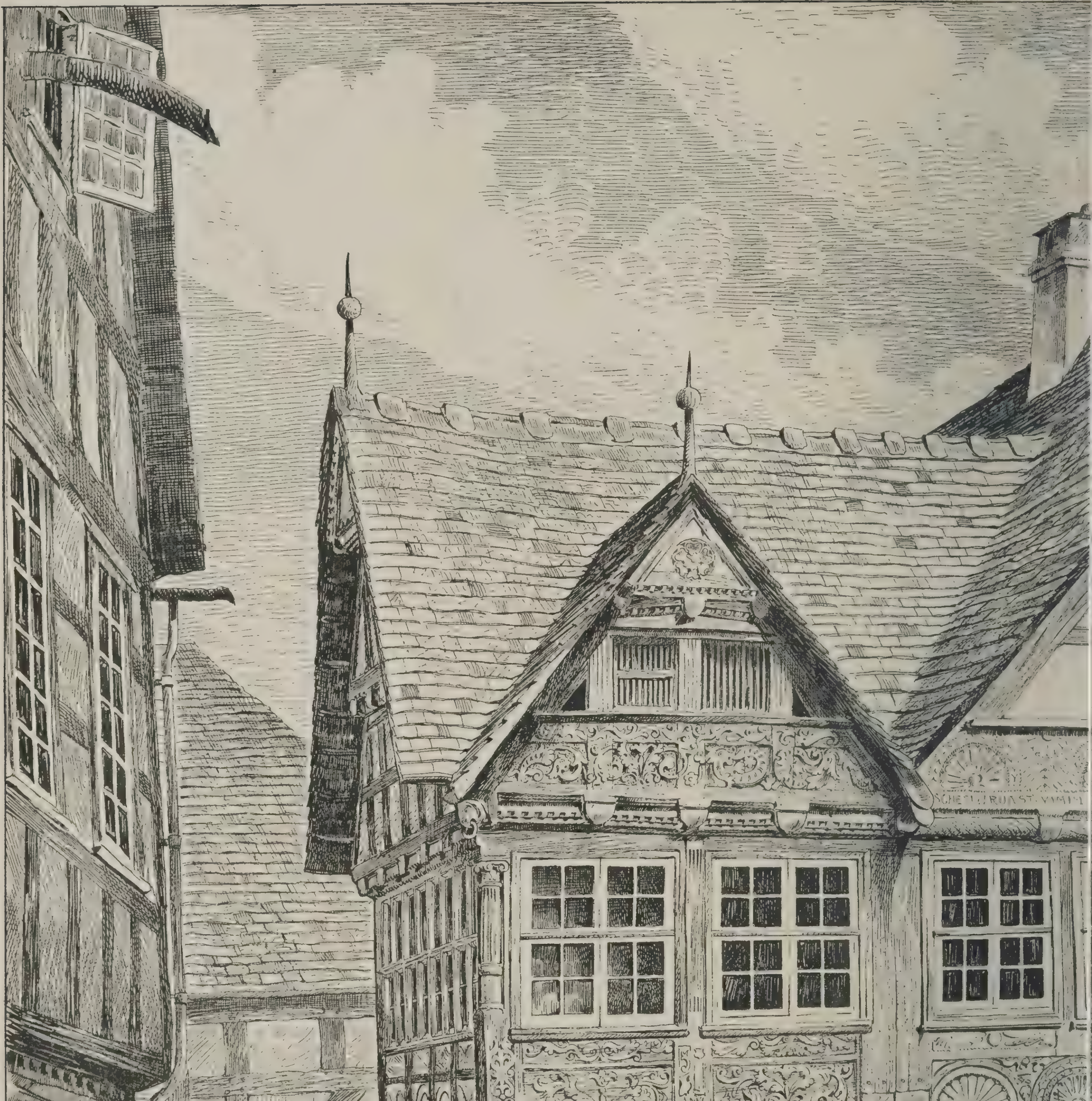
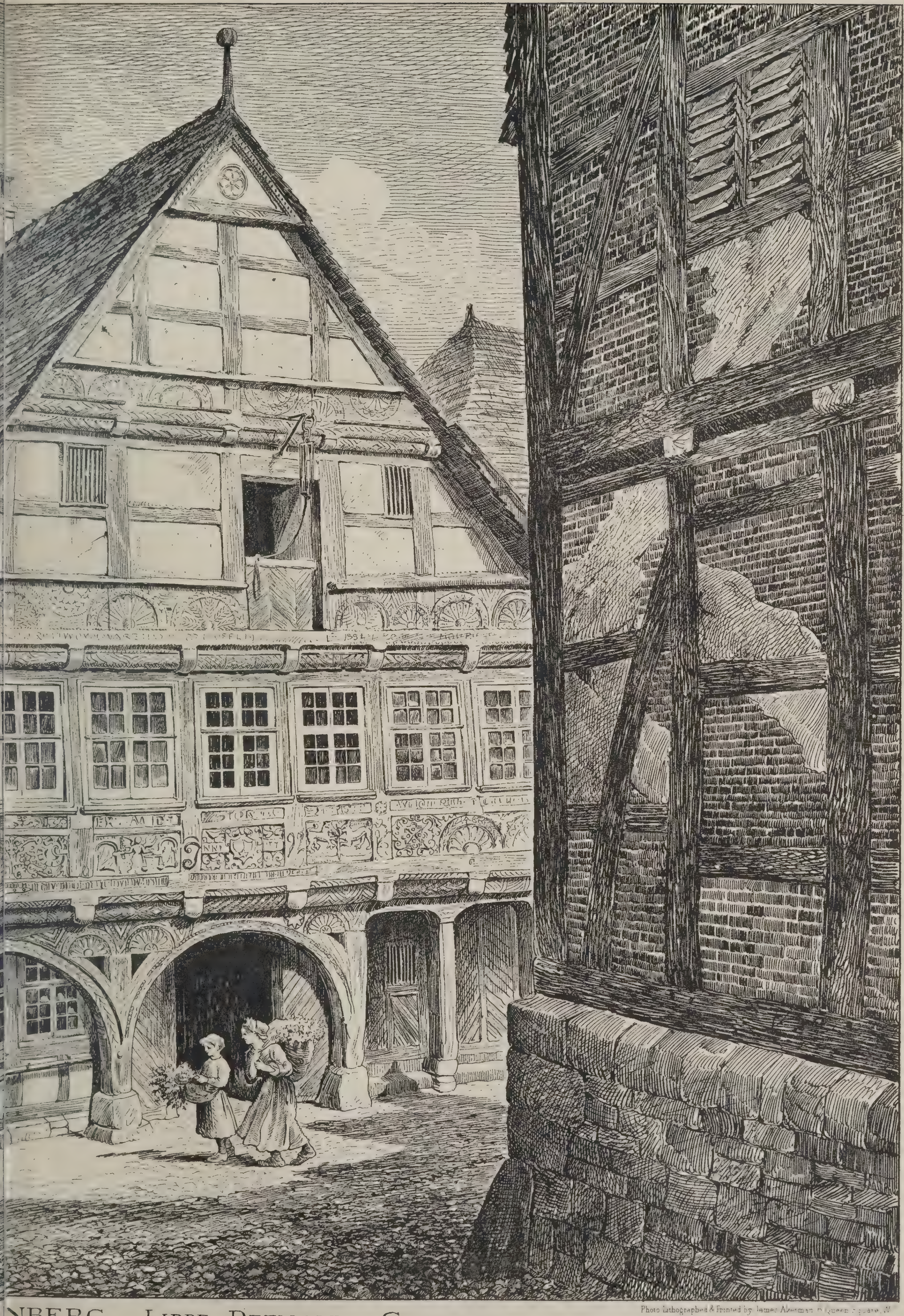


THE OLD RATH-HAUS SCHWAL



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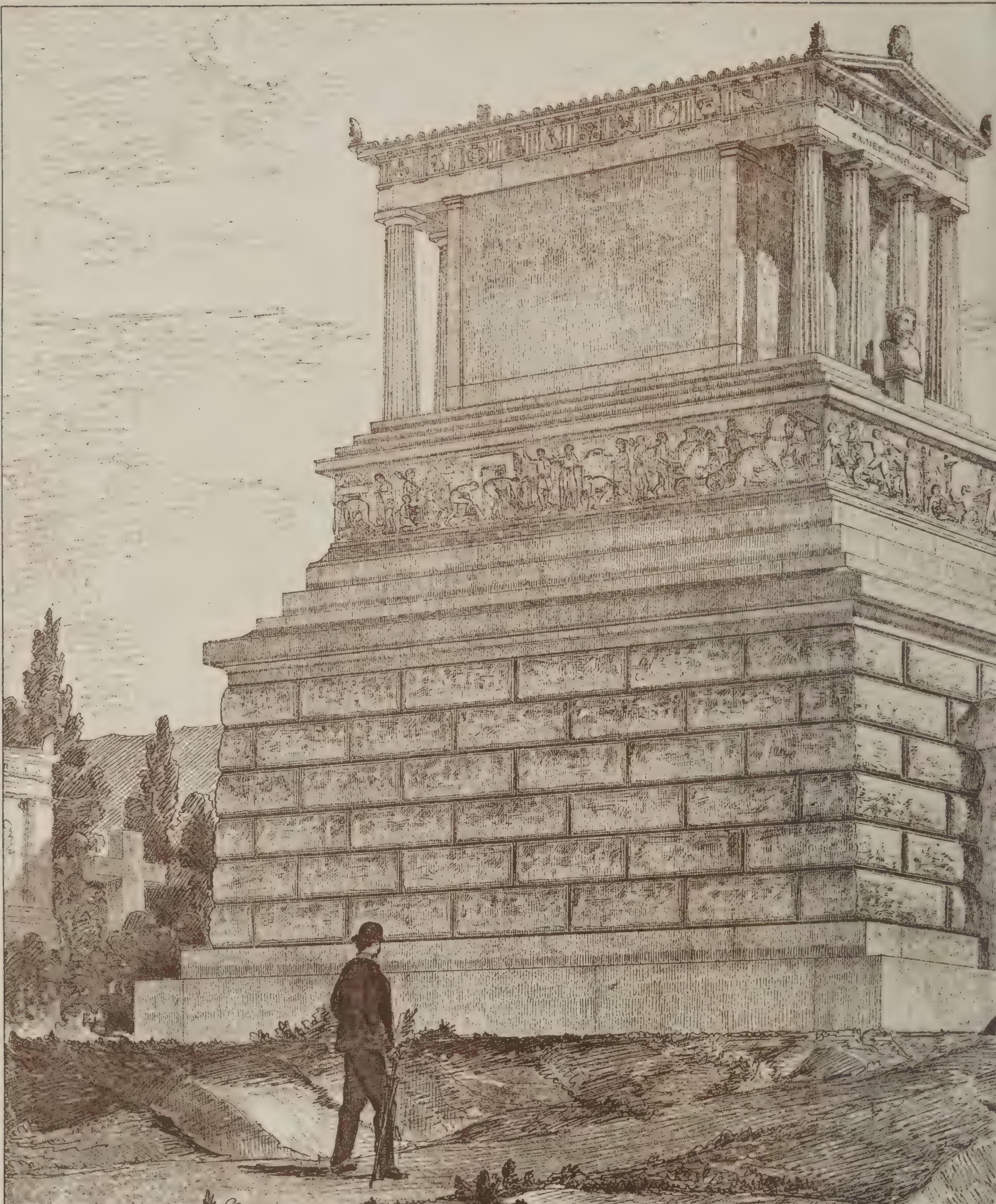

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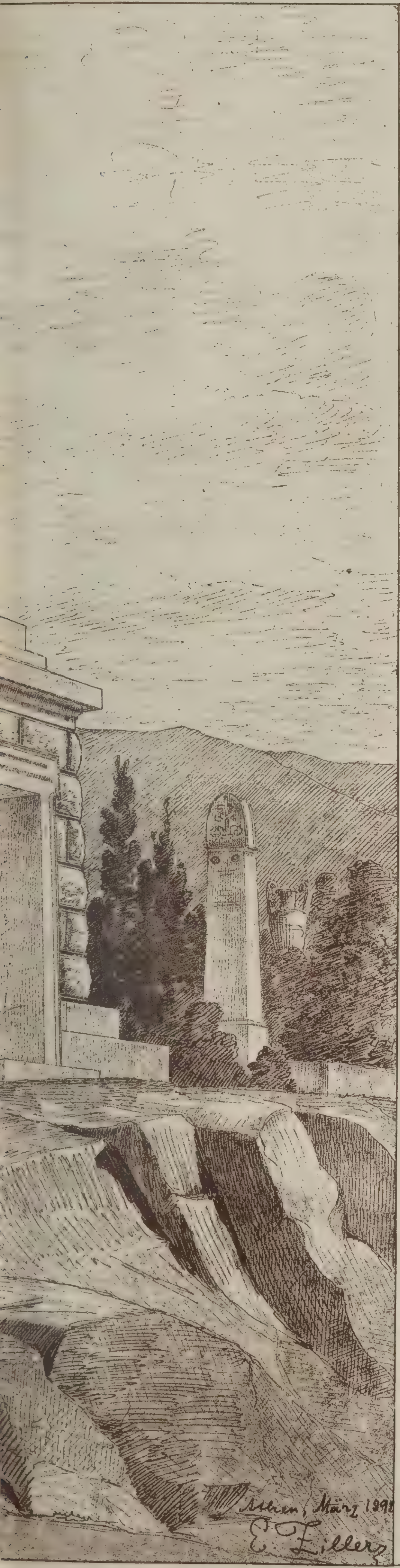

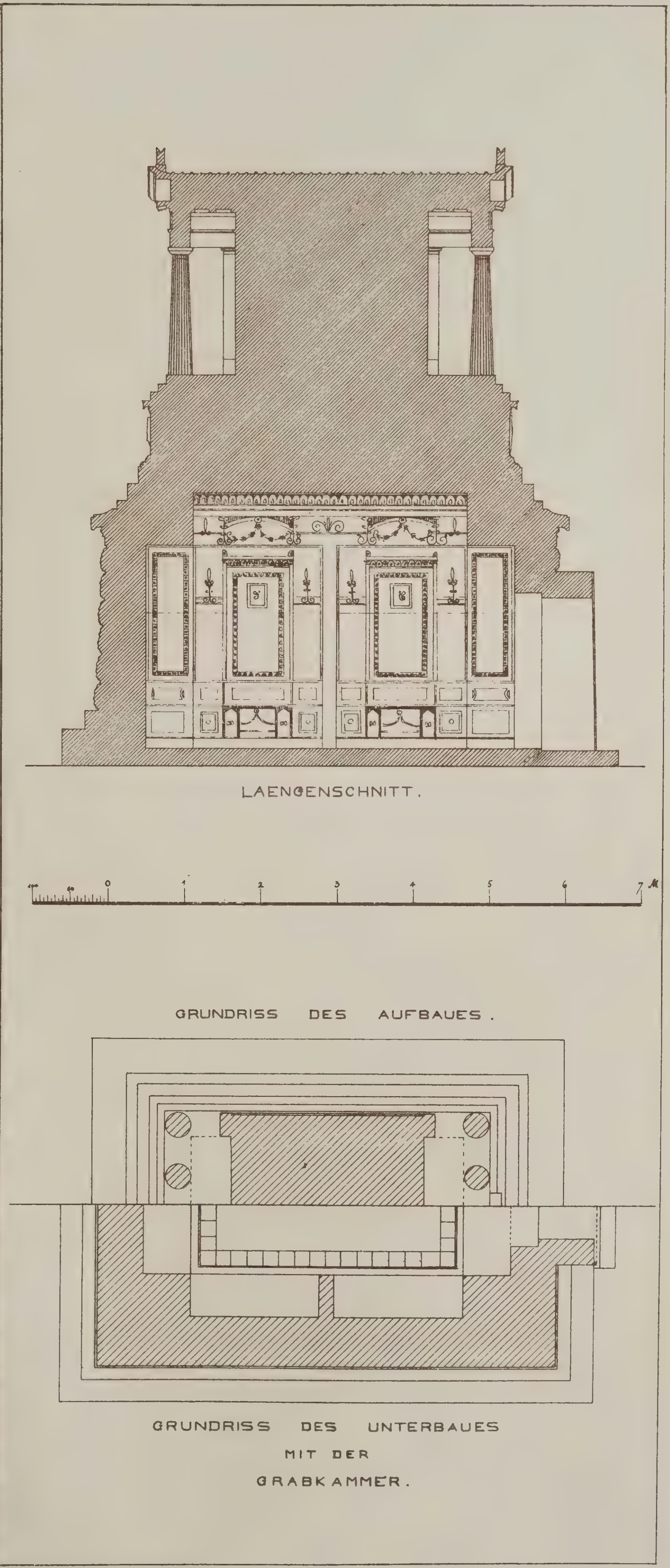

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CEMETERY AT ATHENS· E·ZILLER ARCHT

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2073.

FRIDAY, SEPTEMBER 28, 1894.

THE LONDON BUILDING ACT.

THE London Streets and Buildings Bill, of which we have given our readers some account during the last few months, has at length passed into an Act under the general heading above, and comes into operation on the first day of January next. Since we intend to give our Metropolitan readers a general *résumé* of the main provisions of this Act as it applies to streets and buildings, we may confine our attention here to a general review of the clauses as they have been revised and amended in committee. The Act is, as our readers know, intended to consolidate and amend the enactments relating to streets and buildings in London which are contained in various public and local Acts, numbering in all thirteen, beginning with the Metropolitan Building Acts of 1844 and 1855, and ending with the London County Council (General Powers) Act, 1890, and the London County Council (General Powers) Act, 1893. The various Amendment and Management Acts are too well known to require recapitulation. As we have repeatedly pointed out, the piecemeal legislation during the last 50 years has been too complicated and confusing to allow any practitioner, except the most experienced, to understand the many provisions, some new, others dove-tailed and engrafted upon the old. Many of these provisions are extremely doubtful in their application. With regard to the formation and widening of streets and the construction of buildings, the authorities have been in a hopeless condition of indecision, because the existing Acts have not conferred the powers necessary for carrying into effect certain improvements in those matters.

The new Act is divided into 16 parts. These are: I. Introductory; II. Formation and Widening of Streets; III. Lines of Building Frontage; IV. Naming and Numbering of Streets; V. Open Spaces about Buildings and Height of Buildings; VI. Construction of Buildings; VII. Special and Temporary Buildings and Wooden Structures; VIII. Rights of Building and Adjoining Owners; IX. Dangerous and Neglected Structures; X. Dangerous and Noxious Businesses; XI. Dwelling-Houses on Low-lying Land; XII. Sky-signs; XIII. Superintending Architect and District Surveyors; XIV. Bylaws; XV. Legal Proceedings; XVI. Miscellaneous.

The definitions given in the new Act are more precise and unequivocal than many in the old Act. Thus, we find the definition of "street" has been extended and much altered from the one first drafted in the Bill. It runs:—"The expression 'street' means and includes: Any highway and any road, bridge, lane, mews, footway, square, court, alley, passage, whether a thoroughfare or not, and a part of any such highway, road, bridge, lane, mews, &c." The Draft Bill ran as follows:—"Any street, road, or way, or part of any street, road, or way, formed or laid out for building, or commenced to be formed or laid out for building, and also any way, or any part of any way, widened or altered or adapted for the purposes of a street, or commenced to be widened, altered, or adapted for the purposes of a street." It will thus be seen the amended form is more general and comprehensive in its application, the words "formed or laid out for building" being omitted. The amended form takes in every form of inclosure by building or otherwise, and the words, "whether a thoroughfare or not," makes it clear that the word "street" does not necessarily imply a thoroughfare. Again, "the expression, 'way' includes any public road, way, or footpath, not being a street, and any private road, way, or footpath which it is proposed to convert into a highway, or to form, lay out, or adapt as a street." Comparing these definitions in the Draft Bill and those in the Act together, we find the committee have converted the definition of "way" into that of street, as the clause in the Bill for "way" was, up to a certain point, word for word the same as that now adopted for "street." The definition "roadway" has not been altered. As to the term "centre of the roadway," the sub-clause (*b*) amended reads as follows:—"In relation to any street or way of which the centre of the roadway shall not have been ascertained or defined by the Council or the superintending architect: where the roadway opposite the site of the building in question shall since the 22nd day of July 1878 have been widened; the centre of roadway as existing immediately before the date of such widening; or where it shall not have been so widened, the actual centre of the existing roadway." The superintending architect may define the centre of roadway in the case of a street formed or laid out after the 18th day of August, 1890, and the line so defined is to be deemed the centre, notwithstanding that the actual centre of the roadway may have become altered by reason of widening on one or both sides to an unequal extent.

A very important definition is that of (6) "new building," as upon it turns nearly every question of law as to reconstruction. The Draft Bill definition has been remodelled, though the clause, as finally passed, is less clear, to our minds. The definition, as revised, includes, "any building erected after the commencement of this Act; any building which has been taken down for more than one-half of its cubical extent and re-erected, or commenced to be re-erected, wholly or partially, on the same site after the commencement of this Act; and any space between walls and buildings which is roofed, or commenced to be roofed, after the commencement of this Act." The first drawn-up definition was more exact as regards re-erected buildings. It included the re-erection, wholly or partially, of any building on the same site of which an outer wall is pulled down to or within 10ft. of the surface of the ground, any frame building pulled down as to leave the framework of the ground story, or the re-erection or restoration of any building taken down or destroyed to an extent exceeding one-half of the cubical contents. It also included the conversion of buildings not intended for habitation into dwelling-houses, or the conversion of two or more dwellings into one, and other conversions as that of dwellings into shops. By the amended Act these several conversions of premises are excluded. We think it is a pity they should have been, as many houses are converted into shops and other uses for which they are ill-suited, and become means of avoiding the Act. Other definitions of importance in the new Act are those of "party wall," "topmost story," and "building of the warehouse class." As regards the first, the expression means "(*a*) a wall forming part of a building, and used or constructed to be used for separation of adjoining buildings belonging to different owners, or occupied, or constructed, or adapted to be occupied by different persons; or (*b*) a wall forming part of a building, and standing to a greater extent than the projection of the footings on lands of different owners. This definition would include any projecting mass of masonry or wall. The term "topmost story" has been frequently called into question as to whether it is an attic in the roof, or a story below the roof. The Act says "it means the uppermost story in a building, whether constructed wholly or partly in the roof or not," a definition which is sufficiently obvious to avoid any misapprehension in construing the schedule of the thicknesses of walls. Again, a "building of the warehouse class" is thus interpreted. It means "a warehouse, factory, manufactory, brewery, or distillery, and any other building exceeding in cubical extent 150,000c.ft., which is neither a public building nor a domestic building." As the term "public building" is meant to apply to all buildings used as a place of assembly, or to any structure used, or adapted to be used, for any public purpose; also to those constructed or adapted to be used as an hotel, lodging house, home, refuge, where such building extends to more than 250,000c.ft., or has sleeping accommodation for more than 100 persons, there can be apparently little difficulty experienced in distinguishing a warehouse or building of this class. At present, as we have seen in a recent legal decision, a large building, used partly as a warehouse and partly as a dwelling, gives rise to some difficulty.

Part II. deals with the formation and widening of streets, to which part of the Act we can now only refer briefly. While the new law will not affect the powers of the local authority to widen, alter, or improve any street, certain provisions (sects. 7 and 8) are laid down for this purpose. Sanction must first be obtained by application to the Council before laying out any street for carriage or foot traffic, and the application must be accompanied by plans, sections, and particulars. Erecting a fence, or laying lines of curbing, or levelling the course will be deemed to commence to form a street. The Council may refuse to sanction plans of streets when the proposed street for carriage traffic is not of the full width of 40ft., or such other required width; when the street proposed for foot traffic is not of the width of 20ft.; when the street 60ft. in length or more, of which the length is greater than the width, is proposed without being open at both ends; when any street not within the City is proposed, and will not at, and from, the time of laying out afford direct communication between two streets for carriage traffic, &c. Section 10 requires persons, before commencing to adapt existing streets or ways for carriage traffic or for foot traffic, to make application, and submit plans and sections; it also lays down rules as to what constitutes the commencement of a street; and also as to widening on either side to a less extent than the prescribed distance any part of a street or way. Certain grounds for refusing to sanction adaptation of ways for streets, for traffic or foot, are provided in Section 11, as when the houses on both or one side thereof are not of the required distance of 20ft. between the centre of roadway and the nearest external wall of the houses, or between it and the external fences of the forecourts; or when any such adaptation would result in the formation of a street exceeding 60ft. in length, or a street not exceeding that length, of which the length exceeds the width, not being open at both ends; or resulting in a street not affording direct communication between two streets for carriage traffic. The Council, under Sect. 12, may require, in the public interest, that any street not being within two miles of St. Paul's, which, by reason of its length or importance, is likely to form part of an important line of communication, or, for other reasons, may make it a condition of their sanction that the street or way throughout, or in part, be made of a greater width than 40ft., not exceeding 60ft.,—an important and necessary provision. The next section enacts that no new building, or any part thereof, shall be erected at a less distance than that prescribed from the centre of roadway without consent, and if there be a forecourt, that the said distance be to the external fence. The Council, however, reserve the power in any street of importance to determine a greater distance than 20ft., not exceeding 30ft., from the centre of the roadway. This section is not to apply to any street within two miles of St. Paul's. In case of any dissatisfaction, the person intending to erect or extend such buildings may appeal to the Tribunal of Appeal against the determination of the Council. The other subsections give the conditions under which the Council may give consent to the erection or extension of any building at a less distance than the prescribed, and refer to the re-erection or alteration of any buildings existing at the commencement of the Act, or within seven years previously; also the plans required to show the extent of the building. Sections 14 to 21 deal with the notices, with compensation in certain cases; sanction of Council to new buildings at less than prescribed distances; appeal of applicants on ground of refusal, or conditional grant of sanction, &c. In Part III. the sections relate to the mode of proceeding with regard to buildings beyond line of street, and to buildings projecting beyond general line when taken down. Section 22 provides that no building is to be erected beyond the general line of buildings in any street, place, or row, without the consent of the Council, "in case the distance of such line of buildings from the highway does not exceed 50ft., or within 50ft. of the same, when the distance of the line of buildings therefrom amounts to or exceeds 50ft., notwithstanding there being gardens or vacant spaces between the line of builings and the highway"; such general line shall, if required, be defined by the superintending architect by a certificate. But the section is not to apply to any building erected after the commencement of the Act upon land which either at that date, or within seven years previously, has, or shall have been, occupied by a building. Sect 23 provides that if any building project beyond general line, and is taken down to an extent exceeding one-half of the cubical extent, or shall be destroyed by fire or demolished to the extent aforesaid, the Council may require any new building erected on the site, or any part thereof, to be set back to a line the Council shall direct. Compensation is to be made for damage or expenses which the owner may sustain. Arbitration is provided in cases where the amount claimed exceeds £50. Sects. 24 to 31 relate to notices of definition of general line, appeal against architect's certificate, conditions attached to consent when building in front of line, &c. Part IV., sects. 32 to 38, relate to the draining and numbering of streets.

The very important sections relating to open spaces about buildings and height are given in Part V. Owing to the opposition to the Bill made by property owners, builders, surveyors, the Institute of Architects, and other bodies, the amendments have seriously impaired the efficiency of the original clauses. It will be remembered that section 29 of the Bill required an open space of 40ft. at least (unless the building is less than 40ft. in height) to be left in front of buildings not fronting on a public way, which space was to be clear of all erections except fences or walls. Section 40 of the new Act provides for light and ventilation of habitable basements in the rear of domestic buildings, "an open space of an aggregate extent of not less than 100sq.ft., free from any erection thereon above the level of the adjoining pavement." Section 41 provides also for new domestic buildings abutting on new streets an open space in the rear, exclusively belonging to such building, of an aggregate extent of not less than 150sq.ft. When the basement is lighted and ventilated as above, or when there is no basement story, but when the ground story is not intended for habitation, the open space of this section may be provided above the level of the ceiling of the ground story. The open space in other cases is to be free from any erection above the level of adjoining pavement except a w.c. and receptacle for ashes; it is to extend throughout the entire width of the building, and to a depth in every part of at least 10ft. from such building. Subsection iii. refers to the height of any building in relation to the space required in the rear, and is to be fixed according to a method described. It is briefly this: A horizontal line is to be drawn level with the pavement formed in front of the centre of building, and a diagonal line is to be drawn at an angle of 63½°, meeting the horizontal line where it intersects the rear boundary. No part of such building is to extend above this diagonal line except chimneys, dormers, gables, turrets, and other architectural ornaments, aggregating in all to not more than one-third of the width of the rear elevation. In cases of unlevel pavements, the mean level is to be taken. Other irregularities and exceptional cases are dealt with in several sub-clauses of this section, to which we shall refer more in detail in our next article. The angle at first proposed in the early Draft Bill was 45°, which gave a reasonable, though by no means liberal, space in the rear; that now proposed, 63½°, has been inserted to satisfy owners and others who have vested interests, and we think it is far too great an angle, as it will allow buildings to be erected to a height much in excess of that which all sanitary and hygienic authorities have laid down. We may mention that sect. 47 enacts that a building (not being a church or chapel) shall not be erected or be subsequently increased to a greater height than 80ft., exclusive of two stories in the roof and of ornamental towers, turrets, or other features, without the consent of the Council, except where a contract has been previously made. Discretionary powers are given to the Council, section 49, and the height of buildings in streets of less width than 50ft. is limited to that width in certain cases. A very useful section, too, is 45, which provides for domestic building with courts inclosed on all sides for light or air. It is to the effect that when the depth of such court from eaves or top of parapet to the ceiling of ground story exceeds the length or breadth of such court, adequate provision for the ventilation of such court is to be made and maintained by the owner by means of a communication between the lower end of court and the open air; other provisions relate to windows opening into such courts from habitable rooms, the objects of which are desirable. To these sections and Part VI., on the Construction of Buildings, we shall refer more fully next week.

PROFESSIONAL PARTNERSHIPS.

In a profession which unites so many opposite and conflicting questions as that of architecture, the idea of two or three persons uniting themselves together for a common object appears to be a reasonable one. In most other professions, as those of law and medicine, the partnership idea has always commended itself, for reasons which may not be so easily understood amongst men engaged in an artistic vocation. "An artistic partnership! What next?" many will exclaim. "It is quite an anomaly. As well may we think of partnership in painting or in literature!" A few thoughts may remove this view as regards the architectural profession, which is no longer carried on as an art-craft, as in the old days. It is now something of a combination of the agent, the surveyor, and the artist, and the more nearly these elements are united in one person or brought about by a co-operation of individuals under a proper head, the more of a success it is, and in what way a few considerations will tend to show.

Business negotiations are often best carried on by partners. On the old principle that it is best not to put "all the eggs in the same basket," it is better for the interest of the business that more than one individual should be engaged in its control and management. Clients and patients are like general customers—they go to the shop that suits them the best, and if one member of a firm is not to their liking, the other member may be. Those who have been members of firms know very well this aptness on the part of clients to favour one partner. Lawyers and doctors find it to their advantage in keeping a large business together for one to treat with one class, and the other with another class. Particular clients and patients prefer to see Mr. A. rather than Mr. B., because Mr. A. is more agreeable, more conversational, is more sympathetic—in other words, a "nicer man"—than Mr. B. A firm of solicitors can engage in more than one kind of legal practice, one partner conducting the conveyancing, the other the common law practice; a medical firm has the same opportunity of dividing their patients. And, in a similar way, a varied architectural and surveying practice can be carried on by partners, one of the firm managing the latter class of business, while his partner confines himself to the architectural work. This sub-division is convenient, especially in provincial practices, where A. can confine himself to the designing and the strictly architectural duties, B. to the survey and valuations, and C. to the general business of the office and the consultations. The functions of the business, being thus divided, are more easily discharged; the work is rendered lighter and more congenial to each member, for each individual can take to that branch of the business for which he feels himself more fitted. His attention being confined to it without distraction from ordinary office details and his mind not called away to something of a very different kind, he is able to devote his abilities and experience to more advantage to his client and himself. Those who know what it is to turn their attention all at once from a design involving quiet and sustained study to matters like quantities or valuations, or a question of disputed builder's accounts, will at once appreciate the division of labour. The disturbance is irksome; it is not like an easy transition or pleasing change from one set of faculties to another which is agreeable, but a wrench, when perhaps the mind is in a suitable frame to pursue the work in hand. To go direct from a congenial exercise to one which is distasteful and for which you are quite unprepared is trying to the patience and ruffling to the temper, while it cannot be to the advantage of the work. We can form a general opinion of how a design is likely to be turned out under such circumstances; it goes on by "fits and starts." There is evidence of want of care and thought in the details. Some parts are not thought out at all, but the meaning and intention of the architect or specification has to be guessed, the work is more generally slurred, carried out just as the contractor likes — scamped. During the great ages of architecture, before the traditions of modern professional practice were known, we have good grounds for believing that the real designer was not at all fettered by such matters as quantities, disagreements with builders, and other office-work routine. Such official details and accounts were intrusted to others, as there is evidence to show. There certainly is nothing to indicate that the work of the designer was complicated with duties of the nature of the agent or the accountant. As the operatives formed guilds, so those engaged in the design and supervision of buildings worked upon co-operative lines, each individual contributing his own part to the result. It was a concert of willing heads and hands, rather than the attempt of one man to combine in himself the varied functions of conceiver, agent, and supervisor. The partnership ideal approaches this view nearer than the single professional man ideal. It is possible for two or more individuals of differing tastes and capacities to agree to unite together for their joint benefit; for the artist to join a man of business habits, or a surveyor; or for the architect to join an engineer, a surveyor, or an estate agent. Very often we find the business man, perhaps a surveyor and estate agent by profession, taking a young architect and making a very profitable connection in the three businesses. What is objectionable in these partnerships is the unsuitable alliances often made—perhaps a clever draughtsman with a young and unqualified partner, neither of whom knows anything of building practically; two young men of the same age and qualifications, who both wish to pose as architects or as business men, each anxious to take the lead. There are many partnerships spoilt by this lack of mutual understanding between the members. The firm of Dodge, Buzfuz, and Co. are in many respects admirable business and pushing men; but they each want to be prominent, and the consequence is a constant source of unpleasantness. Each desires to make himself known before the clients, and to have his own way in arranging matters, much to their alarm and perplexity of mind. The merit of a design made by the Co. of the firm—the "ghost," probably an outsider—is claimed by both Mr. Dodge and Mr. Buzfuz, though no one has probably seen either of them at a drawing-board or making a sketch. Petty jealousies and recriminations are continually marring the relations subsisting between the members of this firm, and the friction caused thereby must in the end impair the efficiency of the machine, which cannot work longer with any smoothness. A dissolution of partnership is the inevitable end. Mr. Dodge allies himself with a gentleman of very different tastes, a retiring individual of artistic proclivities, who would rather not be troubled to see a client, if he could sit unmolested and uninterfered with in the sanctum of his drawing office. It is needless to say the two pull harmoniously together. Neither interferes with the other. One takes art, the other the business and the management of clients.

The ill-assorted alliance has much to answer for in slovenliness of design. Each partner has his whims about plan and elevation, and the hapless draughtsman has to include them all. Mr. A. wants a bay window here, Mr. B. a gable there, Mr. C. wants a certain material introduced. As all three want a finger in the pie, we cannot wonder at the partnership design betraying a mixture of discordant features typical of the disunion that exists in the firm. We pity the single-minded artist having to obey so many masters who know nothing of art or the motives which control the architect. From this confusion and want of purpose the single-handed architect is free. He knows his clients' wants, and can form his own judgment without let or hindrance. A single purpose is predominant throughout, and the design partakes of unity in consequence. There are circumstances in which two heads are better than one. In planning, two or three different ideas are of value. It is seldom that a plan of a large and complex building is not improved by the concentration of two or more minds on it. An improved entrance or approach may suggest itself after the first sketch has been drawn out. A little alteration to the boundary walls may enable an important improvement to be made in the interior arrangement. Not so in elevation: one idea is often better than two or three, and the old adage of many cooks spoiling the broth may be taken as a very apt advice.

In our modern system the partnership, a co-operation of distinct talents, appears less objectionable. Separation of duties seems almost inevitable under modern conditions of work. Subdivision of labour in every trade and every manufacture has rendered triumphs of production possible, and has insured more perfect and accurate workmanship. The profession of architecture is in like manner a complex business as well as an art, and a co-operation of distinct talents is necessary. We should probably get better designs and better buildings if both these duties were undertaken by men skilled in design, in planning, and in execution, always supposing that the separate talents were directed in a single-minded way instead of being thwarted by selfish interests. To a very few men it is given to combine the various qualifications necessary to become a successful architect. A few men of individual talent—a Wren, a Sir William Chambers, a Sir Gilbert Scott, and a few now in practice—have achieved a reputation by the natural force of their talents, combined with business qualifications; they have been capable of conceiving as well as practically carrying out their designs. How many more equally talented as artists have failed to make a name? And why? Simply because they have lacked the necessary qualifications of business aptitude and enterprise which men like Scott and Street both possessed. Artists in every true sense of the term as many of these unsuccessful men have been, now and then exhibiting their ability in competitions, they have been wanting in just those qualities which make the whole difference between success and non-success. Had they been united to business and pushing men at the right moment they would have been in the foremost ranks. Fate ordained otherwise. A few of them who still pursue art in some form now and again achieve a temporary victory, and run more successful men "to earth"; others leave the profession, or are engaged as draughtsmen, or as artists. Have we not in these cases a painful illustration of the failure of individual single-handed genius unallied to other qualifications, and do they not point to the failure of individual exertion in a profession which necessitates many other things than art to make it a success—financially, at least?

"OLD MASTERS" ON THE CONTINENT.—IX.

By Charles L. Eastlake

(Keeper and Secretary of the National Gallery).

In a former article which appeared in the Building News on the 8th of June, a brief biographical sketch was given of Fra Angelico, and mention was made of several important works which he executed at Florence. The Accademia di Belle Arti in that city contains some notable examples of his brush, a few of which it is now proposed to describe.

The picture numbered 227 in the official catalogue represents the Virgin enthroned in the niche of a wall hung with drapery of gold brocade enriched with circular diapers. Above this curtain are seen the upper portions of a mural arcade, of which the tympana are filled with rude representations of marble. On either side of the Virgin are depicted three saints—viz., St. Francis and two others on the right, with St. Stephen and two others on the left. All these figures are about 3ft. 6in. high. Their features are delicate, and distinguished by great refinement of expression, and though the flesh tints have flown here and there, revealing the green underpainting then employed, the draperies retain their beauty of colour, and include a chromatic scheme in which pale blue, lilac, Venetian red, and rose pink are associated and harmonised with exquisite skill.

Nos. 235, 236, and 237 are three groups of panels, of which the first two are divided into three, and the last into six pictures, representing incidents in the life of our Lord. Among them we find the Nativity, the Presentation in the Temple, the Circumcision, the Flight into Egypt, Christ Preaching to the Doctors, the Last Supper, the Agony in the Garden, the Mocking of Christ, the Betrayal by Judas, &c. These figures are about 8in. high. They are painted in those pure, delicate colours which distinguish the painter's work. The facial shadows are slight; the features, though rudely modelled, are full of character; but the draperies, as usual, are textureless.

The work numbered 243 contains six little panels, each about 7½in. by 8½in., representing scenes from the lives of SS. Cosmo and Damian, probably part of the same series of which several are in the Old Pinakothek at Munich, and of which one has found its way to the National Gallery at Dublin. They are precious little works executed with great delicacy and even dramatic power. We see the holy men miraculously escaping from fire, shot at with arrows rendered harmless by reversed barbs, and stones which recoil on the assailants. In one scene is a judicial trial; in another a decollation. In a third the saints are thrown into the sea. Vivid colours, careful drawing, and a dexterous rendering of expression will be noticed as characteristic of these pictures.

Nos. 252, 253, and 254 are also by Fra Angelico. The first is divided into five, and the second into six panels, about 15in. square, and all representing incidents in the life of Christ. In 252 we find the Raising of Lazarus, the Entry into Jerusalem, the Marriage Feast at Cana, the Last Supper, the Betrayal of Christ, and the Judgment of Pilate. The principal figures are about 8in. high. Great attention has been given to the perspective and drawing of architectural backgrounds, but the landscape is of a conventional type. The draperies are painted in blue of two shades, maize yellow, pale green, toned crimson, rose pink, violet grey, and lilac. Some of the heads are carefully modelled, but though the features vary in expression, we find throughout a somewhat mannered treatment of the human eye. The iris is raised high on the cornea, and half-covered by the upper eyelid. Another peculiarity is that nearly all the figures have fair or auburn hair.

In 253 the five compartments represent the Procession to Calvary, the Stripping of Christ's Garments, the Release of Souls from Limbo, the Holy Women at the Sepulchre; while a long panel is devoted to the Last Judgment. The handling of these subjects is marked by great skill of composition and vitality of action. This is especially noticeable in the Procession to Calvary.

No. 254 is divided into six panels, on which are respectively painted the Crucifixion, the Entombment, the Ascension, the Feast of Pentecost, and the Coronation of the Blessed Virgin; the sixth panel being occupied by *cartellini* and scrolls inscribed with texts from the Old and New Testaments.

In the scene where the Virgin and the Disciples await the descent of the Holy Spirit, the only indication of that event would seem to be the animated conversation of certain persons in the foreground, who appear to be Gentiles. Madonna and her companions sit apart in a gallery at the rear of the scene. The Holy Spirit does not descend in the form of a Dove, but a small red tongue of flame appears on the nimbus of the Virgin and each of the Disciples. The Entombment in this series is a most pathetic and beautiful scene, and the grouping of the figures who take part in it is admirably managed.

No. 266, entitled "The Last Judgment," is an altar-piece of peculiar shape, oblong in general form, but with a shaped top resembling a large trefoil. In the centre of this head, Our Lord, clad in a pale rose-coloured robe, sits surrounded by a vesica-shaped glory and attended by seraphim. On the outer portion of the glory gold-winged and gaily-robed angels exult, or play on musical instruments. Madonna sits on the right hand of Christ, and St. John the Baptist on His left. Beyond them on either side Saints, Martyrs, Patriarchs, and ecclesiastical dignitaries sit, attired in rich apparel or in the robes of their Orders. The position of their heads is carefully varied. Some are represented in full face, some half-turned aside, others in pure profile; but each is surrounded by a gold nimbus. Most of the heavenly host bear open volumes, and with some are associated the emblems of their earthly martyrdom.

The lower portion of the picture is divided into two subjects by a long paved terrace, in which there are a series of square grave holes. This feature, though unattractive in itself, helps by its correct perspective to give distance and apparent reality to the scenes on either side. On the right hand, demons are seen driving the Accursed into Hell. Among the latter may be noticed a bishop and a friar. Hands are clasped or wrung in agony. Hideous monsters, armed with pitchforks, pincers, and other instruments of torture, do their dreadful work. The place of final torment is divided by horizontal floors of rock into five stages. Here the lost ones are seen hung head downwards, bleeding, maimed, or devoured by a Satanic crew, while others are feasted on scorpions, drowned, or boiled alive.

It is pleasant to turn from this truly gruesome spectacle to the left of the composition, where we recognise the reward of the Blessed. The "Dance of Angels," which has been selected for illustration with this article, gives a pleasant picture of Heaven. Its saintly denizens, crowned with chaplets of red and white roses, join hand-in-hand, and decorously trip before an attractive landscape. Some of them, leaving their companions, hasten to welcome the Elect, including certain favoured saints and friars, while popes, cardinals, bishops, priests, and nuns await a similar greeting. These figures are ingeniously posed on a slope of ground, which gives us what in a pictorial sense may be called a bird's-eye view of the crowd. All are in attitudes of reverence or pious exultation. The robes in which they are clad are for the most part of brilliant hue, and add greatly to the chromatic charm of the work. The entire altar-piece measures about 2ft. high by 6ft. 9in. wide.

* * *

THEATRES.—XLII.

By Ernest A. E. Woodrow, A.R.I.B.A.

The greatest risk and danger from fire in a theatre is acknowledged on all hands to arise from the stage-lighting. This danger, however, as time has gone on has grown less and less, till we wonder, when we look upon a stage illuminated by the electric light, how the theatres of a hundred years ago or less existed even for a short period when the stages were lit "with wax candles on brass censers or cressets." There may be some doubt whether the introduction of gas, as at first used, minimised the elements of danger, for with imperfect burners, and rows of naked and unguarded lights, the stage stood in nightly and momentary danger of becoming ignited. Many of the older hands still to be found within the precincts of the theatres of to-day will tell of the time when it was quite the exception, and not the rule, to see the gas-burners upon the stage protected with wire guards, and as every cloth or piece of scenery was moved it came within dangerous proximity, or even touched the flames of the gas above, at the side, or upon the floor of the stage. Gas "lengths" were hung upon the backs of scenes built up of wood and canvas, with no iron shield intervening, and so close as to make the canvas hot.

The advancement made in the arrangements of the gas-fittings upon the stage have, fortunately for the theatre goer of this decade, rendered such a state of affairs well nigh impossible. It would be idle, however, to argue that the use of gas is no longer a source of danger; but it is only just to say that, with every proper precaution, gas may be used with a certain degree of security.

The Committee of the Franklin Institute which reported upon the "Prevention of Fires in Theatres" in the year 1883, mentioned the fact that the greatest number of fires are caused, as I have said, by the paraphernalia of illumination. The danger of coal-oil, which, as they pointed out, was then much used in Philadelphia and the Western theatres, is self-evident as an illuminating agent; but the hazards of gas, which but within a few years was the safest material at our command, are not so well understood. Besides the dangers of leakage and explosions, we have, in the case of gas illumination, hundreds of flames spread throughout the building, each forming a dangerous sphere around itself. Although, the committee stated, these dangers can, and should, be lessened by proper precautions, such as wire baskets and shields over the flames; still, when we consider the close proximity of the border-lights to combustible gauzes and canvas, and powder, on the hazards of temporary illuminating effects, where jets are fed through rubber hose which must be removed during the change of the scenes, we must ask, Is there not some other method of illuminating by which equally good artistic effects may be produced, and which will at the same time lessen or entirely do away with the hazards of the present system? The experience of the past few years has amply answered this question.

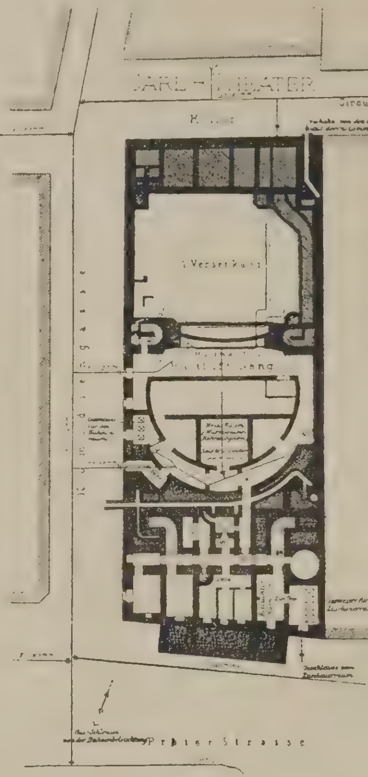


Fig. 1.

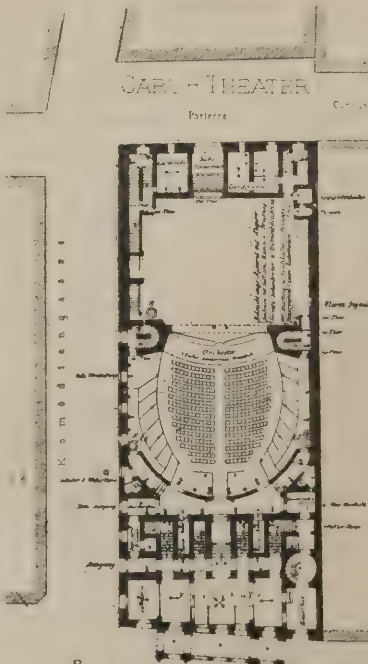


Fig. 2.

I may here mention that the Prussian regulations (paragraph No. 25) prohibits the use of gas and oil for lighting purposes of any sort, and only allows the electric light to be employed.

The disadvantages of gas are enumerated by the Franklin Committee as (1) the dangers from leakage and explosion, (2) the oppressive heat of the number of gas-flames, which dries up the woodwork, canvas, and rope like tinder; (3) the fading of metallic colours caused by the products of gas-combustion; (4) the very expensive process of ventilation needed caused by the fact that the gas in a theatre consumes more oxygen than the audience, which produces the "closeness" of theatres; and (5) the fire-hazard from contact with the light.

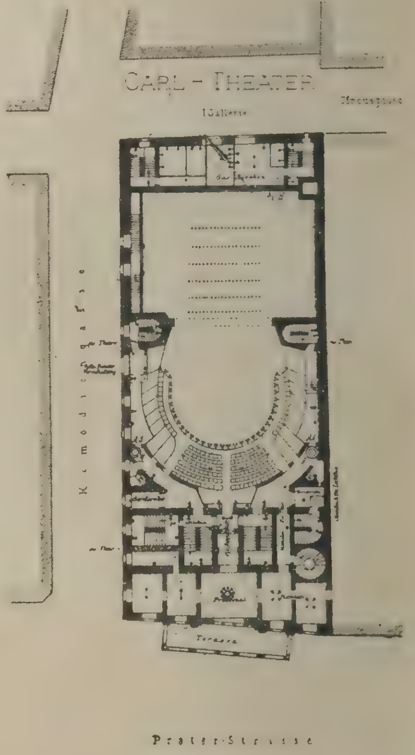


Fig. 3.

Such, then, may be considered the chief objections to the use of gas; and although many of them cannot be overcome, yet we must now consider, if it is to be used, how best it can be used so as to reduce the risk.

The introduction of the electric light upon our stage, by Mr. D'Oyly Carte at the Savoy Theatre in 1881, accomplished two very important steps (the most important of which we shall have to consider hereafter)—*i.e.*, the doing away with gas altogether, and giving an impetus to the gas-fitting trade to improve their arrangements, and make the use of gas less dangerous, as they saw a deadly rival in the electric light ready to cut the throat of their trade as far as stage illumination was concerned. There is no doubt that Mr. D'Oyly Carte then struck the death-blow to the use of gas on the stage; and it is only the prompt action of the large firms of gas-fitters that has put off for a time the day when we shall no longer use gas as the chief illuminant in our playhouses.

Although the electric light has become the accepted medium for all the stage-lighting of the future, yet the time is not yet ripe to do away with gas entirely; and as there are, and will for a time continue to be, theatres old and new using gas, I am compelled to consider the arrangements of the system in connection with these articles.

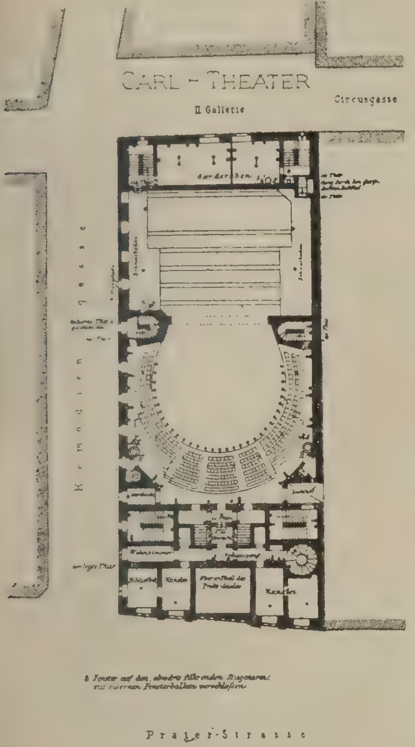


Fig. 4.

Outside the theatre, in a place accessible to the fire brigade, there should be a stopcock on the company's main to cut off the gas in a theatre should a fire occur and prevent the escape of gas feeding the flames; but the use of this stopcock should be very judiciously exercised, for to turn off the gas while the audience are in the building, on the first alarm or outbreak of fire, would be one of the most insane pieces of folly man could be guilty of; for it would place the people in darkness, and cause the most dreadful and deadly panic. It is when a pipe bursts or is fractured by the fall of a part of the building, and a large escape occurs, that the presence of gas is so very dangerous in a fire, and I may here say at once that no soft metal or rubber piping should be allowed in any part whatever of a theatre under any circumstances, hard metal piping alone being admissible.

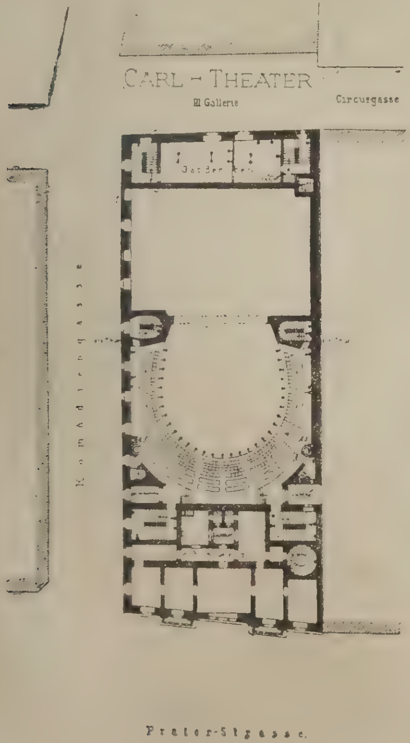


Fig. 5.

It is as well that the gas system in a theatre should be divided up into as many sections of supply as possible, with a separate connection with the street main and different meters. Indeed, it is well, if such a thing can be done, to obtain the supply off two separate street mains, so that should anything happen to one, causing the lights to go out, the other would continue to supply one half the burners, and this can easily be done where a theatre is built on an isolated site, or is situated in two or more streets. Each section of the house should be supplied with a dual service, and again, each division of the house should have its separate meter and supply duplicated. We have already seen how a theatre naturally lends itself to division and subdivision, and it is these lines that must govern the architect when arranging the gas system in a theatre.

The regulations of the London County Council which deal with the gas supply specify that separate and distinct gas services and meters shall be provided to (*a*) the stage, (*b*) the auditorium, (*c*) the staircases, corridors, and exits. For the purpose of this article, however, I would suggest a further division of the building, and add a separate service for the dressing-rooms—one for the refreshment-rooms, foyers, and saloons; one for the workshops, one for the corridors, and one for the staircases; in fact, the more independent means of supply the better.

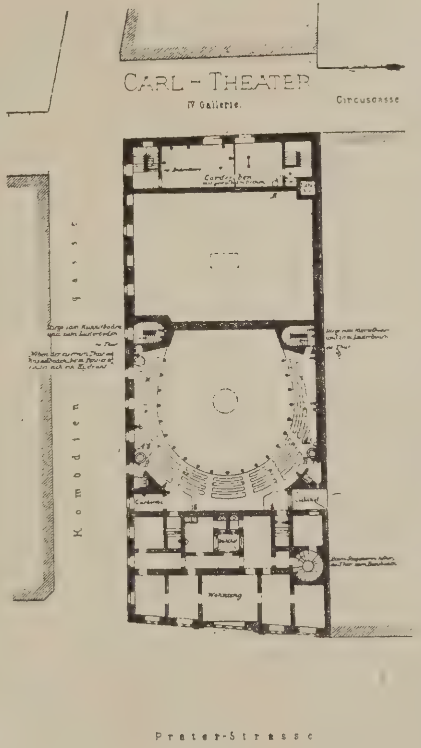


Fig. 6.

I would here say that it is strongly advisable to keep a plan in the offices of the theatre, showing the course of every gas-pipe and the position of every gas-point. Such, indeed, is the practice abroad; and, to show how effectually this is carried out, I produce here the plans of each level of the Carl Theatre, where the round dots indicate the position of each gas-point throughout the building. The basement plan shows the arrangements of the two gas-meter chambers, the one for the stage, the other for the front part of the house; the stage plan gives the position and number of the hanging button lights used to light up the scenes from above.

One of the first points to consider is the location of the gas-meters. These should be placed in a chamber or chambers built of fireproof materials with fire-proof floors and ceilings, with one opening leading thereto, closed by a self-closing iron or other fireproof door, hung in an iron frame, with a three-inch flap, such frame being built into the brickwork. The St. Petersburg regulations suggest an underground vault as the best place wherein to place the gas-meters; but, wherever they are located, the chamber must have most thorough ventilation and through draught, to carry off the effects of any escape and prevent the accumulation of the gas. To hermetically seal the chamber would add so greatly to the danger of explosion, that it would be far better not to place the meter in a chamber at all. Free circulation of air must, therefore, be provided at all costs.

The position of the meter-chamber should be one of ready access for the gasman, and, as his station is on the prompt side of the stage at the gas-indicating plate, where all the stopcocks are, this should be borne in mind; so that should anything occur to take him into the meter-chamber during the performance, he would not be as long traversing the distance as if the chamber were placed in an out-of-the-way corner of the building.

I propose in my next article to deal with gas-fittings and arrangements as suitable to theatres.

AN EXHIBITION OF ARCHITECTURAL PHOTOGRAPHS.

THIS week a collection of photographs has been opened at the Royal Architectural Museum, Tufton-street, Dean's-yard, S.W., which will well repay a visit by those who are interested in topographical views of historic buildings having artistic merit. The gathering has been made with a view to the illustration of this year's excursion of the Architectural Association to Wells and the neighbouring country in Somersetshire, including as well the valley of the Wye. All these photographs are the work of the hon. photographer to the A.A., Mr. John L. Robinson, R.H.A., of Dublin, and each of the large pictures is mounted on a separate card, thereby showing them off to better advantage than in former years, when groups of the prints were shown attached to big sheets of millboard. We may here briefly refer to some of the more conspicuous prints, and at an early date we hope to reproduce a choice which we have made, by way of showing the interest and excellence of the pictures, particularly as exhibiting architectural detail. Photographs, of course, can never exceed good drawings in this respect—no true artist would ever claim so much for them; but, on the other hand, everyone must acknowledge the varied and practical utility of the camera in furthering architectural study, and few architects have done more to insure this advantage than Mr. Robinson. His views of the Cathedral at Wells display the building from several of the best points, and include details of the famous north porch, the chantries of Dean Sugars and Bishop Bubwith, the "Chain Gateway," and the Vicar's Close. St. Cuthbert's Church, too, is well shown, and "The Swan," the headquarters of the party, is seen, with a group before the hostelry. Croscombe Church, both inside as well as out, makes a capital series, and the 15th-century inn up the village street, seen over the stream, should be noted. Nos. 15 and 16 of the screen-work and pulpit in the church leave nothing to be desired; both are first-rate.

Chewton Mendip, Leigh-upon-Mendip, and Evercreech towers are all of the highest order of merit, and well known, of course, for their design and typical character, though the second church is less familiar. Its short and narrow little nave, with its rich parapet of pierced traceries, gives a quaint and uncommon proportion to the composition. Shepton Mallet is done good justice to, and so is Mells, one of the views being almost identical to the sketch which we gave in illustration of the Manor House in the Building News for August 10th, when we commenced our set of plates and notes descriptive of the excursion. Mr. Robinson's view of the porch at Mells is one of the best of his series. Longleat furnishes two good studies, and two more come from Stourhead. Pilton and Bruton Churches, especially the latter, are of much interest; while No. 34, giving a view of the tower as seen over some gabled and ramshackle tiled roofs, furnishes an exceedingly pretty picture, which, rendered in water colours, would indeed look charming. It is a pity that none of the photographs illustrate any of the wrought-iron signs which figure so conspicuously in Bruton village streets. Stoke St. Michael has a good inn with a sign of the same character (No. 61). Frome, with its *via crucis*, is not overlooked, and Pilton village brook, with the parish church on the hill in the distance (No. 74), shows what an artistic manipulation of the camera can do in the way of picture-making with a really picturesque subject. Hormisham (No. 72) exhibits the party at rest after luncheon. Hereford Cathedral and Chepstow Castle and church follow on, and then, further up the Wye, Tintern Abbey figures with admirable grace in several studies, concluding with the arcaded market house at Ross. The exhibition will remain open for a week or two free to the public.

COUNTY LUNATIC ASYLUMS.—III.

By George H. Bibby, F.R.I.B.A.

The administrative buildings of an asylum may be divided thus:—

I. The Board-Room and Offices.
II. The Dining-Hall and Kitchens, &c.
III. The Stores Department.
IV. The Laundries, Bath-houses, &c.
V. The Engineering Department.
VI. The Patients' Workshops (Farm Buildings, &c).
VII. The Mortuary, Post-mortem, and Pathological Rooms, &c.
VIII. Church, Library, Billiard, Lecture, and Club Rooms, &c.

(As the above portions of the buildings should usually occupy a *central* position on the site, I propose to describe the arrangements for these first, and to deal with all the various buildings for the patients later.)

THE BOARD-ROOM AND OFFICES.

The board or committee-room should, as a rule, be placed near the chief entrance to the asylum (*vide* B, Fig. 1); the dimensions, of course, depend upon the numbers of the committee and visitors. A convenient arrangement is to place a waiting-room and the asylum clerk's room *en suite* (*vide* D E F, Fig. 2), with two doors in the board-room. Near to these may be the medical superintendent's business room, any additional clerks' rooms that the size of the asylum may require, a room for the hall porter (*vide* H, Fig. 2), and separate lavatory and w.c. accommodation for the committee and visitors (*vide* L, Fig. 2); a strong-room (or, at least, a large safe) should be provided in the asylum clerk's room.

The area of the visiting-rooms (*vide* V V, Fig. 1) for patients' friends must be proportioned to the size of the asylum, and in large asylums there should be two rooms for this purpose, for males and females, each with two entrances where practicable. These visiting-rooms may be either a portion of the board-room block or of the dining-room department; but in either case it might sometimes be well to so plan them that they may be used as ante-rooms, &c., in connection with the dining and entertainment hall.

It is occasionally convenient to place *within the board-room block* the private sitting and bedrooms of the assistant medical officers (*vide* both Figs. 1 and 2), and other male officials of a higher grade, and upon one floor above similar apartments for the matron, assistant matron, head nurse, &c., in each case providing the necessary w.c., bath, and lavatory accommodation. The board-room block is also occasionally a suitable position for the dispensary (*vide* K, Fig. 2) and drug store, and sometimes for the library, or libraries, and the chaplain's room.

The medical superintendent's house may be near to the board-room block *when* both occupy, as they should, a central position with regard to the patients' buildings for males and females respectively, and it should be arranged that the roads leading to the portions now being described should not be very near to the patients' buildings or airing-courts, for these approaches would often be used by the patients' friends and the public generally, who might annoy, or be annoyed by, the patients, or open up communications with each other contrary to discipline, &c. Some patients try to give the attendants all the annoyance and work they can, and bring absolutely unfounded charges of bad treatment against them, thus distressing their visiting relatives and friends, and creating at the same time ill-feeling against the officials of the asylum.

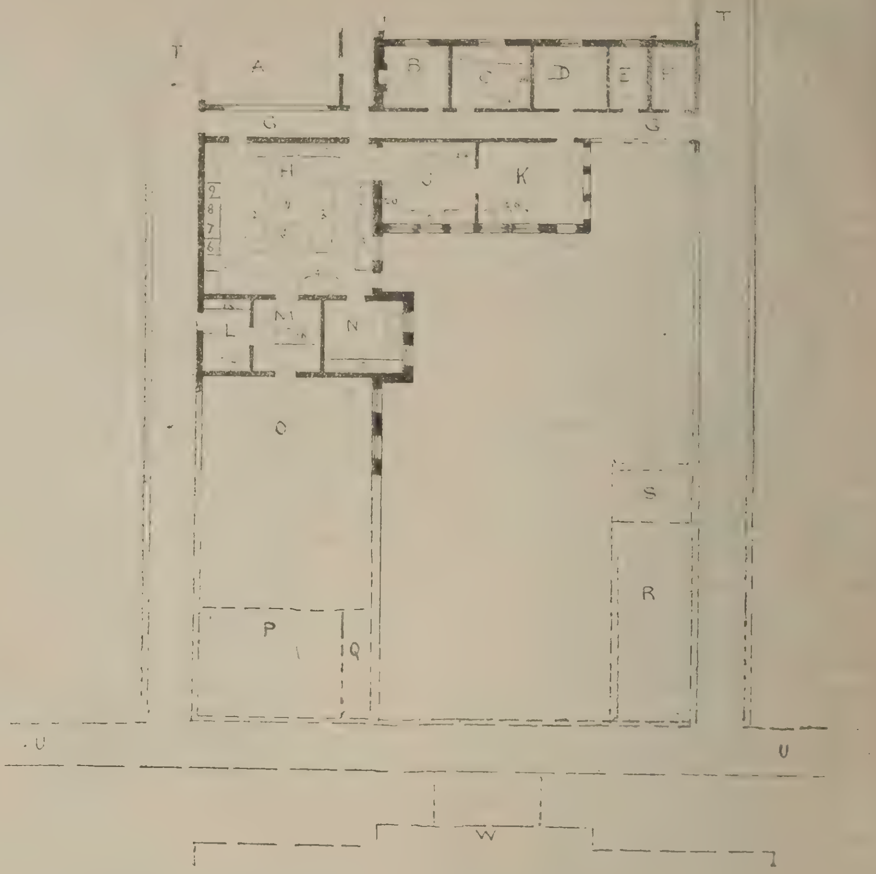


Fig 3. Scale

The Commissioners in Lunacy suggest that, generally, the approach and public entrance to the asylum should be from the north side, as shown in Fig. 1, and the principal entrance, the porter's room, the reception and visitors' rooms, the committee or board-room, the clerks' and other offices, &c., would then be on the north side of the building; but it is frequently placed on the centre of the south front, as in Fig. 2, and there is much to be said in favour of the latter position, which has been adopted by leading asylum architects in recent planning. In Fig. 1, the medical superintendent's house is placed purposely near to the wards for the sick and infirm.

THE DINING-HALL AND KITCHENS.

The dining-hall is usually the largest and most important room in the asylum (*vide* R, Fig. 1), being often used also as a theatre, concert, and entertainment room, as shown also in Fig. 2. It is in this room that great opportunities for watching the patients exist, and it should be cheerful, comfortable, and well lighted. Each nurse should have charge of a fixed number of patients—or say of one table—thus having the opportunity of becoming familiar with their peculiarities and conduct. The arrangement of the tables and seats is one for the architect to consider, and with due regard to the position of the serving-rooms and kitchens, for food should be served to the patients as quickly as possible, so that it may not become cold.

As a rule, the theatricals and concerts, &c., are left to the staff, only a few patients being capable of assisting; but medical authorities endeavour to draw the latter in as far as possible, getting them to sing, recite, or play, &c., the entertainments being regarded as curative agents. An eminent authority wrote:—"Let us by all means try to give the patients something to think about; to occupy their minds to the exclusion of their individual worries. If only for a couple of hours in an evening we can make them forget that they are confined within the walls of an asylum, our time and trouble will not have been thrown away."

The stage (*vide* Fig. 2), with dressing-rooms, closets, &c., need not be raised more than 2ft. 6in. to 3ft. (at the footlights) above the general floor level, with the view partly of preventing danger to the patients through falling over. There should be a fireproof curtain and all the usual precautions in the event of fire; but with regard to this branch of the subject, the able series of papers by Mr. E. A. E. Woodrow upon "Theatres," that recently appeared in the columns of the Building News, give full information.

Between the dining-hall and the kitchen there should be planned a serving-room (*vide* Q, Fig. 1) and washing-up room, each with doors leading both to the kitchen and dining-hall, with the usual fittings, and water services, &c. (see also Fig. 2).

The doorways leading to both kitchens and dining-hall should be so arranged that the sexes shall have separate approaches.

The asylum kitchen (*vide* O, Fig. 1) for large institutions should be 18ft. or 20ft. in height, with top lantern lights and louvred ventilators for taking away steam, heat, and odours of cooking. The floor area should be so arranged that there may be sufficient room around and about the fittings and ranges, &c. (*vide* Fig. 3). There should be an ample supply of slate shelving, dressers, potato bins and washers, vegetable boilers, vegetable steaming chests, vegetable washers, boiling pans, gas roasting ovens, hot-plates, tables, tea apparatus, hot closets and carving-tables, warrenisers, and all the modern appliances for cooking for a large number of persons. Some of these may be placed in the vegetable scullery, which should generally be a separate apartment, and an addition to a large scullery for cleansing purposes fitted with hot water.

In many asylums the cooking is done by steam and gas apparatus; but a roasting coal-range should also be provided.

The kitchen offices (*vide* N, N, N, Fig. 1) should include a small room for the cook (*vide* B, Fig. 3), pantries, larders, fresh meat store, dairy, and living-rooms for the servants' use, also lavatory and w.c. accommodation. The servants' bedrooms might either be upon an upper floor of the kitchen block, or be arranged amongst or near to those for the nurses or attendants. A few patients are in some asylums specially associated with the kitchen department, and may occupy bedrooms or a dormitory near to those occupied by the servants.

THE STORES DEPARTMENT.

The stores required for large asylums are very considerable, and the areas and cubical spaces required for this department are probably much more extensive than the majority of architects, who have not carried out such works, might anticipate. A portion of the provisions is procured by the labour of the patients from the gardens and fields attached to the asylum, and in the workshops much of the clothing, bedding, and other material is manufactured. For all this, and for the raw materials, suitable storage-rooms must be provided in a central position, the approaches thereto being arranged as far as possible with the view of avoiding intrusion with the airing-courts and wards for patients.

The arrangement of the various receptacles for all stores should facilitate the immediate delivery of everything required, and with full attention as to requisite moisture or dryness, heat or cold, and other conditions.

In some asylums the general store-room (*vide* M, Fig. 1) is provided with a gallery on all sides, and a lantern light in the roof serving for the whole; the advantage of this arrangement is that there is a sufficiency of wall space for shelves, hanging boards, chests, or other receptacles which would occupy the wall space otherwise taken by windows.

On the ground floor a fair amount of counter space must be provided, and the approaches to the points where the stores are served out should be so arranged that the sexes shall be separated.

The storekeepers must have sufficient space also for the reception, delivery, and weighing-out of the stores. If the coal stores are placed near to the general store-room, there should be a weigh-bridge with a capacity up to about eight or ten tons, according to the size of the asylum, or its distance from the sources of supply. Some asylums keep steam and house coal sufficient for some months' consumption, a necessary precaution in districts remote from collieries.

The following particulars of leading asylum stores afford a fair idea of the great amount of space to be provided by the architect for storage purposes alone. These were consumed during one year in an asylum that contained a population of 2,139 persons, of whom 253 were officers and servants:—Beef and mutton, 264,695lb.; preserved meat, 23,387lb.; extract of beef, 1,015lb.; pork, 28,347lb.; bacon, 23,738lb.; fish, 65,518lb.; bread, 815,663lb.; butter, 44,942lb.; cheese, 17,191lb.; coffee, 5,639lb.; cocoa, 7,679lb.; eggs, 137,363; flour, 2,276 sacks; milk, 102,968gal.; condensed milk, 2,377lb.; oatmeal, 20,091lb.; potatoes, 7,731 bushels; other vegetables, 13,977 bushels; peas, 2,152lb.; rice, 4,499lb.; sugar, 68,810lb.; tea, 12,336lb.; treacle, 1,402lb.; arrowroot, 3,289lb.; sago, 564lb.; currants, 6,460lb.; raisins, 996lb.; mustard, 754lb.; pepper, 518lb.; salt, 143cwt.; vinegar, 358gal.; barley, 1,376lb.; jam, 17,019lb.; tapioca, 300lb.; lemons, 9,083; oranges, 7,780; lemonade, 300 bottles; caraway seeds, 539lb.; pickles, 412gal. Heating, &c.: house coals, 966 tons; steam coals, 1,297 tons; firewood (faggots), 17 loads. Lighting, &c.: gas coals, 1,545 tons; lime, 18 tons; sperm oil, 108gal.; paraffin oil, 23gal.; candles, 347lb.; tapers, 112lb.; matches, 924 boxes. Washing, cleansing, &c.: soap, 39,334lb.; soft soap, 9,744lb.; soda, 29,914lb.; starch, 1,232lb.; blue, 396lb.; brooms—bass, 325; do. birch, 612; do. hair, 408; brushes—banister, 66; do. hair, 206; do. laundry, 37; do. scrubbing, 1,190; do. shoe, 119; do. stove, 154; do. tooth, 204; combs—long, 1,080; do. tooth, 898; do. back, 72; black lead, 255lb.; Bath bricks, 541; emery cloth, 290 sheets; hearthstones, 5,548; whiting, 1,008lb.; sand, 600 bushels; chloride of lime, 1,032lb.; beeswax, 80lb.; neatsfoot oil, 14gal.; pails, 70; door mats, 57; dust skips, 62; house flannel, 4,169 yards; wash leathers, 189; broom handles, 98; squeegees, 44. Tobacco and snuff: tobacco, 3,823lb.; snuff, 143lb.; tobacco pipes, 73 gross, &c.

In addition to these, storage must be provided for clothing, bedding, &c., for the use of officers and patients, as well as for saleable goods, &c., manufactured on the premises. Also for the storage of material usable in the repair of the asylum buildings under the control of the clerk of the works or engineer of the asylum.

THE LAUNDRY, BATH-HOUSES, &c.

In arranging the plans of a large asylum, it frequently occurs that the positions of the laundry (*vide* F, Fig. 1) and the general stores clash, and are somewhat difficult to contrive satisfactorily; but it is highly necessary to so place the laundry and wash-houses that the persons conveying the clothes to or from the male and female sides of the asylum shall not come into contact, and it is further desirable that separate receiving and delivering rooms shall be provided for each sex. The laundry, therefore, should occupy quite a central position at the rear, and not be placed entirely on the side of the asylum allotted to females, as is sometimes done.

The laundry must be provided with a large wash-house, supplied with liberal arrangements for the utilisation of *manual* labour without very much machinery, for this work is very useful as a means of occupation for many patients, and any machinery provided must certainly be guarded from the patients in every possible way. For this purpose the engine shafts might be *below* the laundry floor, the driving belts being connected from these to the machines above.

The very foul linen would be first taken to a separate receiving-room, and thence, if necessary, passed through a disinfecting apparatus into the "foul wash-house," which would be fitted up with soaking tanks and steeping pits, with washing-troughs, strainer, and rinser, and, perhaps, a washing machine. Having been first cleansed here, the linen would be passed into the general wash-house, which would probably be fitted with hydro-extractors, washing-tanks, strainers and rinsers, hand-power washing-machines, soaking and liquor tanks, and other appliances.

The wash-house buildings generally must be provided with ample means for ventilation and clearing away of steam, &c., from the various apartments, and the hot-water cisterns should be placed in convenient positions for examination and repair when necessary. The working rooms should be well lighted and arranged with the view of giving the officials every opportunity of inspecting the patients at their work. The floor of the wash-house should be of cement, with drain channels, &c.; the drying closets may be very conveniently placed between the wash-houses and the ironing-rooms. In a large asylum these must be of great capacity, as it would be insufficient to trust much to drying-grounds, although these must also be provided.

The ironing-rooms must be fitted with calenders, ironing-boards, tables, ironing-stoves, and mangles, &c.; the floors of these portions may be of wood, or wood-blocks if preferred. In connection with this branch of the work there must be a delivery-room, fitted with racks and tables for sorting the clean linen, and for its distribution to the various parts of the asylum.

The laundry and wash-houses for the nurses and other officials would be similar to that for the patients, upon a suitably reduced scale. Separate receiving and delivering-rooms would be provided only in the event of the asylum being a very large one; but there should usually be at least two rooms for washing and ironing, and a separate small system of drying-closets.

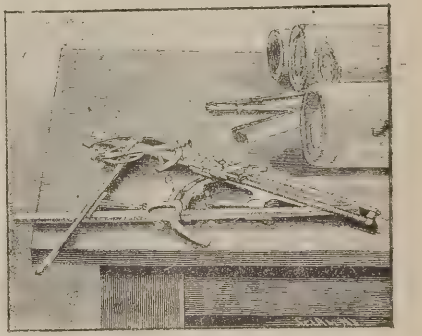
In arranging all baths for patients it is necessary to provide a space on each side, so that attendants may be able to assist or control a patient upon one or both sides—a necessity in the cases of both weakly and violent lunatics. Sufficient water-closet and lavatory accommodation must be provided near to all laundries and bath-houses.

References to Fig. 2 (*see page* 389).—A, matron's parlour; B, head nurse; C, stairs for nurses; D, committee-room; E, asylum clerk's office; F, waiting-room; G, entrance-hall; H, porter's room, &c.; J, superintendent's office; K, dispensary; L, lavatories and w.c.; M, assistant medical officer; N, visiting-room; O, dining and recreation hall; P, stage; Q, dressing-rooms; R, retiring-rooms; S, serving-rooms; T, washing-up room; U, kitchen; V V, corridors to laundries and stores, &c.; W W, corridors to patients' wards.

References to Fig. 3.—A, stores; B, cook's room; C, larder; D, servants' room; E, pantry; F, stores; G, kitchen corridor; H, kitchen; J, vegetable scullery; K, pot scullery; L, bread cutting, &c.; M, serving-room; N, crockery scullery; O, dining-hall; P, stage, &c.; Q, women patients' entrance; R, visiting-room; S, lavatories, &c.; T, corridors to laundries, &c.; U, corridors to patients' wards; W, main entrance; 1, potato steamer; 2, warrenisers; 3, dresser; 4, tea apparatus; 5, beef-tea ditto; 6, gas oven; 7, gas hot-plate; 8, coal hot-plate; 9, gas oven and grill; 10, dresser and shelving; 11, boiling pans; 12, table; 13, table; 14, wash-up sinks; 15, dresser; 16, cutting-up table; 17, dresser and shelving; 18, rack shelving; 19, vegetable washers; 20, dresser; 21, potato washer; 22, shelf; 23, slate dresser and shelf; 24, chopping block; 25, dresser; 26, sinks.

AN IMPROVED INSTRUMENT FOR ENGINEERS, SURVEYORS, Etc.

We take from the *Scientific American* an illustration of an instrument of comparatively simple and durable construction, adapted for an extended field of work. It is designed to facilitate the direct calculation of triangles without the use of plotting or other instruments, and for reading latitudes and departures for any course—down to minutes if desired—for chains, poles, and links at a single observation. The improvement has been patented by Mr. William Hinton, of Hinton, West Va. The base of the instrument supports a graduated distance scale, on which is an adjustable slide with vernier, and on the inner edge of the base is an arm connected by a pivot with a similar arm attached to a straight meridian scale, having graduations. Graduated arcs, which may be clamped together in a sliding vernier, are pivoted to the meridian and distance scales, and on the forward end of a slide on the meridian scale is an extension on which is pivoted a T-square, with head graduated and fitted on a departure scale secured to a pivot in a bracket projecting from a slide on the distance scale. On this pivot are also two arms reading on a second protractor.

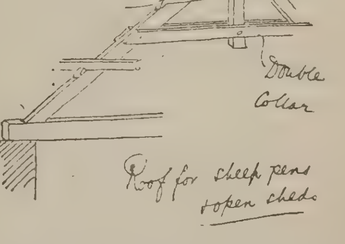


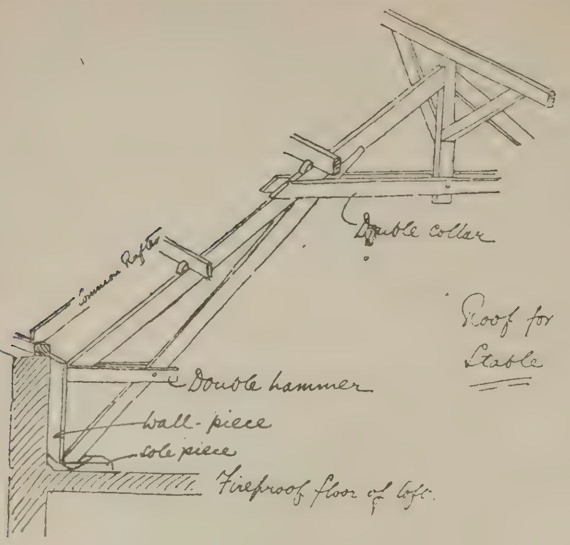
NOTES FROM THE ANTWERP EXHIBITION.

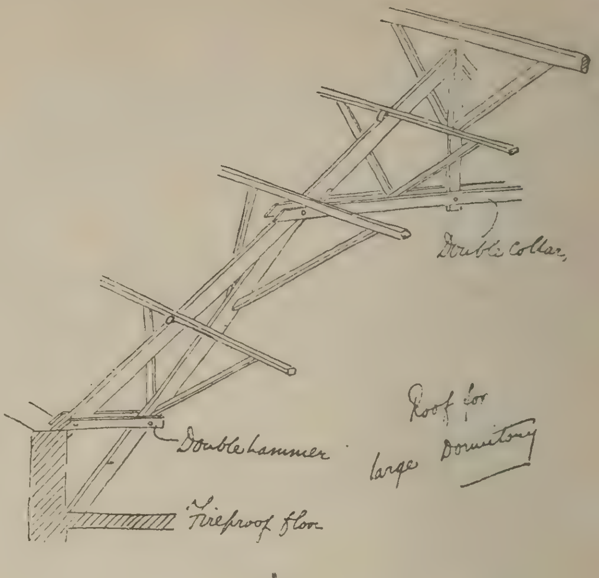
PART I.—TIMBER ROOFS.

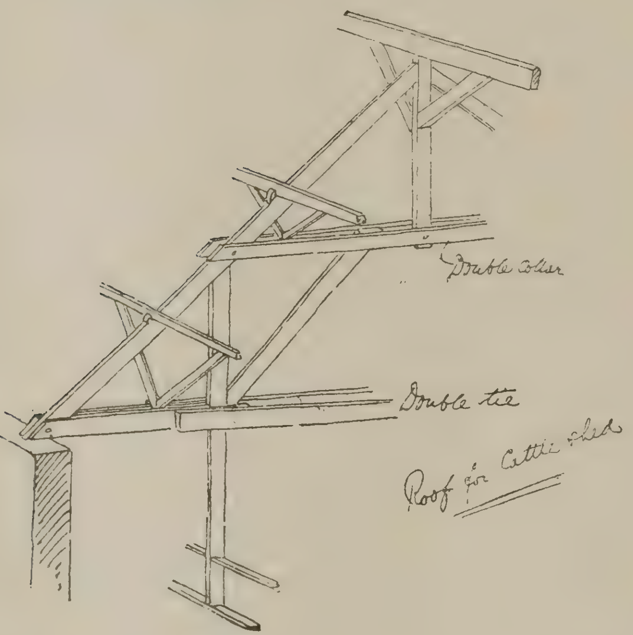
In a large exhibition like that now being held at Antwerp, there is always something worthy of the architect's attention, and in the present instance there is much. It is not that all to be seen there relating to building matters is better than what is customary in England—far from it; but, even where practice differs, a useful lesson is sometimes to be learnt from the cause of the difference, which may lead to the solution of an unusual difficulty where this cause operates with us, upon lines common elsewhere, but rare with ourselves.

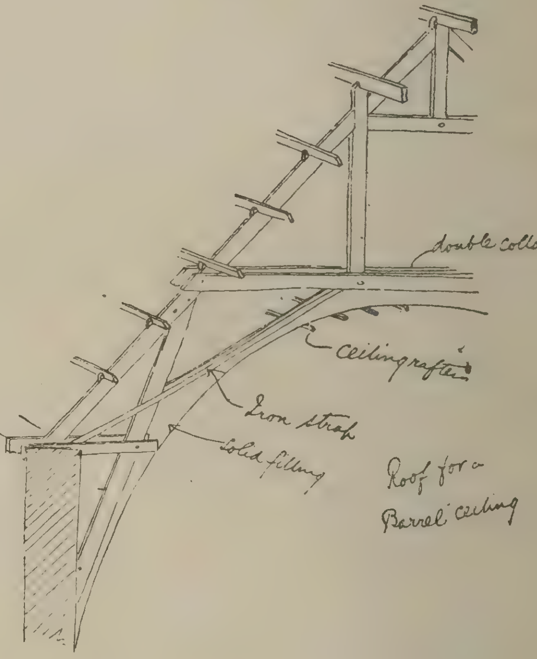
This is particularly the case with the timber roofs, of which a large number of models are shown in the Belgian section, and several of which are illustrated herewith. They are designed for a country possessing and importing small timber only for building purposes. The avoidance of stout members is very noticeable, and the substitution for them of double members, with consequent great saving of labour in the joints. Whether this simplification leads to quite such sound work as does the necessarily careful framing of English trusses may be questionable, but there can be no doubt that the system might be much more largely adopted than it is where scantling boards are readily available, and where it is desired to reduce the cost as much



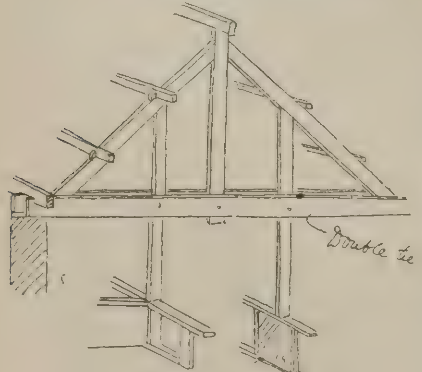








as possible, particularly in structures of a more or less temporary nature. Quite simple examples, adaptable to many purposes, are those suggested for the roofs of sheep-pens and piggeries, though in neither case, possibly, can we unhesitatingly admire the way in which the purlins are *not* supported where they occur.



Roof for Piggeries.

The way in which the ridge piece sits upon the head of the king will also be noticed in every instance, rather with a feeling of wonder than with any desire to imitate.

The want of support to the lower purlin is also the great fault to the stable roof, but, otherwise, it is a suggestive piece of construction, the fireproof floor of loft being utilised for support. The double hammer is sensible, if none too scientific, and the supporting of the ridge-piece is wise.

Both these principles are extended in the large dormitory roof. It is a pity that support to the lower purlins could not have been obtained in a vertical plane; but, even as it is, the bearing of the purlin is considerably decreased, and it is thereby rendered possible to either increase the distance apart from principal to principal, or to decrease the section of the purlin—and altogether it is a clever piece of construction.

In the cattle-shed roof, the supports to purlins have been kept in a vertical plane, and a vertical support to the end of collar is obtained from the ground, but what a terribly clumsy contrivance it is to lengthen the double tie, when timber is not procurable of the length required, in the way which is shown. It looks like amateur's work, rather than a model fit for an exhibition, and, presumably, for the instruction of others.

Want of support underneath purlins is again noticeable in the barrel roof; but the introduction of the flat iron bar as a tie is of considerable advantage, and would scarcely be noticeable from below, even were the roof unceiled. In such a case, however, the double hammers would scarcely be admissible.

It was, unfortunately, impossible to obtain the scantlings of these roofs, the models from which they were taken being to a scale of $\frac{3}{100}$ full size—too small for timbers to have been very accurately cut to.

CHIPS.

The foundation-stone of St. Francis's School, adjoining Moorland-road Board School, Cardiff, was laid on Sunday. The schools will accommodate between 500 and 600 children, and are to be built from plans of Messrs. Habershon and Fawkner, of Cardiff and Newport, Mon.

Viscountess Sherbrooke is erecting a memorial to her distinguished husband, which is to take the form of a bust, over the porch of the north door of St. Margaret's, Westminster. Mr. Ezekiel, of Rome, is the sculptor, and the memorial will be inaugurated, probably in October, by Lord Selborne and Archdeacon Farrar.

A new Presbyterian chapel at Hope, Flintshire, was opened last week. It is Gothic in style, and is built of local stone. The passages are floored with Ruabon red tiles, and the pews are of pitch-pine. Mr. J. G. Williams, of Cable-street, Liverpool, is the architect, and Mr. E. O. Probert, of Hope, the contractor. The cost has been about £1,200.

The will of Mr. Wyatt Angelicus Van Sandan Papworth, F.R.I.B.A., curator of Sir John Soane's Museum, late of 13, Lincoln's Inn-fields, who died on August 19th, was proved on September 15th by Mrs. Marian Papworth, the widow, Mr. Percival Gordon Smith, F.R.I.B.A., and Mr. Walter Ernest Boultbee, the executors, the value of the personal estate exceeding £9,000. The testator bequeaths the framed drawing, by his father, of the design for the interior of a chapel to the Royal Institute of British Architects, £100 and all the household furniture and effects to his wife, and a few other small legacies. The residue of his real and personal estate he leaves upon trust for his wife for life or widowhood, and then to his children in equal shares.

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ILLUSTRATIONS.

WALTHAMSTOW PUBLIC LIBRARY.—ANCHOR BUILDINGS, LEEK.—NEW PREMISES FOR THE CHESTER BOAT CO.—THE PORCH, CRANBORNE MANOR HOUSE, DORSET.—"THE DANCE OF THE ANGELS."—DETAILS OF NEW POST OFFICE AT CARDIFF.—ST. CUTHBERT'S, WELLS.—SPECIMENS OF WOOD-CARVING BY MESSRS. HERRMANN.

Our Illustrations.

THE WALTHAMSTOW PUBLIC LIBRARY.

Mr. J. Passmore Edwards is to open to-morrow the new reading-room which forms the first portion of new public library premises at Walthamstow. It measures 78ft. by 41ft., and is 30ft. high from floor to ceiling, consequently it is the second largest rate-supported reading-room in or around the Metropolis. The front facing the recreation ground is being carried out in red brick, with Bath-stone dressings; the roof principals are of steel, coated and panelled out in plaster. Special care has been taken with the lighting, heating, and ventilating arrangements. This room is connected with adapted premises, which for the present are to serve the purposes of lending, reference, and other departments. The architect is Mr. J. Williams Dunford, M.S.A., F.I.Inst., of 100c, Queen Victoria-street, E.C.; and the builder is Mr. J. W. Best, of Walthamstow.

ANCHOR BUILDINGS, LEEK.

These new premises occupy a commanding site in the old Cattle Market. This market has not yet been turned into a town garden, as shown in the corner sketch, though it may be hoped the new Urban District Council will undertake it. By suppressing the villainous advertisement hoardings, and levying a tax on every bill posted (which the law now entitles them to do) on proper town advertising turrets—as in the city of Hamburg and elsewhere abroad, where the burghers are civilised to the point of cultivating public beauty—funds might be raised for beautifying a town by the very process which removed its disfigurement. "Floreat Porrum!" Messrs. W. Sugden and Son, F.R.I.B.A., are the architects, and Mr. Grace and Mr. Isaac Heath the contractors. Materials used: Sheen stone; thin red ladder-edge bricks, tuck-pointed, white; hand-made brindled roofing tiles, &c.

NEW PREMISES FOR THE CHESTER BOAT COMPANY.

This drawing from the Royal Academy forms one of a series of the same group of buildings erected at Chester for the Boat Company, from the designs of Messrs. T. M. Lockwood and Sons, architects, of that city. We gave a description when we illustrated the other drawings in the Building News for July 20th last.

THE PORCH, CRANBORNE MANOR HOUSE, DORSET.

This illustration is a direct reproduction of a very charming water-colour drawing by the late Joseph Nash, and we are indebted for the loan of the original to Mr. Edmund Kirby, F.R.I.B.A., of Liverpool. The picture figures as the frontispiece and title-page of the third series of Nash's "English Mansions of the Olden Time," but the picture does not occur in the list of exhibited works which we published, from the pen of Mr. Roget, when we began this series of Nash's drawings early in the year.[*] By reference to the Building News for May 23, 1890, a set of measured drawings by Mr. J. E. Mowlem (for which the R.I.B.A. medal was awarded) will be found, fully illustrating what remains of this old historic mansion, which now belongs to the Marquis of Salisbury, to whose son the property gives the title of Viscount Cranborne. The sketch by Nash shows the porch in the south front of the house, which, like that on the north side, the larger of the two, was built when the architectural veneer of *cinque-cento* detail was added to the older fabric of the building. Inigo Jones erected a wing to the manor house, and built the entrance lodges and screen walling. The estate was granted to Robert Earl of Salisbury by James I. in 1612. The building was for a considerable period left in a very ruinous state; but the present marquis has had it repaired and renovated.

OLD MASTERS ON THE CONTINENT.—IX.

From the collection at the Academy of Fine Arts in Florence we select for reproduction this week a portion of the great work by Fra Giovanni Angelico da Fiesole (1387-1455), representing the "Day of Judgment," the part shown being the Dance of the Angels. The picture and other works in the Florence Academy by Fra Angelico are fully described by Mr. C. L. Eastlake in his accompanying article on p. 421.

CARDIFF POST-OFFICE.

Last week we gave a double-page plate of the main façade of this new large General Post-office, now erecting at Cardiff; and we also published with a description of the work the plans of the two chief floors. To-day we print a sheet of details from the architect's working drawings, illustrating at large the main entrance. Mr. Henry Tanner, F.R.I.B.A., is the architect.

ST. CUTHBERT'S TOWER, WELLS.

This is, of course, by no means the first time that sketches of this justly-famous Somersetshire tower have been given in the Building News, and views from other points will be found in our issues for October 24th, 1890, and January 6th, 1893, among some leading typical examples from the same county. In our first descriptive article, given on the 10th of last month in connection with our series of drawings illustrative of the Architectural Association Excursion, reference was made to Wrington, Glastonbury, Taunton, Chewton Mendip, Huish Episcopi, Langport, as well as other specimens; and St. Cuthbert's has been previously fully described. Mr. Frank W. Chapman, the author of the accompanying study, contributes it with a view of increasing the completeness of our Wells sketches, published to enhance the interest awakened by the late visit of the members of the Architectural Association to that old city.

SPECIMENS OF WOOD-CARVING, BY H. HERRMANN, LIMITED.

We illustrate on another page some examples of the excellent and numerous carved wood panels, friezes, &c., which Messrs. H. Herrmann, Ltd., of 11, Dod-street, Limehouse, E., keep in stock, and which they are prepared to supply for the many kinds of decorative work for which they are intended. Their workmanship is of the best, and though in the first place the carving is done by swift and complicated machinery, the finishing is executed by hand and by skilful carvers, thus obtaining the freedom and crispness of work done entirely by hand. The original design from which the repeats are made is, indeed, executed in the best manner possible, at considerable expense, by first-class craftsmen. Though Messrs. Herrmann keep a large quantity of stock designs, they can also, where desired, carry out special ones. The superiority of their work over that of much of the so-called carving which we are accustomed to see in cheap furniture and elsewhere will be evident to all who see the two side by side.

◆

Regarding the dispute over the ownership of the market or preaching cross at Leighton Buzzard, which Sir W. Hanmer claimed as lord of the manor, his supposed rights have been conceded to the local Town Lands Trustees.

COMPETITIONS.

Handsworth.—At Friday's meeting of the school board the chairman stated that twelve sets of competitive plans had been sent in for the new board schools in Birchfield-road. The assessor appointed by the board (Mr. W. Martin, of Birmingham) awarded the plans with the motto "1894" as the best, and these being found to be by Mr. J. P. Osborne, of Birmingham, he (the chairman) proposed that they be accepted. This was agreed to.

Owen Jones Prizes for Designs for Furniture.—The Council of the Society of Arts hold a sum of £400 on condition of their spending the interest thereof in prizes to "Students of the Schools of Art, who in annual competition produce the best designs for household furniture, carpets, wallpapers, and hangings, damasks, chintzes, &c., regulated by the principles laid down by Owen Jones." The prizes will be awarded on the results of the annual competition of the Science and Art Department. Competing designs must be marked "In competition for the Owen Jones Prizes." The next award will be made in 1895, when six prizes are offered for competition, each to consist of a bound copy of Owen Jones's "Principles of Design," and the Society's bronze medal.

CHIPS.

Mr. Francis George Penrose, M.D., M.R.C.P., of 4, Harley-street, W., the only son of Mr. Francis Cranmer Penrose, F.R.S., P.R.I.B.A., of Colebyfield, Wimbledon, was married on Thursday in last week to Mary Helen, only daughter of Mr. Laundy Walters, of Woodhays, Wimbledon.

The work of constructing low-level sewers near Old Hill, for the Upper Stour Valley Main Sewerage Board, have just been commenced. Messrs. E. B. Martin and W. J. Fiddiman are the engineers, and the tender of Mr. Thomas Vale, of Kidderminster, has been accepted at £3,370, this being about £2,000 less than the highest offer received. The clerk of works is Mr. Isaac Fisher.

St. Child's, Lichfield, representing the mother church of the Kingdom of Mercia, is about to be reseated and restored at a cost of £650. Mr. Bridgeman, of Lichfield, will carry out the work.

A church clock at Wilsden, York, made by Messrs. William Potts and Sons, of Leeds and Newcastle-on-Tyne, was publicly started on Saturday. It has four dials, one 6ft. 6in. diameter, and the others 5ft. 6in. across.

Herr Charles Rochussen, the well-known historic painter and illustrator, has died at Rotterdam, aged 80 years.

After three years' negotiations, the War Office authorities have purchased 7,000 acres of Kilworth mountain ranges, near Mitchelstown, for the purpose of establishing a large military encampment similar in extent and importance to that already existing at the Curragh, county Kildare. It is stated that the Government propose to expend £20,000 in erecting barracks and laying out the range, which is alike suitable for artillery, infantry, and cavalry exercise.

The directors of the Great Western Railway are inviting tenders for the recontruction of the Gover and Austell Viaducts, situate between St. Austell and Burngullow Stations, Cardiff, and for earthwork in connection with the widening of the line between these points.

As a tribute to the memory of the late Rev. George London, the teachers and scholars of St. George's Schools, Altrincham, have placed a font in the church, designed and executed by Messrs. J. and H. Patteson, Oxford-street, Manchester. The font is of octagonal form, in rich Derbyshire alabaster. The massive basin is supported by a column of red Devonshire marble with carved capitals, and the whole rests upon an octagonal base. On four sides are carved the sacred monogram "I.H.S.," the sacred cross, three fishes representing the Trinity, and the Paschal lamb. Round the base of the font in gold letters is an inscription.

The memorial stone of the Hardman public institute at Milton was laid on Friday. The building will be two stories in height. On the ground floor will be a wide entrance lobby, leading on the left to reading, coffee, and billiard rooms, and on the right to a library, kitchen, scullery, serving-bar, &c., and staircase leading to the upper floor, which will comprise a lecture and concert-room to seat 250 persons, with cloak and ante-rooms, and bedrooms for the caretaker. Over the main entrance will be a tower. The architects are Messrs. R. Dain and Son, Burslem, and the contractors Messrs. J. Moss and Son, of Milton. The total cost of site and buildings will be over £2,000.

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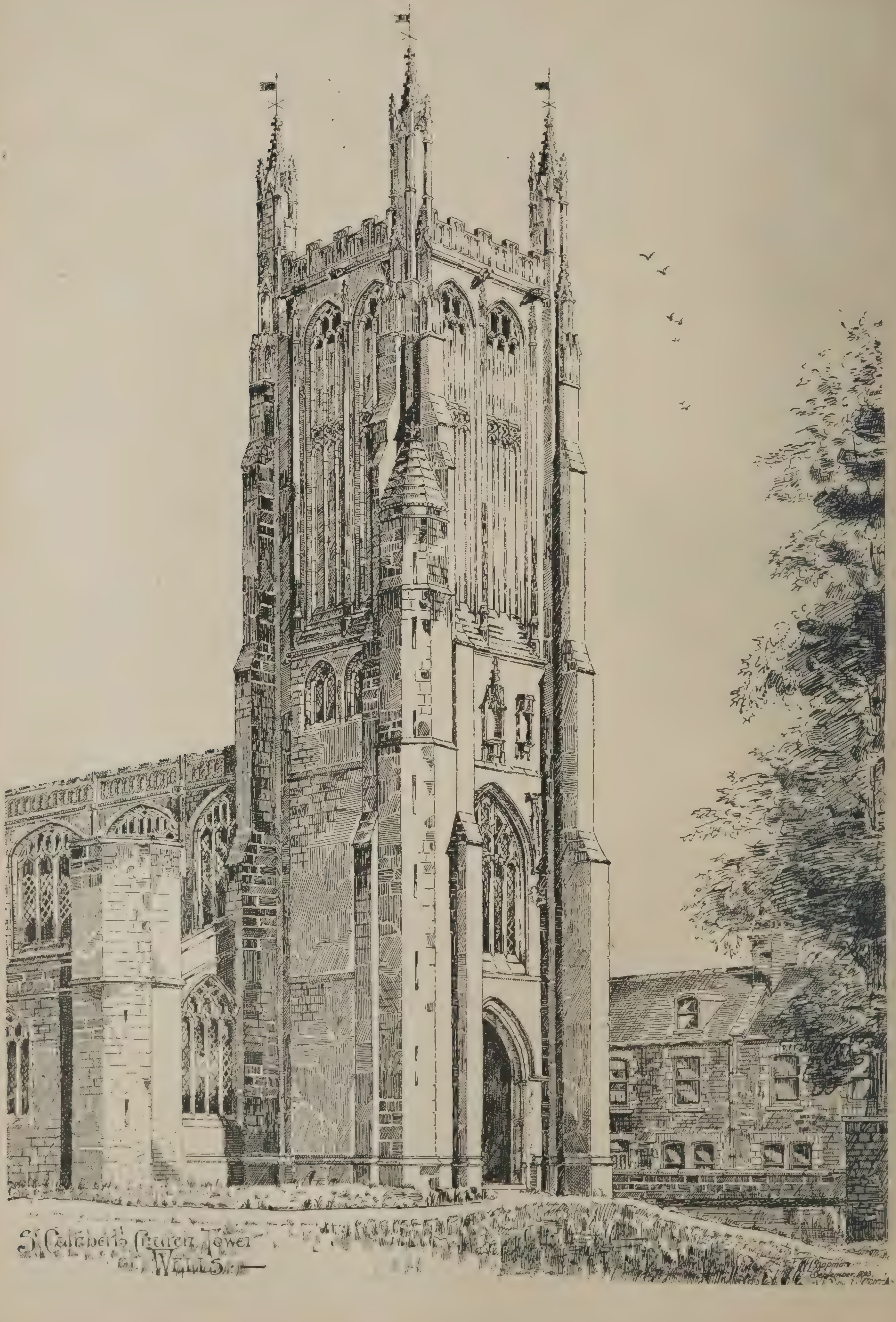
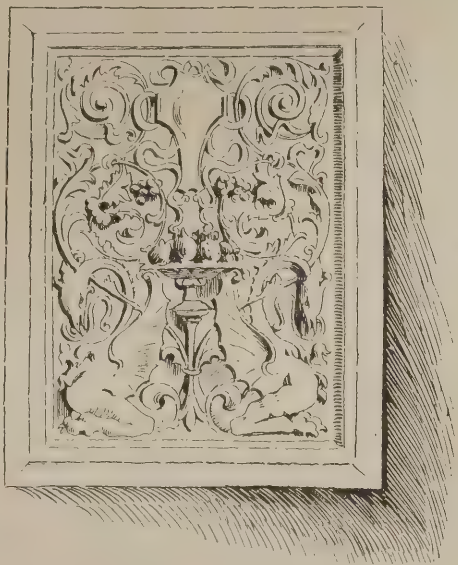
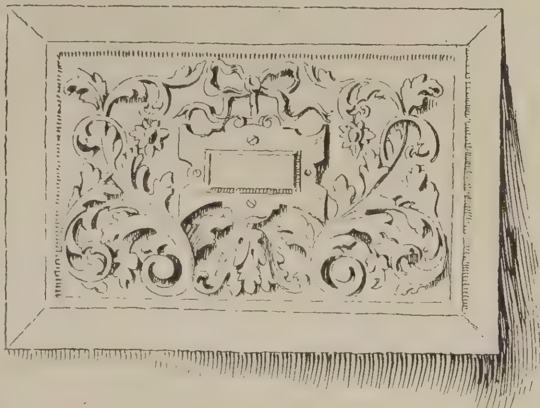
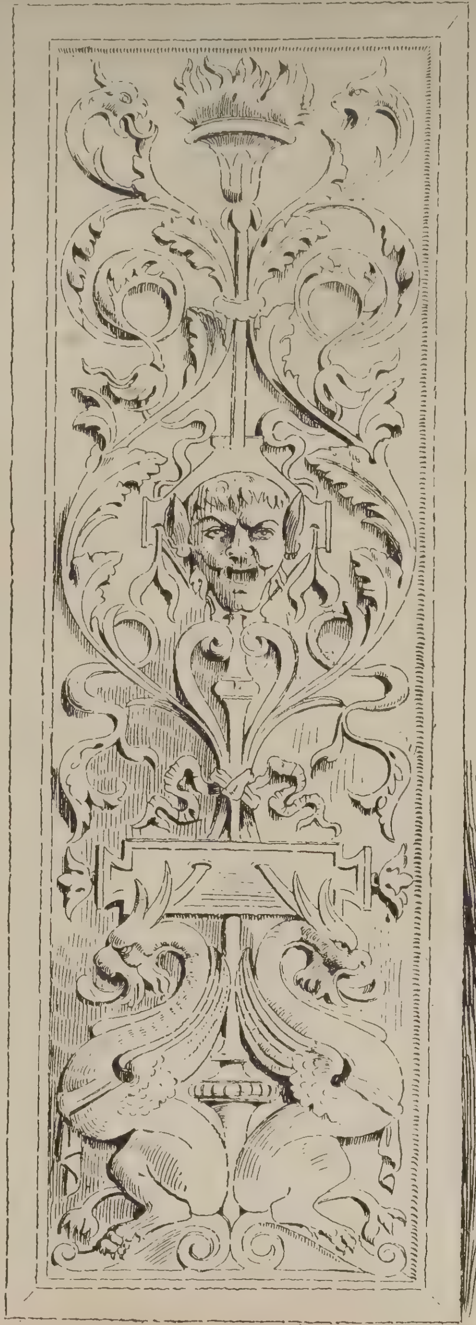
[*] See Building News, Jan. 5 and Feb. 2, 1894.

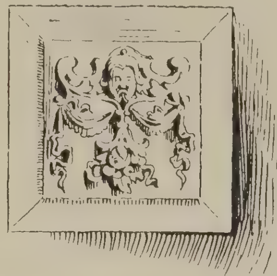

St. Cuthbert's Church Tower, Wells.

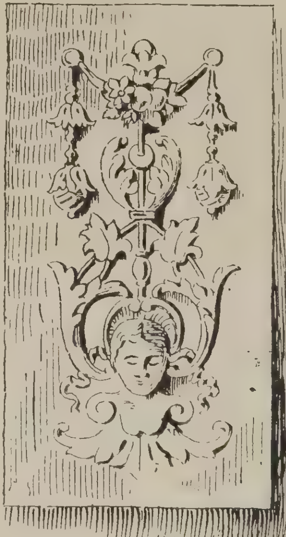
SPECIMENS
OF
WOOD CARVING
BY MESSRS H. HERRMANN LTD

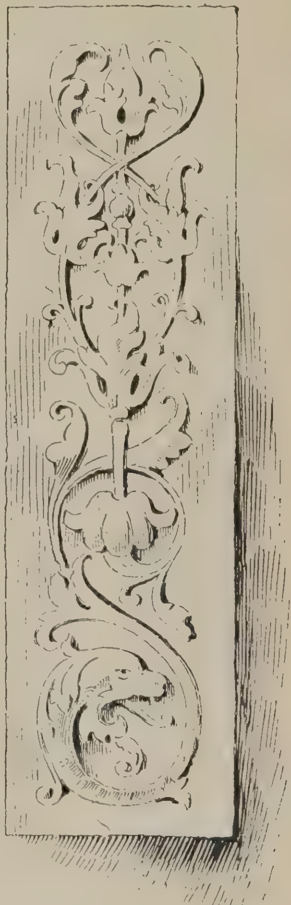












A. Ernest Chancellor Delᵗ

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WAYSIDE NOTES

Without any special claim to a technical acquaintance with photography, I have for many years taken particular interest in the progress and development of the art which has long since certainly exceeded the limits of a mere mechanical process in the hands of such artistic manipulators as Colonel Gale, Count von Gloeden, or Messrs. Fred. Hollyer, Richard Keene, Watmough Webster, and J. T. Sandell, not to mention Messrs. Dixon, Ellis, and Fry, and among amateurs, Precentor Mann. Others could be recounted, of course, in connection with photographic development, and among them are the recipients of medals this year at the exhibition of the Royal Photographic Society, just opened in Pall Mall, which perhaps, on the whole, is not quite so remarkable as on previous occasions, though I am bound to admit the uniform excellence of the examples chosen to furnish the display.

For one thing, the Architectural subjects are not so conspicuous, and there is little novelty in the choice which has been made. The Nave of Romsey Abbey, Hants, taken from the sanctuary looking west, is a gracefully soft and delicate platinum print, by Mr. T. M. Brownrigg, with which he wins a medal. Mr. Henry Little, of Twickenham, ranks also to the fore with his bromide enlargements in illustration of the well-known Courtyard of the Palazzo Vecchio, Florence, and an interior of the Certosa at Pavia, though the iron screens in this building hardly come out sufficiently defined to satisfy an architect. The porch of Canterbury Cathedral, by Mr. W. Thomas, deserves a note for exquisite crispness in detail to a small scale, even if the platinum print is cold-looking and the parapet fogged rather, where the upper part looks somewhat out of focus. Mr. Court Cole shows Sir Arthur Blomfield's concrete Basilican Church interior at Oxford, and among other views a beautiful altarpiece in one of the college chapels in the same University. Messrs. Bedford le Mere's exhibits are good, of course, as photographs; but the buildings shown are generally lacking in interest.

Of the pictorial landscapes and river views, with which so much excellent work is displayed, it is not easy in a concise note to single out those of exceptional merit, and before reverting to them I must refer to the grand set of three big prints of "The Story of Psyche," by Mr. Harry Bates, A.R.A., shown by Mr. Fred. Hollyer. If I had a choice, this would be my prize from this exhibition. "Harvesting in Norfolk" is a medal picture by Mr. A. Horsley-Hinton; and Mr. James A. Sinclare, who shows a charming set of character studies in carbon prints, wins a similar prize for his "Sunshine and Shadow," wherein some women are washing at the edge of the stream. The picture has much the character of a watercolour. "The Village Well," in front of a queer old cottage, struck me as a particularly pretty study well worthy of its author, Col. Gale. Mr. H. Sandland's life studies of Lions and Tigers at the Zoo leave nothing to be desired, and Mr. Gambier Bolton's "Brown Owls" from life are also deserving of the highest praise, I think.

An entirely new view of St. Paul's Cathedral, in consequence of the demolition of a big block of buildings on the south side of the Churchyard, to make room for the new premises of Messrs. Pawson and Co., can now be obtained, and when the afternoon sun may again be caught shining on the west front, a hitherto impossible glimpse of the clock-tower and dome is obtained to good advantage from the courtyard in front of the Deanery. Other buildings in Doctors' Commons are coming down shortly for an enlargement of the Post-office Savings Bank in Knightrider-street, so a still more extensive view of our great Metropolitan church will soon be opened up, both for the artist and photographer. As a new widened roadway is to be formed leading southwards from the well-known archway refaced by Wren, and once the Prerogative Court Office in the angle of the churchyard, it is to be hoped that a permanent improvement will ere long be accomplished for the convenience of the public by the Dean and Chapter of St. Paul's. The gateway, too, is to come down, and probably a larger one built in its place. Here it was that Sir Christopher Wren had his offices, and perfected his designs for the Cathedral. For some time it furnished the great architect with an official residence.

An extraordinary development is going on at East Ham, which is being rapidly transformed from a village into a densely-peopled suburban district. At the last meeting of the East Ham local board the surveyor, Mr. W. H. Savage, reported the receipt of plans for no fewer than 310 new houses. Of these, 114 were proposed to be built in Monega-road, and 101 in Halley-road. Fifteen new streets have been laid out in the district since New Year's Day.

I see that the ancient home of the Leche family in Watergate-street, Chester, one of the most picturesque half-timbered buildings in that interesting city, has become untenanted, and as it is in a state of great dilapidation, it is to be feared that it may be razed to the ground and reconstructed on modern lines unless someone steps in to acquire it for the sake of preserving its artistic front. The "ladies' bower" contains the Leche coat of arms over the original fireplace, and the oak carving running along the whole length. The carving on the Watergate-street façade is vigorous, if somewhat coarse and even indelicate in parts, as judged by 19th-century ideas. Mr. Ivison, a Chester artist, is appealing for measures to be taken to preserve the house. If the corporation of Chester are wise they will purchase, renovate, and re-let the building, for the city profits largely by the visits of Englishmen and Americans in search of the picturesque, and can ill-afford to lose one of the half-timbered houses that have rendered it famous.

In the representation on the City Court of Common Council of Bishopgate Ward, one architect has succeeded another, Mr. Albert Edward Pridmore, M.S.A., having been returned at the head of the poll, in succession to the late Mr. J. Hammack. Mr. Pridmore is just 30 years of age, was articled to Messrs. John Giles and Gough, subsequently assisted the late Mr. Alexander Peebles, afterwards City architect, but for some years past has practised in Broad-street Buildings. He is a Fellow of the Surveyors' Institution, and a Member of the Society of Architects. He has been commissioned by his parish to assess the new Liverpool-street station for the poor rate, and was one of those invited to compete for the Bishopgate and Cripplegate Institutes. Mr. Pridmore is a partner in the firm of Pridmore and Anderson, of Watford, where he resides.

The First Commissioner of Works will be asked next session to provide a new courthouse in which to hold the Old Bailey Sessions. The present structure is, both in external appearance and in internal arrangements, utterly inadequate for the supreme Criminal Court of Assize in London. Its position is poor; it is inconveniently small and crowded, and, notwithstanding recent improvements, its ventilation is still exceedingly bad. One suggestion is that accommodation for the Central Criminal Court and for the Court of Criminal Appeal should be found near the New Law Courts—possibly on the west side of Chancery-lane, opposite Mr. John Taylor's new Record Office extension, which has now reached its full height.

One of our rising young artists is Mr. Bernard F. Gribble, a worthy son of an honoured father, the architect of the Brompton Oratory. Mr. Gribble, who is working at the Trafalgar Studios, Manresa-road, Chelsea, has just completed some designs in both oil and water-colour. One, which he calls "Life on the Thames," is a suggestive view of our great waterway near Greenwich. A steam tug is bringing out a great iron merchant vessel—the sense of active force in the busy little steamer being cleverly opposed to the idea of helplessness in the inert leviathan she is towing—whilst the grey, misty river is alive with more or less indistinctly seen craft. This work is going to Birmingham, for exhibition at the Marine Gallery there. A sea study, rather recalling Henry Moore, is "A View outside Monaco," representing the lovely blue-green waters of the Mediterranean under pale azure sky, flecked with light clouds. A distant ship or two add interest, but do not detract from the simple motive, so difficult to render, of a mass of gently undulating sea-waves. Mr. Gribble's "Antwerp Cathedral" is a view of the quaint old city, with the famous cathedral in the centre, as seen from the Tête de Flandre.

OBITUARY.

In the death of Baron Jean Baptiste Bethune, President of the Belgian Archæological Society of St. Thomas and St. Luke, Belgium has lost one of its greatest archæologists, and the Society of Architects a most distinguished honorary member. Baron Bethune was a Knight Commander of the Order of St. Gregory the Great, a Knight of the Order of Leopold, vice-president of the chief Belgian antiquarian societies, and honorary member of many Continental societies devoted to archæological research. In early life Baron Bethune was attached to the Belgian Legation in London, and he visited England so recently as last year, when he attended a *soirée* given by the Society of Architects, and testified in an eloquent speech to the admiration for English architecture which his fellow-countrymen possessed.

On the 4th instant Mr. John Cunningham Moncrieff, F.R.I.B.A., died of acute consumption at his residence at Victoria-square, Clifton. Mr. Moncrieff was the second son of the late Alexander Moncrieff, Writer to the Signet, Perth, N.B. He received his primary education at St. Andrew's H.B., and after two years at the Universities of St. Andrew's and Edinburgh was articled to the well-known firm of Brown and Wardrop, of St. Andrew's-square, Edinburgh. After his articles expired he went to London, and became an assistant of the late G. E. Street, R.A.; after that he commenced practice in Bristol, where he carried out many important works. He was elected an Associate of the Royal Institute in 1882, a Fellow in 1886, and vice-president of the Architectural Association for Bristol for two years, and was appointed by the Royal Institute on the Federation Committee for the West of England, held in London, 1886. He erected many mansions, churches, &c., throughout England, and also restored several ancient churches. He was the architect employed by Sir John Henry Greville Smith, Bart., in connection with the erection of his new lodge at Ashton, near Bristol, and may be remembered as one of the most prominent architects in the competition for the proposed new Palace of Justice at Lisbon. Although comparatively a young man, he had an extensive and successful practice. He was buried at the church, Easton-in-Gordano, near Bristol, on the 8th inst.

CHIPS.

The foundation stone of a new church was laid by the Duke of Devonshire at Barrow Hill, near Staveley, on Saturday.

The council of the Society of Engineers have unanimously elected Mr. Perry F. Nursey, a past president, and for 36 years a member of the society, as honorary secretary and treasurer, in place of the late Mr. Alfred Williams, who had occupied the position since the foundation of the society in 1854.

Great activity is being shown by the rival railway companies at Bodmin just now. Operations have commenced at the Great Western Railway station for making considerable alterations for the accommodation of goods traffic. Messrs. Relf, the railway contractors, have engaged to remove 15,000 yards of stuff from between the north line of rails and the Barracks-road, for providing space for loading and discharging cattle, and for a coal-store and siding. Preparatory work has also been begun by the same firm on the South-Western scheme to connect Bodmin with the South-Western Railway system. A line was already in existence, but not fit for passenger traffic, and the level crossings, and roads and lines running parallel with no division between them, will be abolished.

The new English Presbyterian chapel, Caergwrle, was formally opened on Sunday. The style is Gothic, and the walls are built of local stone, relieved by dressings of Windyhill stone. The building has accommodation for 250 persons. The architect is Mr. T. G. Williams, M.S A., 3, Cable-street, Liverpool, and the builder is Mr. Probert, Hope, Mold.

Mr. Rienzi Walton held an inquiry at Altrincham on Friday into an application of the local board to obtain sanction to a loan of £3,500 for the purpose of street improvements. There was strong opposition to the proposal.

The old clock at the parish church of South Kirkby, near Wakefield, having for some time been very irregular, a new clock was ordered from Messrs. W. Potts and Sons, clock manufacturers, of Leeds and Newcastle-on-Tyne, who have just completed the same from the designs and plans of Lord Grimthorpe. At the dedication service held on Thursday last, at the opening ceremony the sermon was preached by the Lord Bishop of Wakefield.

SANITARY CONGRESS AT LIVERPOOL.

THE fourteenth annual congress of the Sanitary Institute was opened at Liverpool on Monday, and has been continued throughout the week; it has been very largely attended, the number of members being double that enrolled at any previous gathering of the kind.

On Monday the members were formally welcomed to the city by the Lord Mayor of Liverpool, and after luncheon at an hotel, the members assembled in the lecture theatre of University College. Sir Charles Cameron, of Dublin, the retiring president, introduced his successor, Sir F. S. Powell, Bart., M.P., who then delivered the

PRESIDENT'S INAUGURAL ADDRESS.

Sir Francis Powell dealt in a comprehensive and general manner with the work of sanitary progress, restricting himself within the boundaries of public health as affected in England and Wales by administration and by law. It was impossible to survey the field without a sense of satisfaction, almost of triumph. The difficulties which hindered their progress diminished both in area and in gravity. Improvement in public health had justified both the cost and the labour expended. The Local Government Board had during the last twenty years sanctioned a capital expenditure, chiefly for sanitary purposes, of £53,021,334 in urban, and of £3,923,270 in rural districts, while during the same period local Acts had authorised a further expenditure of £67,335,956. Vital statistics abundantly proved the wisdom of such expenditure. As to general sanitation, administration rather than legislation now demanded the energies of the sanitary reformer. The London Building Acts of 1891 and 1894, following similar enactments for the provinces, supplied for the time the wants of the Metropolis. But domestic buildings in London might still be erected to the height of 80ft., exclusive of two stories in the roof, power being unfortunately reserved to the London County Council to sanction the construction of buildings even of more gigantic proportions. Air and light could not perform their life-giving functions at the base of those structures, still less within courts inclosed in them. It was not an exaggeration to say that the dwellings of our nation were being built in the course of the present half-century. The erection of new houses and the destruction of old were everywhere seen. They were erected under by-laws for the most part wise, and were maintained under regulations conducive to health. Errors of judgment hindered progress. Doubts were already expressed as to the system of huge constructions under the name of artisans' or model dwellings. The Mansion House Council described certain blocks of artisans' dwellings as a “difficulty which wants promptly dealing with.” “These,” said their committee, “have been erected without any regard to sufficient air and light around them.” In the cases of private dwellings and of model lodgings the tenant had his duty to perform as well as the owner. It was difficult to believe that children who passed long and pleasant hours in cleanly and well-ventilated schools would rest content with dirty and unwholesome dwellings. The factory and workshop not less than the dwelling were comprehended within the wide range of the sanitary province. Increased security against accident, improved appliances for ventilation, and general conditions creating greater physical comfort during the hours of labour would increasingly improve the health of the artisan population. It would not suffice to guard the workshop and the dwellings from injurious influences within. The health of the people could not be sound if the air were polluted, and the working classes might discover that the smoke which rendered cleanliness difficult and the brightness of a home impossible, imposed upon them labour which was unnecessary, and cost which might well be spared. The President proceeded to refer to the legislation dealing with processes dangerous to the health of workers, and went on to speak of river pollution. We could not hope by one effort in one generation to restore our streams to their original purity. But we could do much. The River Pollution Bill would be reintroduced in the next session; the Bill had been twice submitted to the House of Commons; but he was not without hopes that Government would grant an inquiry by a Select Committee. The Infectious Diseases Notification Act had, in March, 1894, been adopted in 761 urban districts and 473 rural districts. The great majority of our population was subject to the provisions of that Act. The exhaustive report of the Royal Commission on the Metropolitan Water Supply claimed the fullest consideration. In conclusion, the President urged his hearers not to wait longer for new laws, but to put into effect those already on the Statute-book.

In the evening the Lord Mayor of the city opened the Health Exhibition in the Drill Hall, Upper Warwick-street.

The following are among the awards declared:—J. Cliff and Sons, Wortley, Leeds, Cecil porcelain slop sink; Joseph Cliff and Sons, Wortley, Leeds, imperial porcelain bath; Doulton and Co., Lambeth, metallo-keramic joint for connecting lead to earthenware; the Incandescent Gas Light Company, London, incandescent gas-light (Welsbach system); Bowes, Scott, and Western, London, automatic flushing grease trap; Joseph Cliff and Sons, Wortley, Leeds, white and coloured glazed bricks; Joseph Cliff and Sons, Wortley, Leeds, imperial porcelain kitchen and scullery sinks; Doulton and Co., Lambeth, glazed fireplaces; J. Duckett and Son, Burnley, rest for setting drain traps level; Newton, Chambers, and Co., Thorncliffe, near Sheffield, izal disinfecting fluid; Renton, Gibbs, and Co., St. James's Works, Mill-street, Liverpool, hot-water grate; Thomas W. Twyford, Hanley, ideal sinks and supports in enamelled fireclay; Thomas W. Twyford, combined “C.V.” and athena lavatory basin. Twenty-four exhibits have been deferred for practical trial.

On Tuesday, a series of conferences were held at University College. The municipal and sanitary engineers met under the presidency of Mr. A. M. Fowler, M.Inst.C.E., who urged that the housing of the poor was still far from satisfactory, He found fault with the night ventilation, and the crowding together of so many individuals in one building, which were characteristic of many blocks of artisans' dwellings, and he considered that the back-to-back house self-contained, so extensively constructed in Leeds on the modern plan, was the best type of house for the working classes. As to the street surfaces, he advocated improved wood pavement, or the improved asphalte, and constant removal of filth from the streets. The importance of securing a soft-water supply for domestic uses, and for generating steam in boilers for motive power, could not be over-estimated, for there would be a saving in all domestic expenditure. Dr. Francis Vacher presided over a meeting of sanitary inspectors, and Dr. C. E. Paget over a similar gathering of medical officers of health. In another room the “Sanitation of the Passenger and Mercantile Marine Service” was discussed, with Sir W. B. Forwood in the chair, and a meeting on “Domestic Hygiene” was presided over by the Lady Mayoress. At this latter meeting Mrs. H. Percy Boulnois read a paper on the subject of “The Ethics of Sanitation.” She contended that sanitation should be the crusade of the 19th century, being necessary for the mental, moral, and physical advancement of the race. To do this the cultured must learn first and then teach their poorer neighbours. They should encourage reverence for the sanitary inspector, and show the great importance of sanitary legislation. She dealt with the evils of the present burial system, and contended that cremation should be encouraged from principles of altruism, the watchword of the day.

In the evening a lecture to the Congress was delivered by Dr. G. B. Longstaff, member of the London County Council, on “The Overcrowding of Houses upon Land.” Too much attention was given, he held, to zymotic diseases, which caused but one-sixth of the deaths in England and Wales, and too little to diseases of the lungs, including phthisis, to which one-fourth of the total deaths were due. A constant supply of fresh air was of paramount importance—of more importance even than drainage. If they could not make people ventilate their rooms they could at least see that there were sufficient windows to their rooms, and an abundant access of fresh air to their houses. Parks and playgrounds, cycling and volunteering were all of great importance, but they were not all that was wanted. They could not be enjoyed by all, and to the toiling mother of a family no less than to her young children a mere backyard was of daily and almost hourly importance. The evils of overcrowding in buildings and the evils caused by the crowding together of houses, had been statistically proved; but it scarcely needed statistics to prove that rooms to which air had difficult, and sunlight no, access, were unfit for human habitation. He condemned the overcrowding of buildings, which resulted from the houses known as “back-to-back” houses, and from very narrow streets. The difficulty in regard to these could only be overcome by large schemes of rebuilding and the adoption of additional streets. He had long ago come to the conclusion, in which he was amply confirmed by conversations with surveyors of large estates, that the carrying out of reconstruction schemes would be greatly facilitated if the municipality were made the authority for closing and diverting highways. The municipality was now the controlling authority as regarded new streets, and it should have correlative powers. He had a great antipathy to grandmotherly legislation, and thought that in some respects our sanitary laws had already passed the just limit of interference with the liberty of the individual; but the evils of streets badly laid out, and of houses improperly crowded upon the land, were so great and withal so enduring—the evil, moreover, was one that could only be dealt with by an external controlling authority—that he was convinced that this was one of those cases in which the Legislature was bound to interfere and to confer ample powers upon the municipality.

On Wednesday, Section I., “Sanitary Science and Preventive Medicine,” was opened by an address from Dr. E. E. Klein, F.R.S., on the etiology of typhoid fever, followed by papers and discussions.

At the conference of sanitary inspectors, which concluded in the afternoon, it was urged that inspectors under public bodies should be more firmly established in the tenure of their office, and that in the interests of public health the institute should not grant certificates unless the persons examined could claim several years' practical experience. A resolution in support of the latter proposal was rejected.

Yesterday (Thursday morning) Mr. G. F. Deacon, M.Inst.C.E., the President of Section II., “Engineering and Architecture,” gave his inaugural address. He traced the sanitary progress of Liverpool since 1865, and showed that since 1876 the relative death-rate of the city had very materially decreased, owing to better water supply, the prevention of leakage, the adoption of a constant system, and the introduction of the supply from Lake Vyrnwy, new sewerage, and the removal and destruction of refuse. Papers were afterwards read by Mr. H. Percy Boulnois, M.Inst.C.E., the city engineer (and hon. secretary to the Congress), on “The Housing of the Working Classes: Tenement Rooms or Dwellings in Flats”; by Mr. W. Goldstraw, the city surveyor of buildings, on “Sanitary Powers Relating to the Housing of the Working Classes”; by Mr. William Spinks, of Leeds, on “River Pollution”; by Mr. W. Henman, A.R.I.B.A., Birmingham, on “The Purification of Air emitted from Infectious Diseases Hospitals”; by Mr. Robert Williams, A.R.I.B.A., on “The Nation's Wealth”; and on “The Tub and Pail Systems,” by Mr. George J. C. Broom, borough engineer, St. Helen's. Papers on “Water Supply” were read by Professors Edward Hall and Henry Robinson, the latter dealing with the subject generally, the former with that of St. Helen's, Lancs.

The vice-presidents of the congress are Mr. C. H. Beloe, M.Inst.C.E., Sir Douglas Galton, Mr. Henry Hartley, F.R.I.B.A., Professor Hele-Shaw, and Sir R. Rawlinson; and the hon. secretaries are Major Lamorock Flower, Messrs. Edmund Kirby, F.R.I.B.A., W. Howard-Smith, and Coard S. Pain. The hon. local secretaries of the Congress are Mr. H. P. Boulnois, M.Inst.C.E., the city engineer, and Dr. E. W. Hope, the medical officer of health.

To-day (Friday) Section III., “Chemistry, Meteorology, and Geology,” will be opened by an address from Dr. T. Stevenson. The closing general meeting will be held at 5 p.m., and at 8.30 an address will be given to the working classes in the Picton Lecture Hall, by Sir J. Crichton Browne, F.R.S., and for to-morrow excursions are arranged to Lathom House, near Ormskirk, and to Eaton Hall.

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The Bath city council decided on Tuesday, by 18 to 12, that the city surveyor (Mr. R. Read) be paid £250 for assistance to be granted Mr. Fox, C.E., in carrying out the new waterworks at Newent, and that someone should be appointed to assist the surveyor in the work of inspecting new buildings in course of erection.

DRAWING FOR REPRODUCTION.*

THIS subject, though more particularly treated of by Mr. C. G. Harper in his recently published "Handbook" for the instruction of book and magazine illustrators in what is called "black and white," cannot fail also to be of interest to the architect and the architectural artist or draughtsman, and, therefore, we may with advantage direct the attention of our readers to his little volume. Its pages will obtain a further importance possibly to some on account of Mr. Harper's forthcoming lecture on "Architectural Illustrations," to be delivered in January next before the Architectural Association, though the book itself scarcely mentions this highly important branch of the subject; indeed, the writer seems hardly aware of the advances made by photo-lithography as far back as the "sixties" in the pages of the Building News towards an improved method of the more technical and artistic treatment of architectural illustration. Without attempting to discuss with our author the æsthetic value of such renderings as these productions of that time really possessed, we very much question the accuracy of his statement that all illustrations by "process" previous to 1880 might well be destroyed and no harm done, save perhaps the loss of much evidence of a documentary kind. It may be so, generally speaking, with the ordinary type of newspaper or magazine illustration; but even allowing for the "black and white" man's usual want of appreciation of architectural design and detail, we hardly think a more exact knowledge would countenance so sweeping an assertion as this, to which exception may with justice be taken. We presume, however, that Mr. Harper's remarks are intended to apply to the more limited view of his subject, which hardly includes that with which his paper at Conduit-street will be expected to deal. The instructions, which give a practical value to his handbook, are clearly the outcome of experience, and the illustrations accompanying the letterpress exhibit the relative values of the photogravure, Chefdeville, bitumen, and swelled gelatine processes. We must refer our readers to the treatise itself for details of these, and also for the suggestions printed as to the different advantages of certain pens, inks, and papers. For most purposes, however, Whatman's hot-pressed papers and Mitchell's "F" steel writing pens, used with a good "fixed" liquid black ink, will be found to answer perfectly well. The American method of "splatter work" is described, and the air brush for kindred effects of tone is another trick enlarged upon for the advantage of those who wish to try their hand at this sort of thing. "Half-tone" processes receive adequate attention, and in this branch of the subject the reader is introduced to Day's "shading mediums," which are more useful for magazine printing; the same remark being applicable to the "scratch-out" clay-boards, made by Augerer and Göschl, of Vienna, or Gillot, of Paris. Both of these methods do not allow more than a slight reduction of scale in the reproductions, on account of the printed granular or lined surfaces of the blocks employed.

Mr. Harper's remarks on "styles and manner" are exceedingly entertaining, and his observations on some contemporary illustrators may thus be sampled. The "pretty" convention adopted by Mr. Herbert Railton is described as having nothing except a remarkably novel technique to recommend it. He could draw an elevation in a manner curiously feminine, but he could only repeat himself and his trees; his landscapes were insults to the imagination, inspired by nothing beyond achievements of pictorial confectionery. This sort of artistic influenza was catching; but it could not possibly last, it was so resourceless. Everything in this manner wore the romantic air of the "Moated Grange," whether the subject was a ruinated castle or a new warehouse. This offensive apotheosis of raging skies and falling smuts, of impending chimneys, crumbling stones, and tottering walls was only a personal manner. Its imitators have rendered it ridiculous. The chief merit, says Mr. Harper most rightly, of such topographical and archæological drawings is when they are truthful and reverent. Mr. Railton's drawings in Mr. Loftie's "Inns of Court," or his "Westminster Abbey," he considers of "no historic or artistic value whatever." Sir George Reid and Degas are more commendable as devoid of the braggart assumption of "side." Caldecot is described as a dangerous man to copy, as there is no technique but only characterisation in his work; and Mr. Phil May's gay and festive humour is replete with a marvellous economy of line, though we understand his studies are really based upon the most elaborate pencil drawings. "Mr. Walter Crane has any time these last ten years been the great apostle of Decoration plus Socialism. It has been given him in this wise to make (in theory) the lion to lie down with the lamb (and yet for the lamb to remain outside the lion with his destiny of mutton still in perspective), and he has proclaimed in parables the possibility of mixing oil and water. He has perpetrated a cartoon for the Socialistic if not Anarchist 'First of May,' and therein he has striven to decoratively treat the British workman.* But although Mr. Crane has a pretty trick of decoration, he was worsted in that bout, for the British plumber or the Irish hodman is stubborn material for decoration, and their spouses as festal nymphs are not convincing visions." The bravery of our London firemen and policemen deserved a better fate than the Democratic valour cartoons by Mr. Crane in the Red Cross Hall, and although his revolutionary verses in praise of brotherhood and equality point to an equal distribution of this world's good things, Mr. Crane has nevertheless accepted the mastership of a Government Art School at Manchester, under the direction of that not very revolutionary body, the Committee of Council for Education. "Decoration," adds Mr. Harper, "is made of sterner stuff!" "Indeed, the decorative work of the students of the National Training Schools may be put in the formula of one-third Crane, and the remaining two-thirds Heywood, Sumner, and Lewis Day, an amalgam ill-considered and poorly wrought." Mr. Beardsley's work is "morbid and neurotic, with a savour of Bethlehem Hospital and the Charnel-House"; while Mr. Selwyn Image is devotional, keeping his art on the model of the Monkish Scriptorium. The book concludes with some admirable remarks on photography and "painters' pen drawings," with a few capital specimens. Mr. Harper hardly does justice to Mr. Pennell by the one unhappy inferential remark in which that artist's name alone occurs in the book—viz., on page 143.

SPECIFICATION WRITING.—I.†

IN reality, an architect commences to write his specifications when he commences his drawings,—one involves the other. The knowledge requisite for the one is as necessary for the other, and as the lines are drawn, the specifications form themselves. The insight into construction necessary to draw correctly indicates the ability to describe the work shown on the drawings. Without this ability the drawings and specifications alike will be failures. There is no one thing in our profession that has as much to do with personal success in its practice as the ability to properly prepare specifications. And I do not in stating my idea as to relative importance, except the question of design; because to one person able to discriminate at all between good and bad design, there are a great many who very clearly distinguish between good and bad business ability, and who will not fail to express their opinion of the architect who does not properly protect them—who, for instance, forgets to specify the stripping of walls, or the traps on plumbing fixtures or the rain conductors. And the fact that the exterior of his house is an architectural "dream," or that the detail of his mantels and stairway is "out of sight," will, in a certain sense, be only an aggravation of the offence—a sort of adding insult to injury which he will not forget. And your chance of making a living at your profession, not to speak of a fortune, which is hardly possible—at least, I have never heard of an architect dying rich—depends upon the reputation you make as a careful practitioner. To carefully write your specifications is indispensable to successful and conscientious supervision of the work; it is impossible where they are drawn loosely or in a slovenly manner, and it is not worth while to handicap yourself in this way, and add unnecessarily to the inevitable load of responsibility and worry which will come legitimately with the practice of your profession. It does not do for a professional man to make mistakes, and there is no hiding them in building; they are apparent for all time, and, like the fly in the pot of ointment, spoil the whole. Mistakes are two-edged swords. They destroy your client's confidence, and your own, the latter, perhaps, more disastrous to you than the first. Of course all this philosophising applies also to the drawings; but if you prepare your specifications with care and minuteness, you will escape most of the pitfalls, and they will greatly help you to accuracy in the drawings. The specifications bear somewhat the relation to the drawings that the arteries and veins do to the body, and they should, like them, extend from the foot to the head; from the footing stones to the cresting of the roof, and ramify in all directions, covering each little point of construction and material. They cannot be too full. Nobody ever got into trouble because he too minutely described the work to be done, or the materials to be used. To draw good specifications requires exact knowledge. You must know precisely what you want, and how you want it done. Your directions must be specific, as the name implies, and clear and simple in expression. Make your paths straight, so that the wayfaring man, though a fool, shall not err therein; but make them narrow as well, so that he shall not have room to wobble. It does not follow necessarily that he will be a fool, though it has sometimes seemed to me that nothing short of idiocy could explain what seems to be an irresistible impulse that forces the average workman to do things exactly the wrong way, when the reverse is really easier. It does not do to specify things generally, or to assume that "Oh, they will understand that." Believe me that they will not; if there is any possibility of a misunderstanding, it will be embraced. Do not leave your phrases until they are clear beyond any possibility of ambiguity, remembering always that it is too late to change the specifications after the contract is signed, and that it may be exceedingly inconvenient to have to explain clauses which are capable of more than one reasonable construction. It is a great help to use the trade terms, names, and grades. The builders understand them, and it will enable you to ascertain more readily whether you are really getting what you specify, and where it is practicable I would specify materials which have their quality marked on them. But, unless you have some reason for requiring a particular make, it is better to specify two or three makes, equally good, rather than the make of any one manufacturer. I know no class of men more disinterestedly honest than architects, or who so little let questions of money or profit have any bearing on their professional conduct. But it is possible that a misconstruction may be put upon a perfectly innocent act, and the requiring of the product of a particular manufacture may give rise to question, particularly if there are other goods of the same grade and general worth in the market, and it is well to avoid even the appearance of evil. In addition to this reason, which I express with some hesitation, and which I am very well aware may be open to the charge of timidity, there is this other—that to close out the goods of all manufacturers but one, destroys the chance of competition. That these remarks are perhaps rather less practical than ethical is true, but they have something to do, nevertheless, with what has been my practice in preparing specifications. The sin peculiar to the specification is the sin of omission, and the greatest particularity will hardly insure against it. I use as a sort of safeguard a scheduled synopsis, and use it always, which I will show you and explain farther on, and which I have found of the greatest use, but which must be added to continually as the complexity of work and the increase in the number of appliances and methods become greater with the passing of each year. In making drawings it is my custom, and that of other men as well, I have no doubt, to print upon them many notes as to things not of a nature to be clearly shown by the drawings, placing the notes on the parts to be explained, noting girders, beams and their sizes, sizes of flues and their linings, if any; finish of rooms; kind of flooring; kind of glass; and many other matters of that kind. They are really part of the specifications, and should be specified in them also, or, at least, attention called to the fact that such notes are to be taken as part of the specifications, in the general clauses of the specifications to which I will refer later on. One advantage of placing these notes is:—First, that as they are made at the time the drawing is made, they are fixed there once for all, and are not liable to be forgotten, as they may be if you wait until you write the specifications; and secondly, that they are right before the builder's nose when he looks at the drawings, and he is not likely to miss them. A not very usual thing, but a very convenient addition to a specification, is a table of contents, giving the page-number, and a list of the subjects on the page. It saves a good deal of time in the use of the specifications, and is very little trouble. And somehow, as there is never enough time, and always too much trouble going, any labour and time-saving devices are of value. The working or detail drawings, in contradistinction to the contract drawings—i.e., the plans and elevations—are the final exponents of the contract drawings. These drawings are made up from the contract drawings and the specifications, from which last the methods of construction, size, and kinds of materials must be derived. They embody both, and if it were possible to make the working drawings with the contract drawings before estimates are made, the specifications might be shorter, which would be desirable; and as it is impossible to make in many cases the word *written* as readily understandable as the word *drawn*, there might be less misunderstanding, which would be still more desirable. In this connection let me say that exact and minute specifications and full working drawings will enable you to build cheaply, an important thing to your client, who, if he be like most of us, is generally scheming to get a dollar's worth for 90 cents, because the bidders will not have to allow so much for "laps and slams," for the things not clearly shown or definitely specified, but which look the larger and more dangerous because they are undefined. As a general thing, when great differences in the amounts of bids occur, you may make up your mind that there is some want of clearness or of particularity in the specifications of drawings. The exception to this rule is caused by the irresponsible bidder who throws his hat at the drawings and guesses how much the work is worth, and who is either very high or very low; but, in fact, he should not have a chance to bid, as generally his hope triumphs over his experience, and he bids low, and sometimes gets the building, to the ultimate scamping of the work, his own loss and also the owner's, and to the despair of the architect. It is this sort of bidder who grizzles the locks of the superintendent, and eventually brings his grey hairs in sorrow to the grave. Avoid him if possible, and care and firmness will generally enable you to dodge him; but you must avoid him before he bids—afterwards it may be too late, for your client having the easy idea that the architect is paid to watch the builder anyhow, is apt to turn a deaf ear to your suggestion that he take a higher bidder at an ostensible loss of the difference, expecting you to play stop thief, a sort of "I spy" game with the contractor, with the usual result of making for yourself, at the least, two enemies—the owner and the contractor, and of having been unable to entirely protect the owner or curb the contractor. There are some things you will require to specify which are difficult, almost impossible, to describe so that their value can be got at: stained or leaded glass for example, or an elaborate stairway or carving, and matters of that sort. My method in such cases is to put a price on them: for glass, by the foot, unless I intend very elaborate work, in which case I omit it and say so. If for a stairway, I name a lump sum, and specify whether that includes the horsing or not, and the finishing. For carving, I specify a sum of money to be allowed; or if very costly, like figure-work, omit it and say so. When a sum of money is allowed, you should state that the owner is to buy where he pleases, otherwise you may find some trouble in putting the work where it will be best done. Forms of specifications vary somewhat, but in essentials they are alike. I presume you are familiar with their general make-up; in fact, it has been a matter of some debate with me how much of this talk is threshing of old straw and an old story to you. However, I have concluded that it won't hurt you to hear again what you have already learned, and I may have said something that will help to impress upon you the instruction probably received before. The specifications begin with the recital of the general clauses. The general clauses are those which are to be observed and followed by all the trades connected with the work of the building, which call attention to requirements common to all, and are binding upon all. The first of these refers to the architect and his authority, whether he is to supervise the work or not. If so, the clause is worded thus:—"The work to be erected under his supervision, and to his approval without reference to any other person." The sentence "without reference to any other person" is an interpolation of my own; but it is a good one, as it makes you the dictator, as it were, the sole arbiter of the drawings and specifications. And while it seems to add responsibility, really lessens it, or at least simplifies it, and will rid you of a good deal of foolish and annoying interference from both contractor and owner. It is occasionally objected to, sometimes by the contractor, but not often, the contractor knowing from experience the safety that lies in a court of last resort; more often by the owner, but I think it well to insist on it. It defines the authority of the architect positively, and rids him of the annoyance of having his decisions overruled. This does not refer to any question of values necessarily (the agreement usually providing that dispute as to prices, &c., shall be decided in some other way, as by arbitration), but to matters connected with the design and the meaning and intent of the drawings and specifications, where the architect is the only person who is qualified to decide, after all. The second clause refers to the unity of the drawings and specifications, calling attention to the notes written upon the drawings as being part of the specifications, and that drawings and specifications are to be taken together and not separately. Work shown or mentioned in either to be taken as if in both. This clause is intended to insure against omissions in either of the two, and is a valuable one. The utmost care may fail to include in both what may be in one or the other. The next provision is one requiring the contractor to follow the detail drawings as the final exponents of the contract drawings, with the implied guarantee on your part that they shall show no new work or work not suggested by the contract drawings, but which insures you an opportunity to correct or improve on your design up to the last moment within the bounds of the rights of the contractor. Next, a claim of importance requires the builder to follow the figures on the drawings rather than to measure them with scale. Builders will use the 2ft. rule if they are permitted, with unfortunate results, particularly where you have worked things down in your planning to a very fine point. This same rule, generally the worse for wear, is not a safe instrument to use, particularly if your drawing is one-ninety-sixth or one-forty-eighth the full size, while the figured drawings, if properly checked, can be made exact without any possibility of doubt. The last clause of the general clauses is one requiring the contractor and all trades to comply with all city ordinances and requirements; to pay for all permits, and to hold the owner free from all penalties for infringement of ordinance, or failure to comply with the same. Some copies of specifications I have seen have more than these clauses; but I think that these embody all that apply directly to the work of the building, any other requirements belonging more particularly to the agreement. The methodical arrangement of specifications should be this: Excavation, stone-mason and cut-stone, marble, bricklayer, terracotta, mosaic floors, tiling, cement pavements, carpenter, mill-work, plumber, tinner, plasterer, galvanised iron, roofer, iron-worker, beams, &c., painter and glazier; heater, steam-work, engines, electric-work, dynamos, &c., lifts. Each trade should be complete in itself, and the specification should embody all of the work and materials required, and any work or materials to be done or supplied in connection with any other trade, as, for instance, the tinner sometimes supplies registers to sizes given by the heater contractor, which are set by the plasterer. You see these three trades require each notice that the others have to do with them. It is necessary, also, that if, for any reason, you vary the work usually done by any one trade, you shall give notice to it, that either it shall include work not generally taken, or exclude work usually taken; as, for instance, the painter I always require to furnish the glass. In some localities, the mill-man furnishes the glass for the general trade. If you wish to avoid any trouble, you must always say in the mill-work specification that he shall not furnish the glass, or omit it from the painter, and let the mill-man furnish it. You can require the plumber, if you choose, to put enamel paint on a tub or on a wall of a bathroom, or to supply casings of wood or marble for his fixtures. And the reason you do this is to avoid interference of one trade with another, and to make the plumber entirely responsible for his own work, so that he cannot plead for any breakage or spoiling of work that the carpenter, mill-man, or painter, or marble-worker did it. Now when you have done this, you must notify the painter, mill-man, carpenter, the marble-worker, that the plumber does this work, otherwise you may pay twice for it; that is, both trades may estimate on it, seeing it required on the drawings and clause No. 2 of the general clauses before them, which would be unfair to your client of course. Builders sometimes object to the grouping of work in this way, and unless the trade whose usual business it is to provide the work or material is notified in his specification, it may make confusion: notification is sufficient, however. And thus while you make the plumber provide all marble-work required, you have let the marble mason know that, and also to know where the specifications for that marble-work will be found, by your intimation in his specification. Always draw each specification, so that if the work is let separately, each man's work is in his specification complete, with nothing left for implication one way or the other. With a general contractor as the builder (one man who assumes all the work), he is, of course, responsible to you and to the owner, and work or material specified anywhere in the specifications would be held, from a legal point of view, to be his to do or furnish. But if your specifications are defective as to who of all those who contribute towards the work does each part, you can put your general contractor in a hole very easily, and he has a moral right to expect that when he gets his estimate from mason, plumber, or anyone else, that they have taken all that is required, and that there is no such ambiguity as will cause him to lose money, instead of making his legitimate profit, and in which latter case he is likely to make your existence an unpleasant one as far as your connection with that building is concerned. Your specifications must agree with the drawings. There must, of course, be no conflict between them. Each building is *sui generis*. There can be no general specifications prepared which will meet every case. There are forms of specification printed which proceed upon the idea that you shall cross out any clauses not applicable to the house for which they are intended to be used, leaving in those which are; but you are very likely, if you use them, to leave in parts which have no business to remain, and you will have specified cornices where outlookers are shown; turned posts where squares are drawn; stone heads where arches are shown, and a thousand other inaccuracies, small, perhaps, but all requiring explanation, and lessening your control of the work. In addition to this, crossing out or interpolating gives rise to question sometimes, and it may be hard to prove, from such specifications, their correctness. I have prepared some copies of the synopsis of the specifications I am accustomed to use. If you will refer to them I will go over them hastily, noting some of the more important matters, and will not further take up your time.

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* A Practical Handbook of Drawing for Modern Methods of Reproduction, by Charles G. Harper. London: Chapman and Hall, Limited. 1894.

* For these cartoons by Mr. Crane see Building News for May 1, 1891, and May 4, 1894.

† A lecture delivered before the Architectural Department of the University of Pennsylvania, by Mr. T. Roney Williamson, Architect.

GENERAL WORKING SYNOPSIS OF SPECIFICATIONS.

EXCAVATION.—REFER TO GENERAL CLAUSES.

Top soil. Disposal of earth, cart it away? deposit on lot—to grade—in piles?

Depth of cellar. Depth of trenches. Inside, outside.

Width of footings. Vault. Grease-trap.

Well:—Include walling; include man-hole.

Trenches for pipes. Include digging and refilling.

Shoring of walls—adjoining. Shoring of earth banks, if necessary. Pumping of water, if any. Cleaning of old wells; filling of same.

STONEMASON.—REFER TO GENERAL CLAUSES.

Stone:—Cellar and backing: sizes, kind. Facing: sizes: kind of wall—broken-range, random-coursed, coursed.

Dressed—how? rock faced?

All on natural bed: jambs dressed, arrises cut. Specify bonding.

Footings, stone:—Depth, width, kind of stone, sizes; squared? edged?

Footings, concrete:—How mixed? Who furnishes forms? Thickness layers, ramming. What cement? What sand? What proportion of each?

Testing of cement:—For fineness—what mesh? Tensile. Compression. Boiling.

Thickness of walls:—Piers, sizes. Cellarway. Foundation for steps.

Levelling of walls:—For joists, sills, frames, heads, plates.

Leaving chaces for pipes, posts, flues.

Building in blocks, strips, frames.

Skew-backs for arches. Arches: what soffit, if necessary? cut? rough-face?

Mortar :—Any cement? what kind?

Lime, any particular kiln or make?

Sand :—Bar, road, creek, bank?

What proportions of lime, sand, and cement, if any?

Pointing :—Lime mortar. Marble dust. Cement: What kind? any sand? what style of pointing?

Anything as to bad earth foundations, rock in cellar: blast it, sledge it, plug and feather. Owner to pay per perch? owner to have?

Old walls :—Stone to be re-used, removed, contractors, owners.

Who supplies water? scaffolding, who supplies?

Cut-stone :—Pier-caps, chimney-caps, girder blocks. All sizes, kind of stone, dressed.

Ashlar: how thick? how clamped?

Sills: moulded? plain? Cut to wash, throated.

Heads: moulded? plain?

Platforms: steps, balustrades, moulded rails? turned or square balusters?

Bands: moulded? plain? left for carver?

Columns: full diameter? half diameter? fluted? left for carver?

Caps: left for carver? moulded?

Pilasters: plain? panelled? left for carver?

Cornices: size; projection; bed.

Curbing: what kind? all sizes.

All sizes, kind of stone, style of dressing.

Marble or slate treads and risers to iron stairs?

Stone-pavement :—What kind? all sizes; dressed? rough?

Any cutting for doors, man-holes, plumbers' fittings?

Remember to set sills free in middle.

Remember that fine limestones must be laid in lime-mortar, and that cement must not touch limestones in joints or backing.

Remember to require covering of all cut-stone to protect from injury while building.

Remember that some stones rust and run—look out for that.

Specify who furnishes water: contractor? owner?

Carving :—Who does it? contractor? owner?

How, by fixed sum?

Name carver, sum.

Underpinning :—How done, by the day? on contract? any particulars?

What kind of stone? Conshohocken? cement? neat? with sand, how much?

Is underpinning to be done with stone or brick?

(*To be continued.*)

CHIPS.

The partnership heretofore subsisting between E. Ludford and F. H. Tulloch, architects and surveyors, Albany Buildings, Victoria-street, Westminster, S.W., under the style of Ludford and Tulloch, has been dissolved.

The memorial stones of a Congregational church in the course of erection at Penmaenmawr were laid on Friday. Mr. Hugh Davies, Conway, is the architect, and Mr. Erasmus Jones the contractor.

Among the receiving orders in bankruptcy announced in Tuesday's *Gazette*, the name occurs of H. Stockton Judd, of Leicester, architect and surveyor; and also that of John Ward, of Morie-street, Wandsworth, described as president of the Navvies, Bricklayers' Labourers, and General Labourers' Union.

Alterations are being made to the parish hall, Teddington, embracing the ventilation, which will now be effected on the Boyle system, the latest improved form of the patent self-acting air-pump ventilator being adopted for the extraction of the vitiated air, while fresh air is admitted through their improved air-inlets.

The new opera house at Wakefield will be opened on Monday next. Mr. Frank Matcham is the architect, and Messrs. Denholm and Co. were the contractors. The whole of the moulded and modelled front has been supplied by Messrs. Fambrini and Daniels, Lincoln, in their buff concrete masonry. The above includes a series of highly decorative panels of large size, representing "Music," "The Drama," &c., with modelled medallion heads of Mendelssohn, Beethoven, Garrick, and Shakespeare.

After undergoing repairs and restoration the parish church of St. Botolph, Aldersgate, was reopened on Sunday. Nearly three thousand bodies have been removed from the vaults and building and reinterred at Woking Cemetery. In the course of excavations several discoveries were made, including a portion of a massive column of the church which formerly occupied the site of the present structure. An immense slab of unpolished greystone—weighing about 25cwt.—was found on the floor of the vault. It bears the name of a former benefactor, "Mr. Richard Chiswell, citizen and stationer," who died in 1711, and the slab has been placed in an upright position inside the church.

Building Intelligence.

Alsager.—The foundation-stone of a new church at Alsager was laid on Thursday in last week by the Lord-Lieutenant of Ireland, Lord Houghton. The church, now in course of erection, is in the parish of Barthomley, and when completed will become the church of the new parish of Alsager. The church is to be erected in the Decorated style, and will consist of a chancel and nave 26ft. wide, and north and south aisles, opening into the nave by arcades of five bays each. The church will be entered at the west end by north and south porches, both of which open into the tower, which will be surmounted by a spire. The total length of the church will be 124ft., and the width 56ft. The church will not be completed at present; but will consist of a chancel, vestries, nave, south aisle, and a portion of the north aisle, accommodation being provided for 450 persons. When completed there will be seating accommodation for 700 persons. The church is to be built of Alton stone, and the roofing will consist of Staffordshire tiles. The cost of the present section will be about £5,450. The architects are Messrs. Paley, Austin, and Paley, of Lancaster; and the contract has been placed with Mr. John Fielding, of Altrincham.

Aston.—The foundation-stone of a church institute and mission-room was laid by the Bishop of Worcester on Monday. The site has frontages to three streets, Park-street, Lynton-road, and Wainwright-street. The higher end will be occupied by a mission church and classrooms. The mission church is about 62ft. by 38ft., and will have an open-timbered roof. The girls' classroom is 24ft. by 21ft., and the infants' classroom 27ft. by 21ft. In the basement are a large kitchen, heating apparatus chamber, dressing-rooms, lavatories, &c. The design for the building is a free treatment of Gothic. The external elevations will be of brick, with moulded cornices, &c., of brick, and tracery of stone. Mr. John G. Dunn is the architect, and Mr. Thomas Johnson is the builder.

Birmingham.—Bishop Ryder's church was reopened on Saturday, after having been closed for some time for the purpose of carrying out much-needed repairs and redecoration. This church was built in 1838 from designs by the elder Rickman, and, like many similar structures built at that time, it was disfigured by deep and comfortless galleries. Nearly 20 years ago the galleries and old pulpit were cleared away with their cast-iron tracery and imitation carving grained to represent oak; the church was newly floored and reseated, and a carved-stone pulpit was erected. Last year a new chancel was added, and a carved reredos. The present work includes the replacement of the plastering of the nave ceiling by matchboarding, decorated with designs of sacred symbols and crowns, surrounded by foliated wreaths. The builder's work was carried out by Mr. John Bowen, the decorations by Mr. W. Naughtin, from full-size designs, and under the superintendence of Mr. W. H. Bidlake, architect, of Waterloo-street, Birmingham; and the figures were painted by Mr. G. T. Tarling.

Gestingthorpe.—On Thursday last, Gestingthorpe Church, Essex, which has been under repair for the last seven months, was reopened. The nave arçade, which had by the weight of the roof been thrust out of the Perpendicular to an extent of 1ft. 10in., has been taken down and rebuilt. The timber roofs of the nave and aisle, which were particularly fine, had been almost entirely concealed by plaster. These had been reframed and refixed. The chancel arch, which was filled in, has been opened out; but the fabric generally has been disturbed as little as possible. A new organ-chamber has been built at the expense of Mr. W. E. Oates, Gestingthorpe Hall. The work, which, owing to the critical condition of the building, involved considerable difficulty, was carried out by Mr. S. C. Parmenter, of Braintree, under the superintendence of Mr. A. Blomfield Jackson, architect, London.

Leeds.—An art department is being added to the Yorkshire College at Leeds, from designs by the architects of the main building, Messrs. Alfred Waterhouse and Son. The building now in progress is being erected on the north side of the textile department, and joining up to the western gable of the dyeing department. The entrance to the art department is from the Clothworkers' Court, the extension serving as a connecting-link between the textile and dyeing departments, and by the addition of a covered way to the latter, the Clothworkers' buildings will be made directly accessible to the main body of the college. On the first floor are the studio, with north light, and the design studio, which is in close proximity to the textile museum. On the second floor is private studio, and a life room, while on the ground floor is a students' common room, and a ladies' cloakroom. The rooms are lighted throughout by electricity, and arc lamps are hung in the design studio and the life room. The rooms will be ready for the actual use of the art classes at the beginning of the second term of the coming session.

Nelson, Lancs.—The technical school section of the Free Library and Technical School, which have been erected by the corporation of Nelson at a cost of about £12,000, exclusive of site, was opened on Friday. The building has its main frontage to Market-street, and will ultimately form the south wing of an extensive pile of municipal buildings. Its frontage to Market-street is 37ft., but its length is 103ft., and its height is 44ft. The public library will be accommodated in the Market-street end of the building. The structure is three stories in height; the ground and third floors have each a central corridor, with the various rooms opening into it; but on the second floor the corridor skirts the external wall, and has the three art rooms opening on to it from the right. In the library section of the building will be provided general and ladies' reading-rooms, lending and reference libraries, &c.; and in the basement is a cotton-weaving room. The elementary drawing-room and the chemical laboratory on the first-floor corridor are open to the roof.

CHIPS.

By order of the Court of Chancery the whole undertaking of the tramways in the streets of Hull is now offered for sale, the reserve being fixed at £15,000. Should a satisfactory offer not be obtained, the lines will be pulled up, and the horses, cars, stabling, and all materials disposed of. The Corporation might become the purchasers, but they do not require the horses and the present cars, as they consider electricity the future motive-power for tram-cars.

Only four years ago, the pine-bark beetle invaded the pine lands of Virginia, and the result now is that hundreds of thousands of acres of forest are killed as effectually as if it it had been done by a conflagration. Similar devastations are reported from portions of New York, New England, and the Maritime Provinces of the United States.

Mr. Benjamin Walters, of 11, St. Mary's-place, Newcastle-on-Tyne, retired timber merchant, who died on the 21st July last, has left personal estate valued for probate at £121,270.

The estimates of the Public Works Department of Victoria for 1895 contain votes for erecting and repairing bridges to the amount of £4,000 odd; jetties and harbour works £16,000 (£6,000 of which is to be devoted to the clearing the Yarra of basaltic reefs); drainage works, £4,900, £2,000 being devoted to the improvement of the Hanna-street drain, South Melbourne.

The board of guardians for Walsall are about to add a new infirmary to the workhouse at an estimated cost of £7,000. Mr. H. E. Lavender, M.S.A., of Walsall, is the architect.

The French Minister of Public Works has proposed, and the President has sanctioned, the appointment of a special commission to consider under what conditions a maritime canal between the Atlantic and the Mediterranean could be made, and what would be the probable results if it were constructed. A special commission reported twelve years ago against such a canal, and the council of the engineers of French bridges and roads have also pronounced unfavourably on the proposal.

The old Canobina Theatre at Milan, which has just been reconstructed from plans by Signor Sfondrini, was reopened under the name of the International Lyric Theatre on Sunday.

The foundation-stones of a new Wesleyan chapel have been laid at Wolstanton, near Burslem. Accommodation will be provided for 740 persons, and the estimated cost is £4,500.

Mr. George Frederick Watts, R.A., has received from the State Department at Washington an engrossed copy of the Act of Congress, accepting, on behalf of the American nation, his picture, "Love and Life," which he presented to the United States after its exhibition at the Chicago World's Fair. The picture has been placed in the Executive Mansion, Washington.

Engineering Notes.

Edinburgh.—At Monday's meeting of the Lord Provost's committee of the Edinburgh town council, Messrs. Cunningham, Blyth, and Westland, C.E., submitted plans of the proposed new North Bridge, prepared in terms of instructions from the corporation. The plans were approved, and instructions were given to advertise for offers for the work, with the view to enable the magistrates and council to exercise the option conferred upon them to cancel the agreement with the North British Company within three months of its confirmation by Parliament if from any cause they should find it impracticable to carry out the work. Mr. Robert Morham, city superintendent of works, under instructions of the committee, undertook the architectural work of the plans.

Improvements at Cardiff Station.—The contract for the erection of the new station buildings, platforms, &c., in connection with the improvements which the Great Western Railway Company are carrying out at their Cardiff station was recently let to Mr. J. Strachan, of Cardiff, the total amount being for between £29,000 and £30,000. Mr. Strachan is at present engaged in constructing the new approaches to the station under a contract previously entered into. The work of laying the metals through the new station will be carried out by the company's own men. There is now but one more contract to be let in connection with the company's extensive works at Cardiff, and that, which will be let in a few weeks' time, is for the station at the Bute Docks terminus of the riverside branch line, Clarence-road.

Wylam Bridge.—This bridge, built 60 years ago, has just been reopened after alteration and rebuilding, carried out under the direction of Messrs. J. Watt Sandeman and Moncrieff, C.E., The new superstructure, which has been placed upon the original stone piers, consists of steel-plate girders, with a decking of creosoted pitch-pine planking, 6in. thick, laid at right angles across and overhanging the main girders, whilst on the upper surface is a layer of tar concrete paving. The clear width of the roadway between the handrails has been increased from about 11ft. to 14ft. 6in. The contract for the alterations was let to the Stockton Forge, Limited, Stockton-on-Tees. Mr. George Bell, of Collingwood-street, Newcastle, acted as clerk of works during reconstruction, and the painting was intrusted to Mr. R. J. Richardson, of Saville-row, in the latter city.

Waterloo and City Railway.—Good progress is being made with the preliminary work in connection with the construction of an underground railway between Waterloo Terminus and the open space between the Poultry, Bank, and Mansion House. Piles have been driven in, and a pentagonal platform erected in the bed of the Thames, near the Surrey side, a hundred yards west of Blackfriars Bridge. The works are being carried on for a special company financed and fostered by the London and South-Western Company, under the joint engineering control of Mr. W. R. Galbraith, of the South-Western, and Mr. J. H. Greathead, who designed and constructed the City of London and Stockwell line. The principle of construction and the mode of execution will be the same as those carried out in that instance. The tunnels will be each formed of an iron ring or culvert, formed of segments bolted together by their flanges planed to smooth surfaces. Through small holes in the iron culvert cement will be blown, to form a skin on the exterior, whilst the inside will be concreted to form a smooth surface level with the inwardly projecting flanges of the segments. The diameter of the iron culvert will be greater than in the case of the Southwark line, being 12ft., increased to 12ft. 9in. at the stations. The contract for the two parallel tunnels has been let to Messrs. Mowlem and Co., of Westminster; and the caissons which will form the means of access to the borings have already been sunk under the staging at Blackfriars Bridge to a depth of over 50ft. As soon as the depth of the floors of the intended tunnels, 65ft., is attained, the four protecting shields and the mechanical excavators will be lowered into position, and the driving of the tunnels will be carried on simultaneously in both directions. As soon as the first ring of the culvert is put together, a shield is put in the front. Through a door in it the face of the heading is accessible to the miner, who picks out the central core of the rock. The shield has a projecting edge all round its periphery, which, as the shield is pushed forward by the hydraulic presses, cuts a circular hole sufficiently large for putting the iron segments together to the proper dimensions of the culvert. Wedges being inserted in the rock face between the periphery of the shield and the central core cavity, the intervening rock is broken into fragments, and falls down between the shield and the face of the heading, being shovelled up thence and sent away to the rear in skips. The geological formation through which the tunnels will be excavated will be London clay for the entire distance, except at Stamford-street, where there will be a deposit of gravel to be pierced, containing large volumes of water, which will be met by overpowering air-pressure. The line will be over 1½ miles in length, and there will be no intermediate station. The system of traction will be by electricity.

CHIPS.

Colonel J. W. Ottley, R.E., has been selected for the appointment of Inspector-General of Irrigation in India.

By the mayor's casting vote the corporation of Hertford have decided to carry out a scheme of electric lighting as recommended by their engineer.

The local board of Smethwick decided on Friday to give a piece of land in Crockett's-lane as a site for the technical schools proposed to be erected at an estimated cost of £5,500.

Recent excavations at Studfall Castle, near Lympne, on the borders of Romney Marsh, have revealed vestiges of the southern or missing wall of this Roman castrum. Enough of the old wall has been disinterred to prove that the castrum was of the usual quadriform construction.

Building operations are still vigorous in Aberdeen, and plans for buildings to cost over £15,000 were passed by the town council on Friday.

The foundation-stone has been laid of a mission church at Brynteg, in the parish of Brymbo. The church is to seat 200 persons, and will cost £1,000.

The committee of the Poole Museum have decided by a bare majority to discontinue the opening of the museum on Sundays, thus falling in with the wishes of the town council.

A Paisley joiner, named Neil M'Neil, thirty-three years of age, was killed on Friday by a fall through the joisting in a new tenement in Prince's-street, Glasgow, where he had been employed.

A stained-glass window, erected by public subscription as a memorial to the late Lord Penrhyn, was unveiled on Sunday at St. Mary's Church, Bangor. The subject is "The Nativity." Mr. Wyndham, Birmingham, was the artist, and the architectural work was carried out by Mr. Gregory, the diocesan surveyor.

A high altar has been erected in the Roman Catholic church at New House, Waterhouses, Co. Durham. It is 14th-century in style, and the altar-table, nearly a ton in weight, is cut out of a monolithic block of Carrara marble. On each side of the table is open carved work of coloured marbles, and the throne and reredos are of white Beer stone. Father Fontin, priest of the mission, designed the altar, which has been executed by Mr. A. B. Wall, of Cheltenham, and was consecrated by Bishop Wilkinson yesterday (Thursday).

A course of twelve lectures on the making of the "Earth's Crust" will be delivered by Professor Alleyne Nicholson, in the Lecture Theatre of the South Kensington Museum, commencing on Monday next. The lectures are given under a bequest from Dr. Swiney.

The Lancashire and Yorkshire Railway Company have some important works in progress at Victoria Station, Manchester. On both the western and eastern sides the approaches are being widened, in the one direction as far as Windsor Bridge, in Salford, and the other to Miles Platting. Within the station itself an entire rearrangement of the parcels department will be made.

Mr. Norman D. Macdonald, of Edinburgh, writes that the great Roman Camp at Ardock, N.B., now in excellent preservation, has been endangered by the planting out of the northern ramparts with young fir-trees, which will not only obscure the plan of the camp, but when uprooted will seriously damage the trenches. At the same time, a rabbit warren is being formed within the encampment, and the rodents will undoubtedly tend to destroy the outlines as effectually as the fir-trees themselves.

Under the will of the late Canon George Heron, of Moore Hall, £1,000 has been bequeathed for the completion of the stalls and fittings of Denstone College Chapel, and a valuable library of books has been left to be deposited at Ellesmere College.

Correspondence.

REGISTRATION OF ARCHITECTS.

To the Editor of the Building News.

Sir,—As your correspondence suggests the registration of engineers as well as architects, and since I have hitherto been called by the former name, I should like to make a few remarks and ask one or two questions, which, of course, refer to engineers and not to architects, but may be useful to those gentlemen. Except among the public not interested in engineering work, C.E. is not considered as having any value when added to a man's name beyond showing that he is not entitled to put M.I.C.E. or other letters signifying that he belongs to some engineering society. An engineer, like a poet or inventor, is born and not made by registration or subscription to an institution, and although every true engineer must admire the great help to the art and science, as well as the profession, rendered by the Institute, I have heard a full-blown member remark on seeing the letters after the name of a man who had just been appointed to a post, "Oh, he is a *mice*, then he may possibly know how to calculate the distance from the main girder to the nearest pub. if he has the assistance of a foot rule and a labourer," meaning thereby that they were not a certain guarantee of proficiency. Now, who is it that desires registration? Not the man, whether he was born a carpenter, a blacksmith, or a shop boy, who is now in consequence of his energy, talents, and inventive powers, carrying on a successful business as an engineer. T. Champneys and C. Middlewick may find an apprenticeship and registration absolutely necessary to enable them to pose as bogeymen before the awestruck public; but I do not remember how Brunel, Brunlees, Stephenson, Fairbairn, and one or two others among the unregistered got on, sufficiently to go into the matter here. Registration is not desired by the man who has formally and properly learned his business of a civil engineer engaged in actual work, and who has become M.I.C.E., &c., and who in consequence of his position, ability, knowledge, and natural engineering quality can gain the respect of all who know him. Certainly not. Who is it, then? Chiefly those who lack some or every quality which would justly entitle them to the name of engineer, but who, by the help of wealth or accident or fraud, are now carrying on a business, in which they only injure more or less the productions of the brains of their paid assistants. These try to deceive the public with C.E. after their name, and require the protection of registration to save them from infamous graves. We have seen a similar case with the registration of patent agents. The incompetent and the firms managed by unscrupulous ignoramuses are all registered and placed on an equality with the one or two able agents. The examination of the Institute is doubtless good; but we all know that a man who passes an examination in any subject is not necessarily suitable as a business and practical man, and is often troubled with such a bad memory as to have quite forgotten the subject two or years after examination. The profession, if it should be so called, is moreover now overcrowded with those who, having passed their exam., can only get any business at all by charging ridiculously low fees, and thus injuring the old-established firms—the good ones more than the bad. Let us take warning by the patent agents. If any registration is required, it should be simply a registration, without fee or examination, and all those guilty of incompetence, or who could be charged with any fraud or imposition or misrepresentation, should be prevented from practising, and liable to punishment.—I am, &c.,

Nottingham, Sept. 24. Pontifex Minimus.

BAD AIR IN THEATRES.

Sir,—May I hope that one or two of your readers have to do with theatres, either as builders, managers, or architects, and that they may turn their attention to a matter which the medical profession, through their mouthpiece, Dr. Parkes, claim to be of the utmost importance —fresh air?

The need of fresh air is a matter which *ecclesiastics*—to judge by the outcome of a correspondence on this matter a year or so ago—do not think sufficiently important to be worth their notice, and they and most theatrical managers, too, try and reproduce the Black Hole of Calcutta. Times without number have I had to leave a London theatre in a state of semi-faintness or suffocation, and until I recently visited Eastbourne, I thought that all Dr. Parkes' printed utterances were just as much thrown away upon theatres as they were upon churches. Not so. I trust those of your readers who care to verify my facts will pay a visit to Mr. Standen Triggs' theatre at Eastbourne, and closely inspect it. Last week I purposely took a seat—front row, centre stalls—for which I paid 4s. 1d., including programme, and on the night following I took a gallery seat—the worst I could think of or select—for the purpose of testing the ventilation, as well as the view I could get of the stage. There was no difference whatever, and I was enabled on each occasion to sit through the whole performance and inhale fresh air. Now, if Mr. Triggs can give me 4s. worth of unmixed pleasure, why do all the London theatres appear to vie with one another in giving me 10s. 6d. worth of suffocation, and little or no view of the stage *as well?* I like to take a gallery seat.—I am, &c., H. J. Cunliffe, M.A. Oxon.

New University Club, London.

Intercommunication.

QUESTIONS.

[11219.]—**Income-Tax.**—I have lately taken to a small builder's business, a going concern, and last year I was assessed at more income-tax than I think I ought to have paid. This year I intend to appeal, but do not know how to go to work, being young, and a new hand. Can you briefly inform me the form of balance-sheet I shall have to produce, showing condition of business? I may say this year business has fallen off very much, and in many cases I have to give very long credit, as this has been the previous custom. My great difficulty is, in what form to prepare myself so as to be able to convince the commissioners I am entitled to a reduction of the tax. How can I show an allowance on debts which very likely, in due course, may never be paid at all?—B. J. Broad.

[11220.]—**Electric Lighting.**—Will some reader experienced in electric lighting recommend a concise handbook suitable for the general requirements of an architect?—Architect.

REPLIES.

[11213.]—**Tall Mill Chimneys.**—The best book is "Tall Chimney Construction," by R. M. and F. J. Bancroft.—H. L.

[11216.]—**Flat Roof of Concrete.**—"Enquirer" will not be able to construct a flat of 35ft. span without using girders. He should make the concrete much thicker than 6in., and arrange a good thickness over the top of the girders. With good materials there should be no cracks.—H. L.

[11216.]—**Flat Roof of Concrete.**—It is almost impossible to make a watertight concrete roof, except it be of very small dimensions—not by reason of any difficulty with the concrete itself, but, in common with other materials, it is subject to expansion and contraction with change of temperature, and, unlike some other substances, it will not yield to this change of form without giving evidence thereof in the form of cracks which admit moisture and rainfall. Under any circumstances lengthened experience is necessary to construct a concrete roof of considerable span which shall be watertight and satisfactory in other ways, and it should always be asphalted. The correct quantity of bullock's blood to mix with cement to give it the desired tint is best arrived at by trying it in various proportions before doing any actual work with it.—Thomas Potter, 39, Victoria-street.

A stained-glass window has been erected in the parish church, Wigan, to the joint memory of the Hon. Sir James Lindsay, and of his wife, Lady Sarah Lindsay. It consists of four figures, representing Mercy and Truth, Righteousness and Peace. Messrs. Heaton, Butler, and Bayne were the designers.

The Redruth local board are inviting tenders for the construction of a large storage reservoir, certain intake works at Lower Penstruthal and Gordon, and the supply, laying, and jointing of about ten miles 178 yards of 6in., 5in., 4in., and 3in. cast-iron socket-pipes with their appendages, for the water supply of the town of Redruth. The engineer is Mr. H. Bertram Nichols, Assoc.M.Inst.C.E., of Corporation-street, Birmingham.

The corporation of Sheffield are about to make their first venture as builders of artisans' dwellings. In carrying out the widening of Eyre-street, it is necessary to demolish twenty-three houses, most of them back-to-back dwellings. The Local Government Board, in their provisional order sanctioning the scheme, make it a condition that the corporation erect other workmen's dwellings in place of those pulled down. The corporation have accordingly offered contracts for the erection of seven dwellings on land belonging to them, situate about 200 yards from those to be pulled down, and they will be of a modern character.

Legal.

HABITABLE ROOMS.

Local authorities show a disposition to apply their building by-laws with increasing stringency, and in the public interest this is satisfactory. A recent case from Coventry, reported in our issue of last week (Sept. 21), shows how easily important questions may arise over matters apparently trifling. It appears that a builder was summoned by the local authority for breach of the building by-laws, in having built a habitable room in a domestic dwelling which was not 9ft. high from floor to ceiling, as therely required. He had sent in his plans, which were ultimately approved; but when the surveyor went over the house, upon receiving the usual notice that it was fit for occupation, he found the room in question had been built at the back on the top floor, although it was not in the plan. The room was 14ft. 3in. long by 12ft. 6in. wide, and at its highest point it was 9ft., but for more than half its area much lower. It contained an ordinary window, but no fireplace. There were no means of ventilation, and the surveyor did not consider it was fit for habitation.

It was argued for the builder that he had only intended it to be used as a box-room, and not in anyway as a sleeping apartment. But, on the other hand, the local authority urged that it was built in such a way that a bed could be, and doubtless would be, placed in it, and so that it was a "habitable" room within the meaning of the bylaw. The builder's advocate was, in fact, ultimately driven to argue that, as the room was not intended to be lived in, if the owner or occupier of the house should afterwards chose to use it for that purpose, it would be the duty of the local authorities to give him notice and have it closed. This, however, seems to be quite beside the point. The object of the bylaws is to prevent the building of "habitable" rooms in such a way as that they shall not be fit for habitation. The time for the local power to interfere is when the house is building, and it would be practically impossible for them to do so when it is subsequently occupied. The magistrates held that this room should have been shown in the plan, and that as it was a habitable room which did not comply with the bylaws as to centre space, the offence had been proved, and the builder was fined accordingly.

Fred. Wetherfield, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Builder.—Foundations.—Support.—(1) You can only do this safely by providing for the support of his wall. (2) Probably he has acquired a right to the support of your adjoining building. (3) By serving the usual party-wall notice. But it does not seem that this is a party-wall.

WATER SUPPLY AND SANITARY MATTERS.

Shipley Drainage and Sewage Disposal.—At a meeting of the Shipley Local Board, held on Sept. 25th, it was resolved: "That application be made to the Local Government Board for their sanction to the borrowing, at interest, upon the security of the rates of the district, of the sum of £55,000, in addition to all other sums heretofore sanctioned for these purposes." This amount is required for the main drainage and disposal of the sewage and nightsoil of the district. The plans for the main outfall sewers for the whole district, as well as the treatment of the sewage, have been prepared by Mr. Malcolm Paterson, M.Inst.C.E., of Bradford, and those for the subsidiary drainage of Windhill (recently annexed to the Shipley district) by Messrs. W. B. Woodhead and Son, C.E., of Bradford. The sum mentioned in the resolution includes the provision of means of dealing with the nightsoil of the district.

An organ originally built by Messrs. Lewis and Co., of London, is being enlarged and rebuilt for erection in Jesmond parish church by Messrs. Blackett and Howden, of Newcastle-on-Tyne.

Surveying for the railway, to connect Lynton and Parracombe with the remainder of the world, has commenced. From Blackmore Gate the route creeps down the hillsides to cross the valley near Highly, and from thence near the Old Church to Martinhoe Common. Most of the land has been already promised, and the fund for preliminary expenses has been raised.

Our Office Table.

At Tuesday's meeting of the City Commission of Sewers, Mr. Morton, M.P., inquired as to the charges made by a district surveyor in the City named Power, and whether the fees had been received. The surveyor, he said, had made demands for fees of two guineas each from numbers of shopkeepers in the City because he had chosen to construe everything hanging from a shop-front as a "sky-sign" within the meaning of the recent Act, by which sky-signs had to be licensed. Mr. Blake, the clerk to the Commission, said no fees had been returned by Mr. Power as far as he could ascertain. Some persons had taken proceedings against Mr. Power to recover the money paid, and had obtained judgment, but had failed to get any further satisfaction.

The largest log of mahogany ever imported into the United States was received a fortnight since at Messrs. Nesmith Brothers' mahogany and cedar yard, Greenpoint, N.Y., on the schooner *Laguna*, of Port Jefferson, N.Y. The log, measuring 44ft. 4in. long, 60in. by 56in. at the base, and weighing 21·66 tons, was felled in the Sierra Chisee, in Gautemala, and floated down the Rio de la Pasion and Rio Usumucanto to Laguna, Mexico, a distance of over 300 miles. It was to have been sent to the World's Fair at Chicago, but all vessels refused to carry it. After lying at Laguna over a year, the log was sawed in two, and Captain S. S. Bayles took it aboard his vessel and conveyed it to New York. Even now the block measures in the clear 22ft. 6in. long, 5ft. wide, by 4ft. 8in. deep.

The Canadian Parliament has just passed an Act providing for the inspection of electricity meters. This Act allows consumers, whenever they are dissatisfied with the action or tests of the electric light contractors, to have their wires and fittings tested by an electric-light inspector, upon application to the Inland Revenue Department, which has charge of the inspection under the Act. The Act also settles a question upon which there was formerly no written law, in providing that any persons discovered maliciously or fraudulently abstracting, or causing to be wasted or diverted, any electricity, shall be dealt with as guilty of theft, and punished accordingly.

CHIPS.

The Duchess of Devonshire laid on Wednesday the memorial-stone of a new church at Eastbourne. The church, which will be called St. Peter's, and will replace the existing church of that name, is being erected on a site opposite Compton-place, the ground, as well as a sum of £5,000 towards the building fund, having been given by the Duke of Devonshire.

A new Congregational church, which has been erected at Stroud-green at a cost of over £10,000, was opened on Wednesday. It is built of stone, and seats 900 persons.

The Ayr Harbour trustees have resolved to rebuild the wall on the south side of the harbour at a cost of £21,000.

The memorial stone of the new Burgh Buildings of Whiteinch, near Glasgow, was laid on Tuesday. The buildings have frontages to George-street and Whiteinch Park. Contained in the block there are a police establishment and fire station.

Gold and silver medals have been awarded at the Autwerp Exhibition to Messrs. Harry Hems and Sons, ecclesiastical art workers, of Exeter.

The first ordinary meeting of the Liverpool Architectural Society for the present season will be held on Monday week, October 8, at 6.30 p.m., when the president will deliver his opening address, and introduce the new professor of architecture (Mr. F. M. Simpson) to the society.

The Earl of Derby opened on Wednesday a new technical school and free library at Leigh, Lancashire, which has been erected at a cost of £13,000.

The Weybridge Schools, Weybridge, Surrey, are being warmed and ventilated by means of Shorland's patent Manchester stoves, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

A special meeting of the Llanelly harbour board was held last week to consider the advisability of continuing the line of training banks westward towards Burry Port, in accordance with the recommendations of the consulting engineer, Sir Alexander Rendel. After an exhaustive discussion it was decided to proceed with the work.

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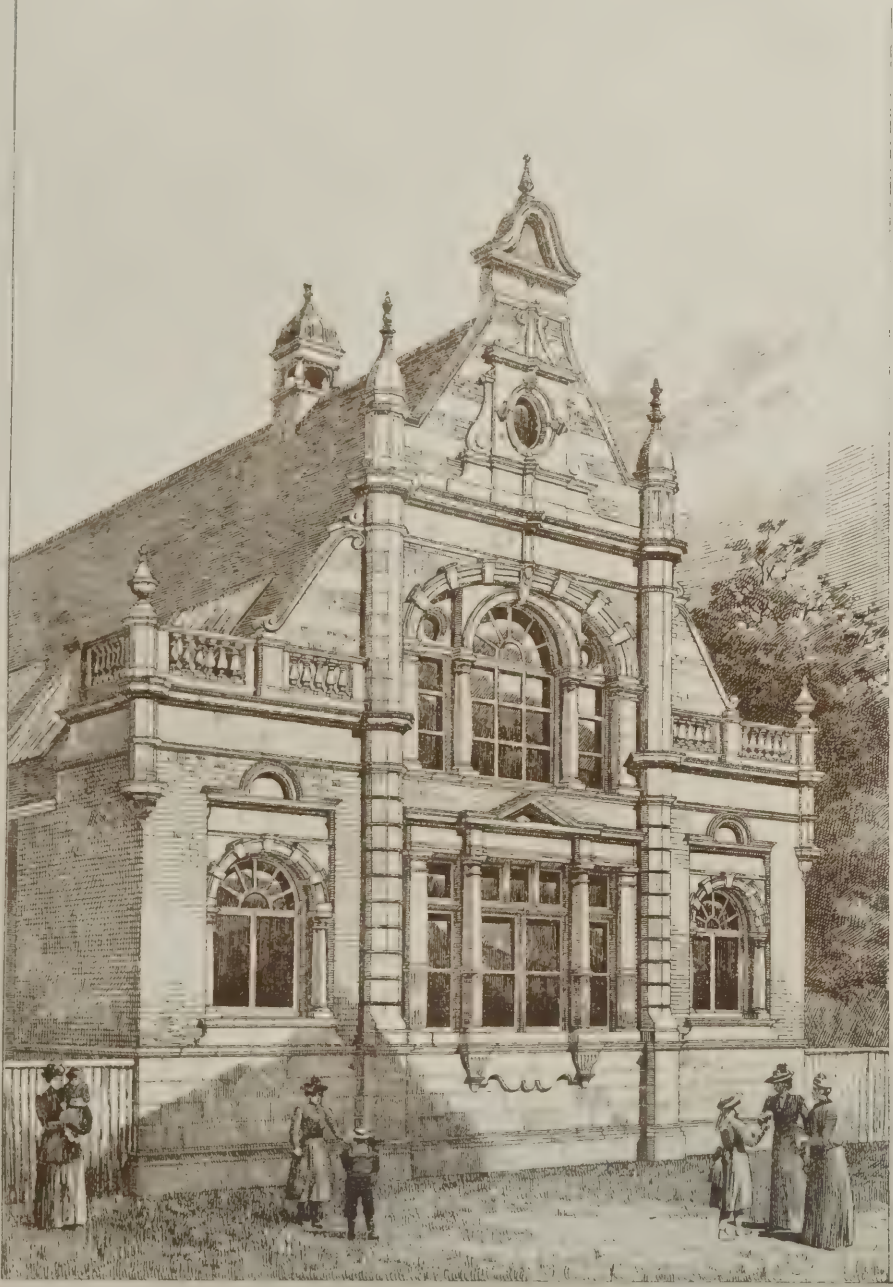

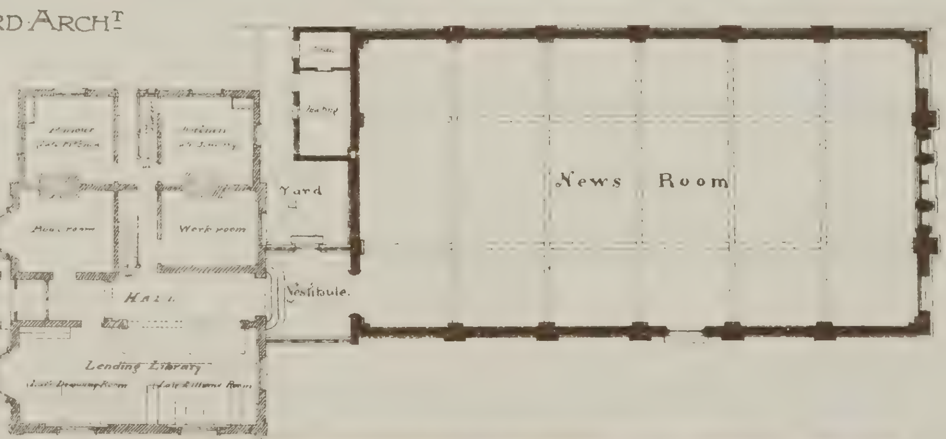

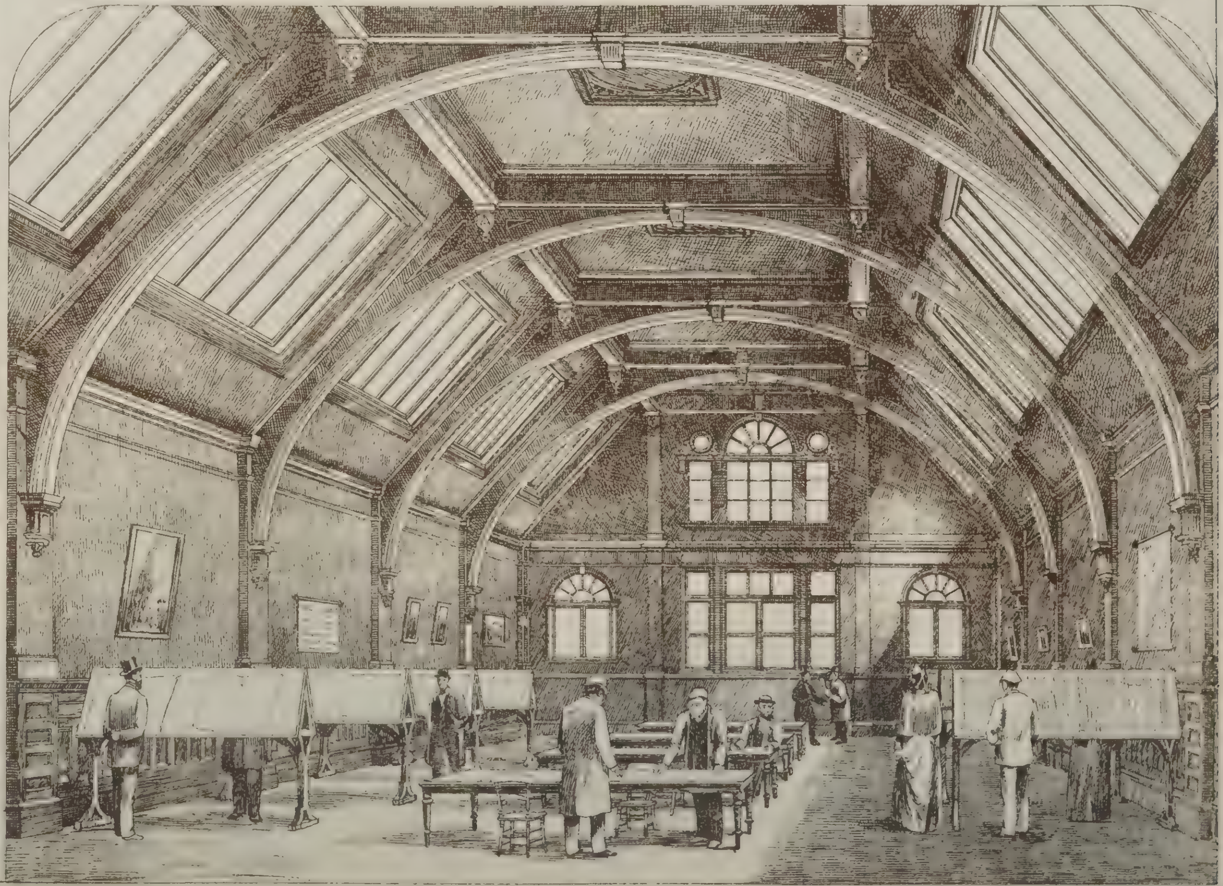

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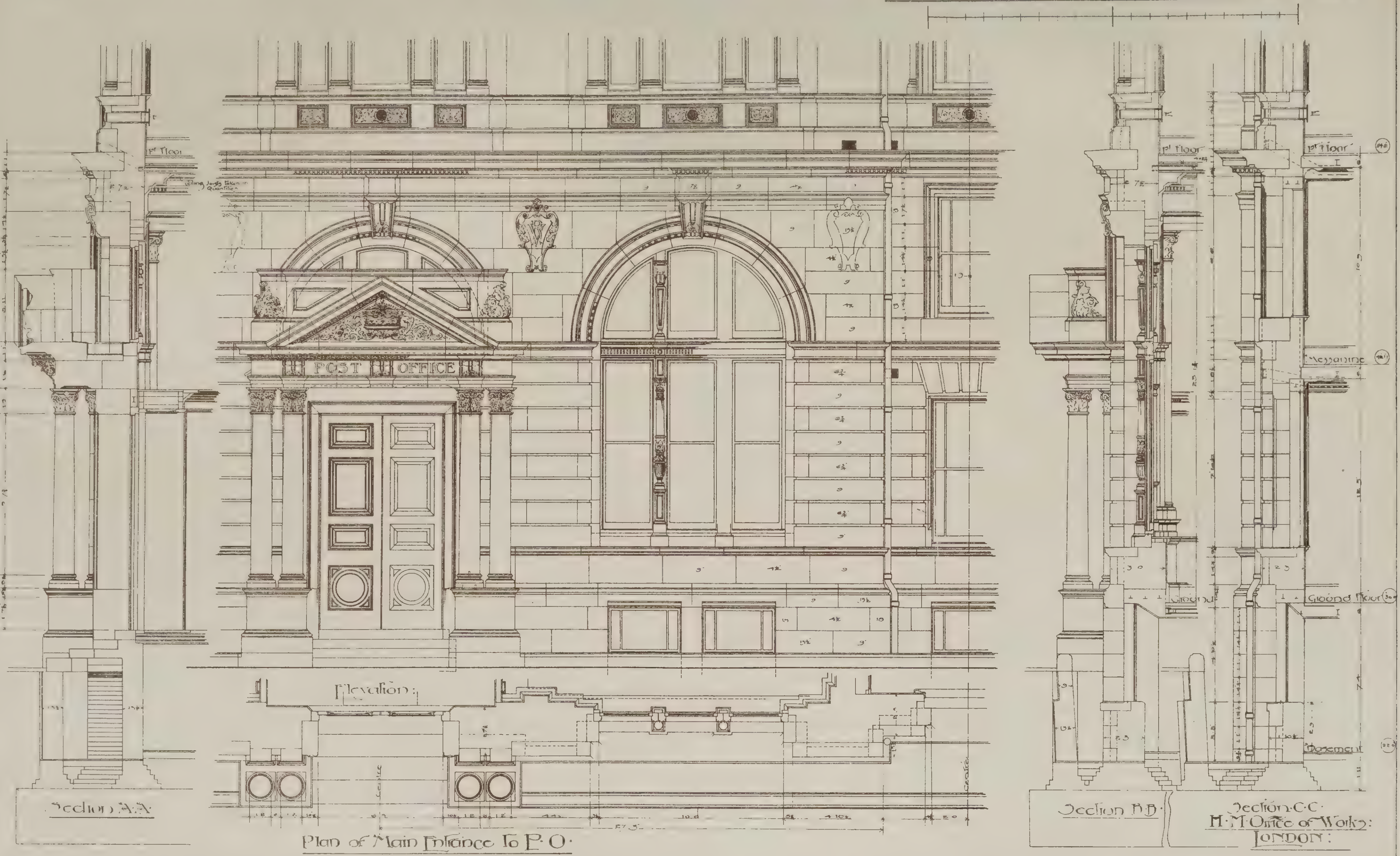

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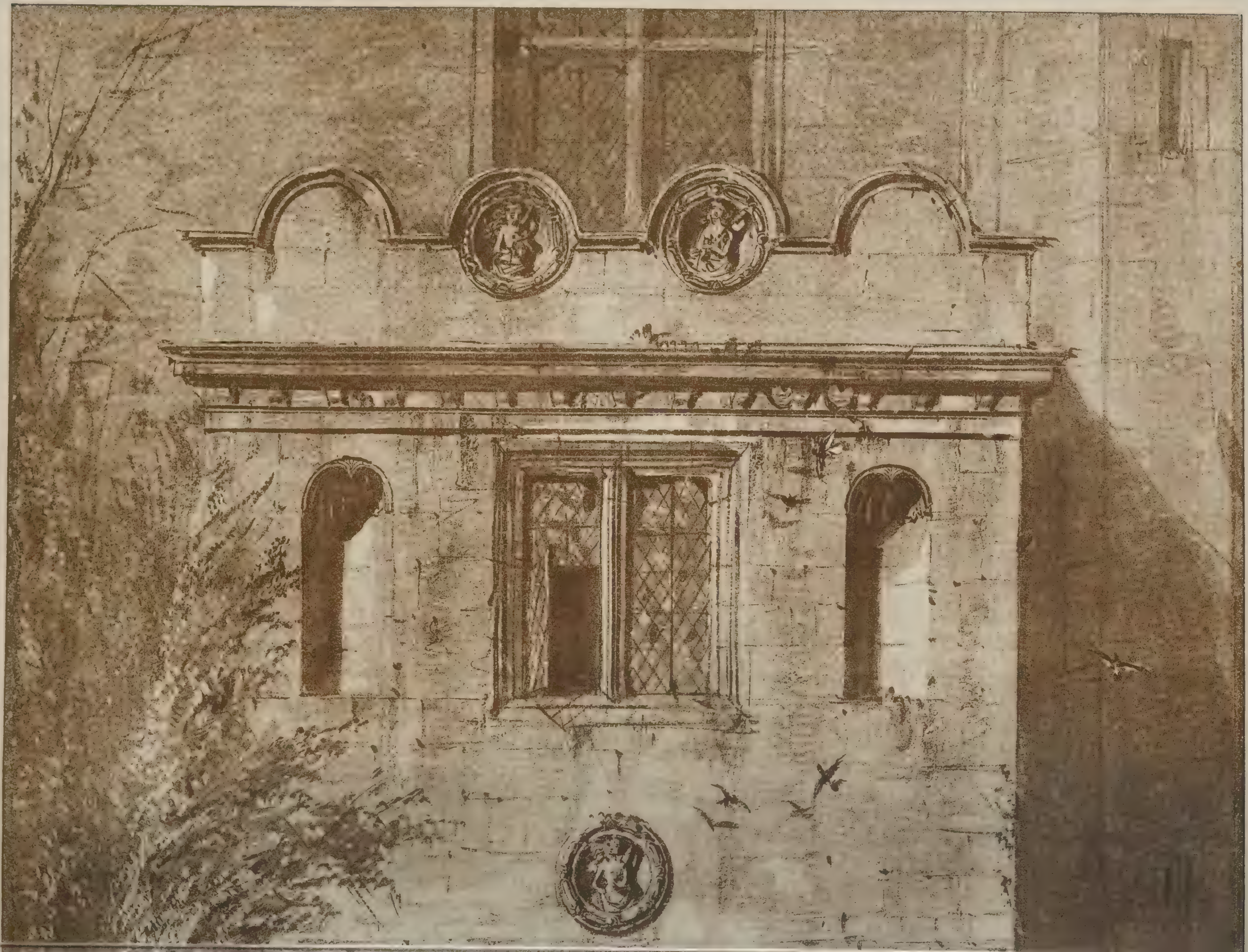

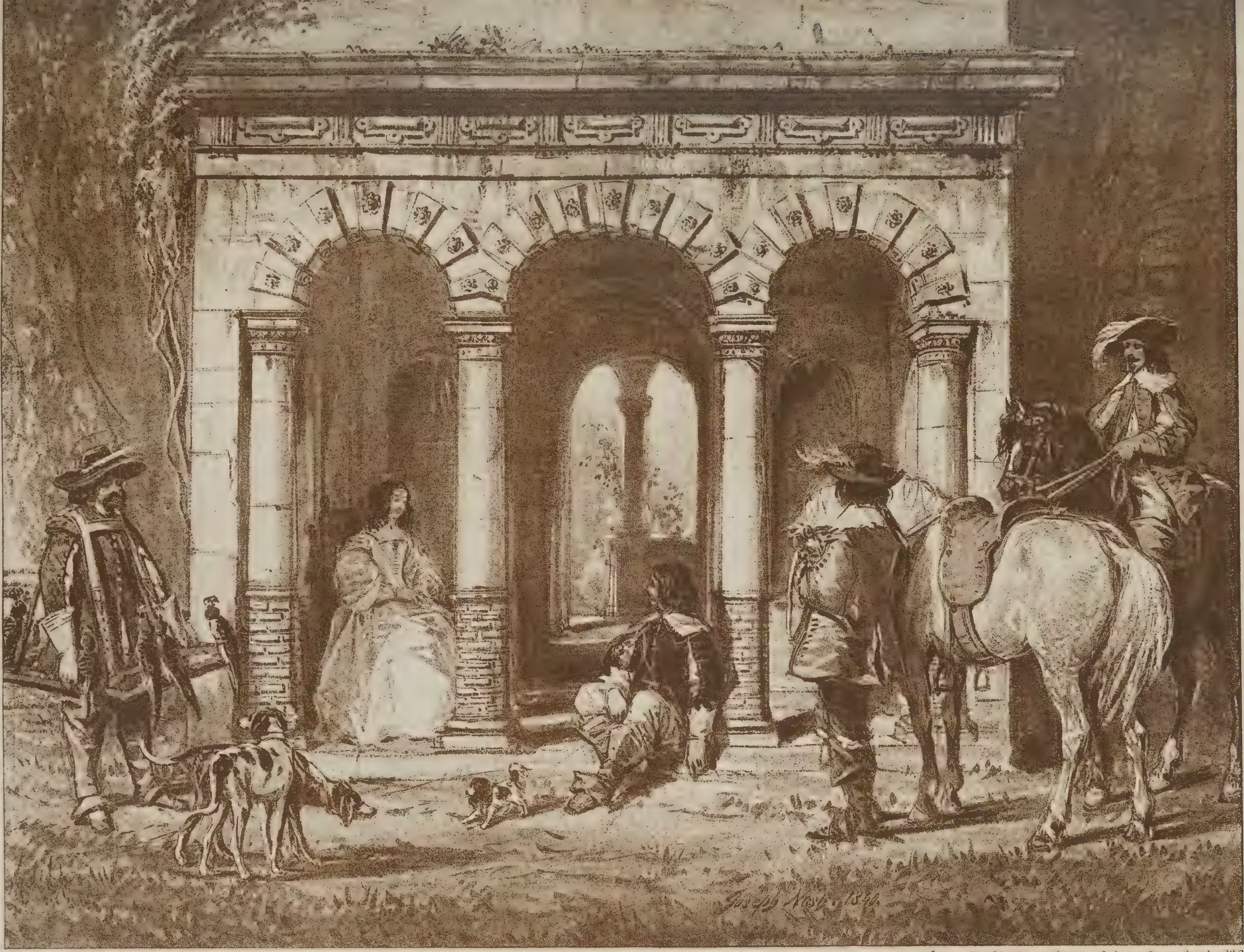

FROM·THE·ORIGINAL·LENT·BY·Mr EDMUND KIRBY·

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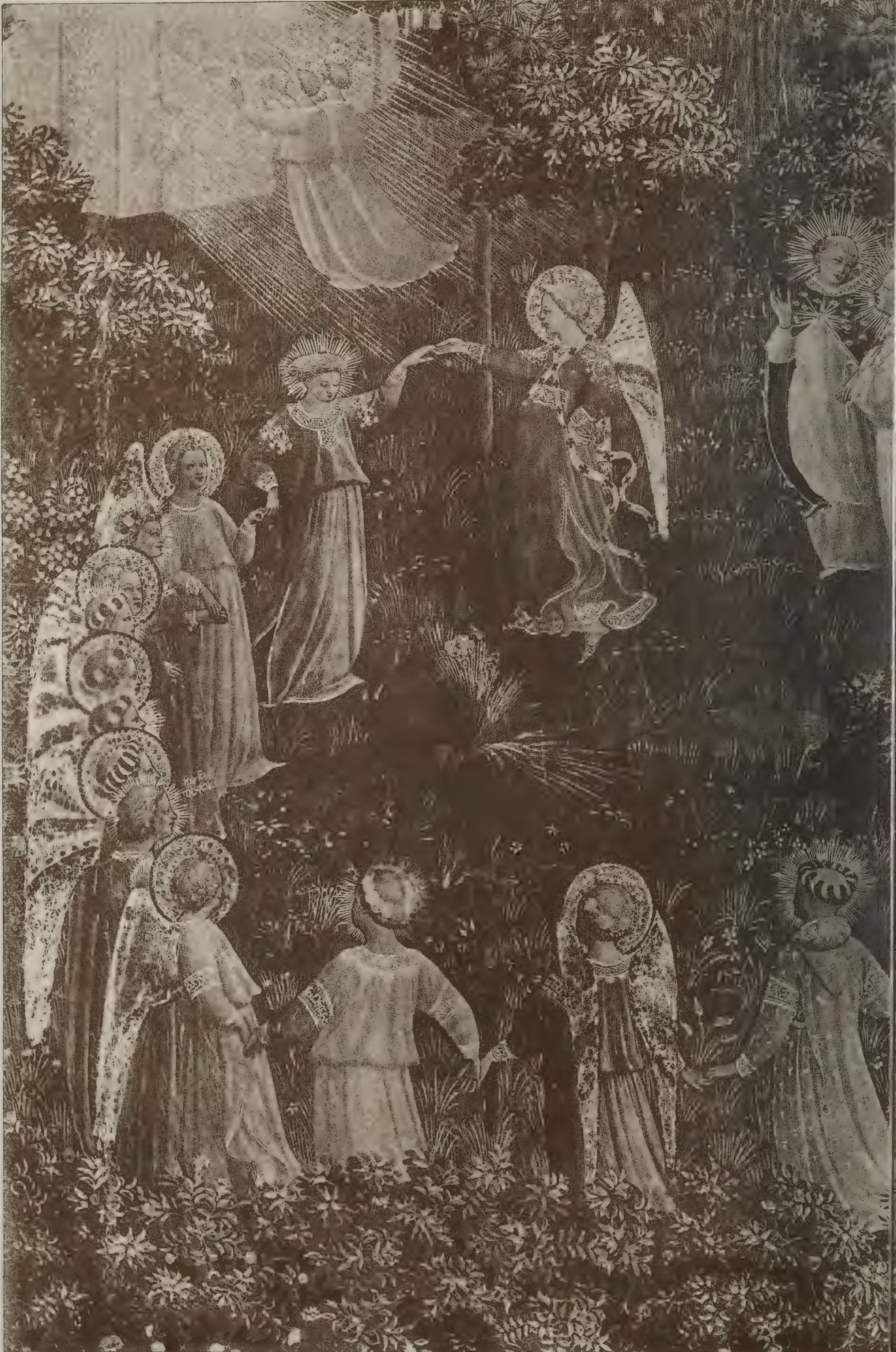

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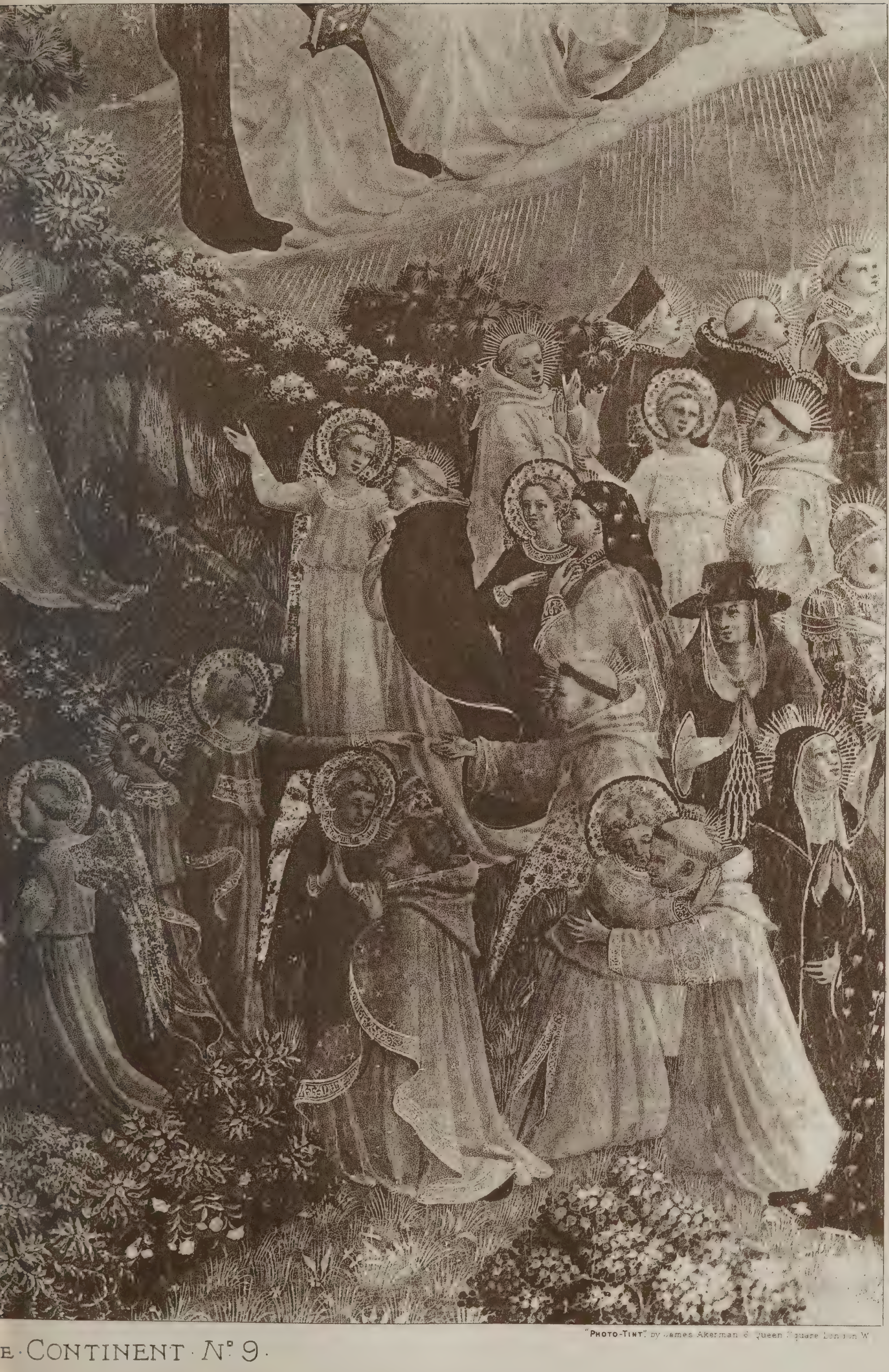

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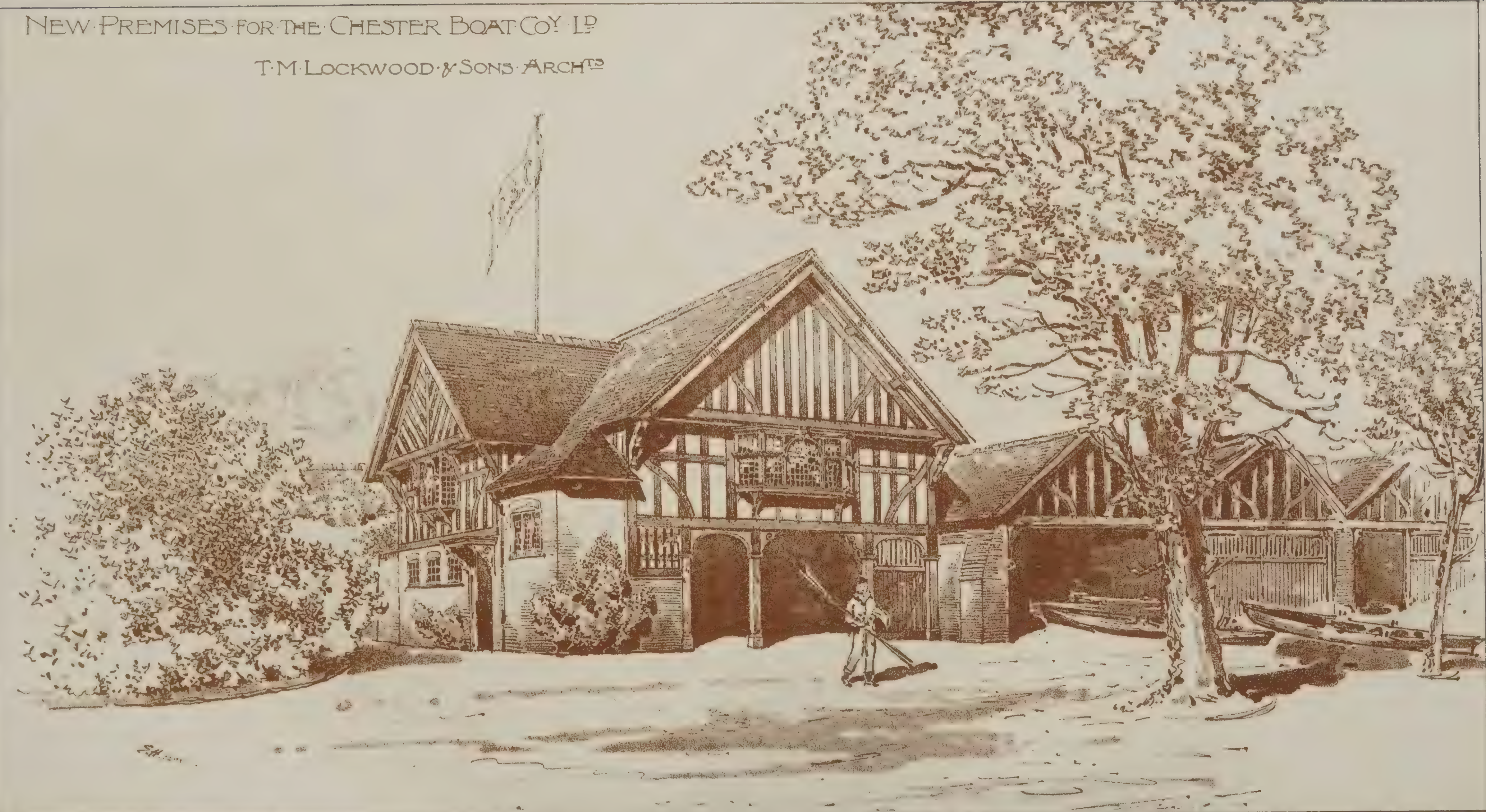
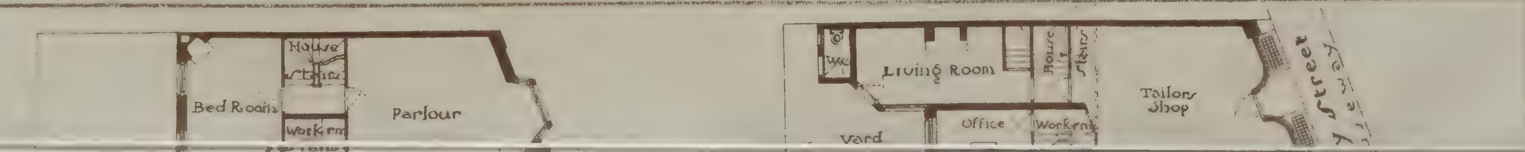
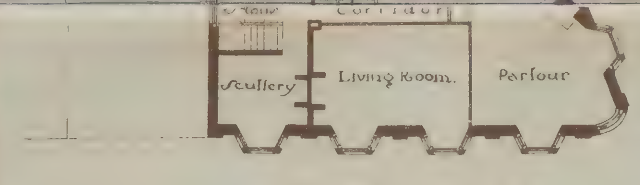


Anchor Buildings: Leek.
For Mr. William Larner Sugden,
Sanders. F.R.I.B.A.





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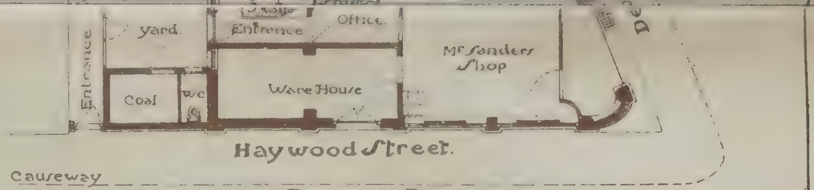
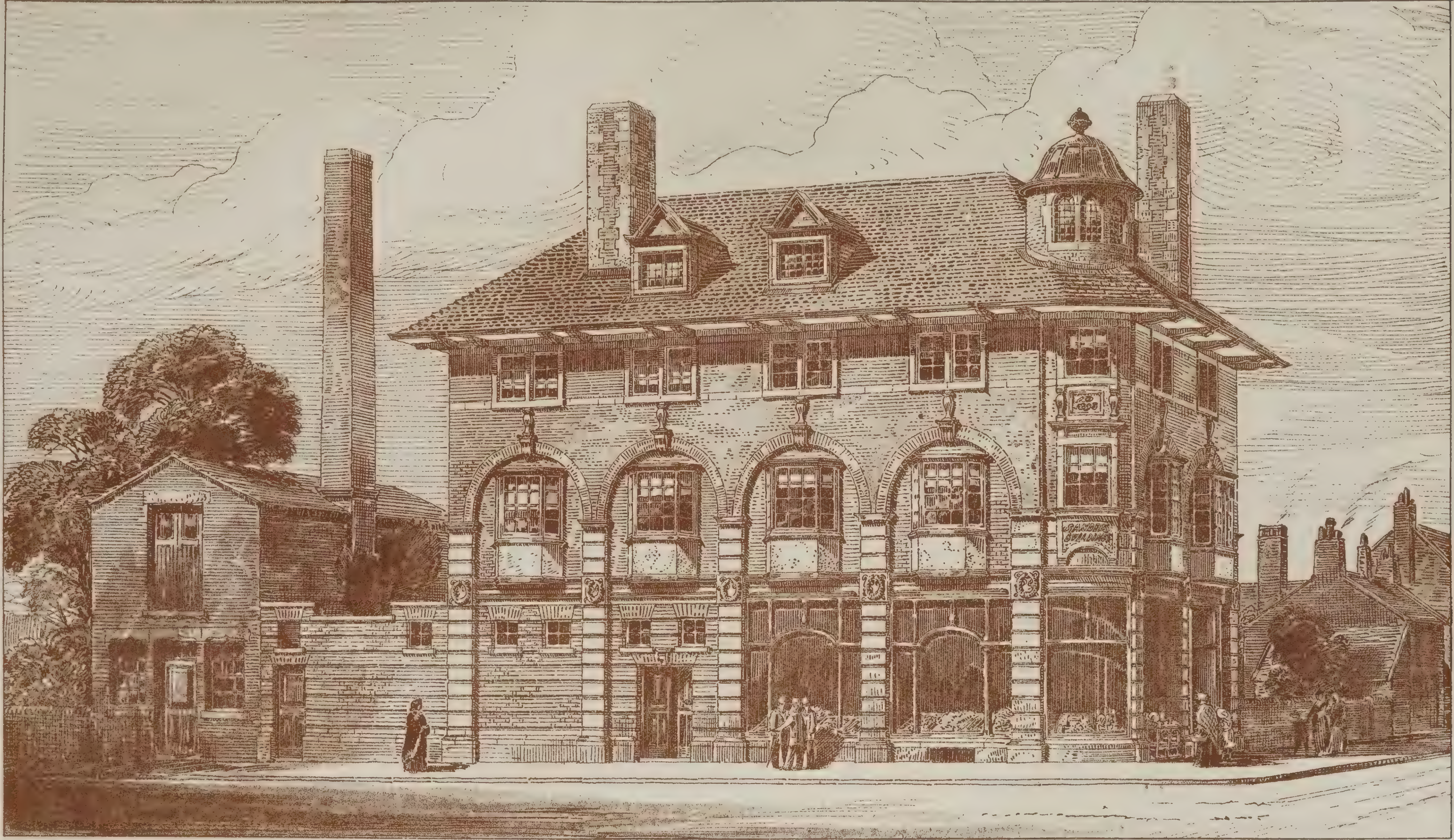


GROUND PLAN.



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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2074.

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A NEGLECTED RESOURCE.

DID anybody ever meet with a photographer who did not think himself quite fit to photograph any building, old or new? Probably not. But if such unheard-of diffidence could affect the possessor of a camera and a lens, the person who owned to it would thereby suggest that he was far above the average of his tribe in architectural knowledge. In portrait photography, even the Bank Holiday practitioner who plies his trade on Hampstead Heath or Kew Green would admit that some training is necessary. He would not like to "take" his customers from any point or in any attitude. Nor would they like to be so taken. Their remonstrances would perhaps be more forcible than polite, and their mildest measure would be to return his goods upon his hands. But when it comes to the case of a church or a house, the matter is altogether different. Here a photograph is a photograph, and whether it is good, bad, or indifferent, must be paid for. Indeed the ordinary photographer (and, of course, we except from these remarks the few men of taste and artistic training to whom we architects owe so much) does not recognise that one photograph of a building is better or worse than another, except in the technical matters which he understands. If, for instance, the negative was under-exposed or over-exposed, or the lens out of focus, he knows this to be wrong. But if the building is taken from a bad point of view instead of a good one; if its best details are in deep shadow and its poorest ones in bright sunshine, it matters nothing to him. He does not admit it, for he does not see it; his print is free from technical faults, therefore, he is content with it, and cannot tell why everyone else should not be so likewise.

The exceptional photographer, the man who knows how his subject groups best, and what sort of light it requires, too often disappoints the architect in another way. He spends his life apparently in doing the same stock subjects over and over again. Like Mr. Pecksniff, he gives us Salisbury Cathedral from the east, Salisbury Cathedral from the west, Salisbury Cathedral from the north-east, and Salisbury Cathedral from the south-east. Then he goes on to Lichfield Cathedral, and Norwich Cathedral, and all the rest of the cathedrals, and repeats the process. After he has done the cathedrals he takes up the abbeys. Tintern, in particular, he cannot leave alone for a year. He gives us plenty of ivy, and not much architecture, and the more familiar everybody is with a building, the harder he works at photographing and re-photographing it. This may suit the public; in all probability it is done just because it *does* suit the public. But it is not by any means the kind of thing that suits architects. For their purposes there are enough general views of cathedrals already. They want models of a different class, and even in the class of church-building they want models that are less ambitious and more suggestive. Therefore photographers, as a rule, fail to do more than a fraction of the good they might do to the architectural student, and in his education, photography is, to a great extent, a neglected resource.

There are, it is true, photographs of interesting and little known buildings to be met with. Here and there, in out-of-the-way places, some scarcely-heard-of practitioner, with very modest appliances, takes views of noted works in his own locality. It may happen that these views are satisfactory—for natural perception sometimes goes far to supply the want of training—and artistic taste is not always on the side of the largest camera. And even if the views are poor, they are worth buying when no better ones can be had. At worst they will indicate whether a building is worthy or unworthy of a visit, at least, for those parts of it which the picture represents. And when it has been visited they will be no less valuable. Different students carry away with them different memories from the same architectural work. One remembers best, perhaps, the construction; another, the plan; a third, the mouldings; and a fourth, the tracery or the carving. And it is one of the marks of a satisfactory design, that everybody thinks he can never forget it. It looks so simple, so natural, so impossible to have been treated otherwise than it has been, that we feel it the easiest thing in the world to recollect it from beginning to end. This is how art conceals art. Try to sketch it a month after, and see how many difficulties suggest themselves—difficulties so perfectly conquered in the design that one never noticed they had been there. This is where a photograph, even the worst of photographs, becomes helpful. It may be dark where it ought to be light—it may crowd the building together and make a jumble of its best features; but still such facts as it records can be depended on, and there are often enough of them to answer the questions that arise when the student has left the place and tries to recall the scheme in its entirety.

The unfortunate thing is that photographs such as these are hard to meet with. They are seldom to be bought in London. They must be picked up in their own localities. This means that it takes years to collect them. Half-a-dozen are to be met with here, half-a-score there. In some country town you look through portfolios of cathedrals and abbeys and find, perhaps, one view of some old house or village church which you never saw or heard of. You carry off your prize as does the botanist who comes on a rare flower, or the coleopterist who finds a new beetle, and you leave the young lady in the shop wondering that anybody should prefer such a humble subject to a print of the west front of the local minster. With Continental architecture the case is even worse than with our own. Laurent, of Madrid, has indeed produced a magnificent series of works in Spain; and if England could but afford from £80 to £100, the money would be well laid out in buying the complete set for one of our chief public libraries. This, however, may be too extravagant a proposal, and we must be content with the few specimens of M. Laurent's views which alone exist, or did for years exist, in the Art Library at Kensington. For France we know of no single series comparable with his. For a long while only the French cathedrals seem to have been thought worth photographing; and none but the best known of these were represented in London. The earlier collections, in fact, were almost confined to buildings in Normandy. Now it is possible, even in England, to get views in Poitiers, Arles, Nismes, and elsewhere in the south. The larger Renaissance examples, too, have been dealt with; and, on the whole, France is almost as well treated by the architectural photographer as England. Italy sends an abundance of photographs from Rome. The unsatisfactory front of Milan Cathedral finds many buyers, for Milan is the biggest cathedral in the world, and popular taste in England, as in America, always thinks the biggest must be the best. Venice, too, is fully illustrated. People go there, and like to show their friends where they have been. But the great Mediæval and Early Renaissance buildings in Italy do not seem to be thought worth notice. It is a rarity to see any views of them, except, perhaps, the Certosa at Pavia, and two or three west fronts like that of Siena. One very small photograph of the Campanile at Amalfi, beloved of painters, is all that it seems possible to obtain in England of that locality; while of Bari, Trani, Molfetta, and the other towns in the lower part of the peninsula not a trace is to be seen.

Belgian Hôtels de Ville can be had without difficulty. Belgian churches, with the exception of Antwerp, are rather harder to meet with. Domestic buildings in Bruges seem to have attracted the photographer, who has yet a great deal to do in illustrating other towns. Holland has now been photographed in parts, but not always wisely. Much that has been brought thence was scarcely worth bringing, and a great deal that remains behind would be very valuable to us. Germany seems to be unfortunate in its photographers. They send us representations enough of the lifeless and mechanical buildings of Berlin, which look as if they had been turned out by an architectural drill-sergeant, and neglect places like Hildesheim, Stendal, and even Nuremberg. Cologne Cathedral, as completed, of course suits their taste; but the older churches in that city, and the smaller ones in the Rhine district, are passed over with contempt. This, in fact, is the fate of small churches everywhere: and yet, for the few architects who still have any concern with church work, it is the small and not the large ones which have usually most to teach.

This is a general outline of what photography, so far, has done for architecture. Could we expect it, unsought, to do much more? People who publish photographs do it as a matter of business. Their customers are the public, not chiefly the profession, and they order what their customers will pay for. If architects want other subjects, they must take them or have them taken. Why should they not be their own photographers, and exchange specimens, as botanical and geological collectors do? The specimens would not, by any means, be all of general views. They would include details of every period and of every description. They might come, not only from England, Scotland, and Ireland, but from the Continent, and even, if opportunity offered, from more distant regions. The sizes might be very moderate, and the photographing would certainly not do away with the drawing and measuring of interesting work. On the contrary, it would facilitate it. Dimensions, sections of mouldings, and enlarged sketches of detail would still be noted down by hand; the photograph would be supplementary to them—a record of the actual effect of the work as built. Now that cameras are so plentiful, and amateur photographers so numerous, it would surely be easy to start a small society of those amongst them who are interested in architecture, and to arrange for the exchange of prints. The printing might have to be handed over to someone experienced in its technicalities; but the cost, divided amongst some scores of members, would be small, and the results, in all probability, very valuable.

THE NEW LONDON BUILDING ACT.—II.

WE now take up in more detail those sections of the new London Building Act which refer to "Lines of Building Frontage," Part III.; "Open Spaces about Buildings and Height of Buildings," Part V.; and the "Construction of Buildings," Part VI., in all three of which important alterations have been made. The numbering of the sections widely differs from those of the Draft Bill, which makes it laborious to compare the clauses. We have already given a brief *résumé* of these parts of the Act. It will be noticed that the old restrictions are re-enacted in Part II., as to the formation and widening of streets. The setting-back clauses of the London County Council's General Powers Act, 1890, are retained, the effect of which is that it will be impossible after the Act comes into operation for anyone to erect a building at a less distance than the "prescribed distance" (which is 20ft. and 10ft. respectively for carriage and foot traffic) from the centre of roadway (being a highway) without consent in writing of the Council, though should they think it expedient, they may consent to the erection or extension of any building, forecourt, or space at a less distance, subject to certain conditions as they may think proper to sanction. Section 16 provides that buildings may be erected at less than the prescribed distance from centre of ways (not being highways) as may have been sanctioned, under certain conditions; but the way shall not become a highway unless certain conditions are complied with, which are set forth in this section. By this provision it will be impossible for the owners of any estate to convert any road into a highway unless they serve a written notice upon the Council setting forth their proposal, when the Council may within two months serve a notice upon the owners or builder of the building or forecourt, fence or boundary, requiring him to set back the same or any part thereof to the prescribed distance from centre of roadway, or at such distance as the Council or Tribunal of Appeal has sanctioned. Those areas that may have been occupied by any building at any time within two years before the 22nd of July, 1878, are exempted from this restriction, or any building or extension that was going on at that date within such area. Sanction is also given by the Council to the erection of any new building at a less distance for a limited time, and subject to times and conditions as they think proper. The previous Bill contained a clause that empowered the Council to set back buildings in any new street formed after the passing of the Act distant more than two miles from St. Paul's, so as to leave a space of 5ft. beyond the width of roadway, and if the premises are used as shops, such space to be given to the public. This was judicious; but property owners could not see their way to so generous a concession. But practically sec. 26 meets the case to some extent.

As to the lines of building frontage, sec. 75 of the Act of 1862, 25 and 26 Vict., has not been repealed, and is unaltered in wording. Its purport is that no building shall be erected without consent of Council beyond the general line of buildings in any street, place, or row, in case the distance of buildings from the highway does not exceed 50ft., or within 50ft. from the highway when the line of buildings therefrom amounts to or exceeds 50ft., notwithstanding gardens or vacant spaces between the building line and highway. This rule has been often relaxed on trivial pretences. Buildings erected upon land previously occupied by buildings at any time within seven years of the commencement of the Act are exempted. Sect. 23 also repeats with slight verbal alteration section 74 of the old Act, which is to the effect that in case any building which projects in any part beyond the general line of frontage shall be taken down to an extent exceeding one-half cubically measured, or shall be destroyed by fire, &c., the Council can require any new building on its site to be set back to a line they shall direct. Compensation is to be made to the owner for any damage and expenses which he may sustain and incur, the amount, if not agreed, to be recovered in a summary manner. When the amount exceeds £50, it shall be settled by arbitration under the Lands Clauses Acts. The next section (24) provides that the superintending architect, within 14 days after defining the general line, is to serve notices on the local authority, the owner of building or land, and on the owner of houses in the same block or row "within a distance not exceeding 50 yards on either side of the building or land," or where there is no such block upon owner of adjoining lands on either side. This clause defines a distance which the present section (28) does not. The local authority or person aggrieved by the certificate of the architect may appeal to the Tribunal of Appeal. Very necessary conditions are attached (sec. 26) to the consent given to buildings beyond the general line—namely, that land in front of the advanced building shall be dedicated to and left for open public use, and that the building shall be used only for such purposes as may be specified in the consent, &c. The consent thus given (27) is not to affect the rest of general line existing. In all cases the architect may by request determine in what street or streets a building is situate, though the certificate may be appealed against.

These sections are largely on the lines of the old ones, but their amendment will facilitate the action of the authorities. The next, Part IV., on the "Naming and Numbering of Streets," is hardly of sufficient interest to detain us. The rules appear to be sensible; no name is to be given to any street without notice to the Council, who may object to it within one month—a very useful rule that will avoid much confusion.

Part V., on "Open Spaces about Buildings, and Height of Buildings," is so important, that we desire to give a more careful *résumé* of the sections. Sect. 39 defines "domestic building" as not including any buildings used or constructed or adapted to be used wholly or principally as offices or counting-houses. In the definitions of the new Act, the expression includes "a dwelling-house and any other building not being a public building, or of the warehouse class." Under section 39, and for the purposes of this part of the Act, the above further distinction is made—certainly rather bewildering, though the framers of the Act had in view that large class of buildings in London used or adapted for offices. We think, however, this further definition should have appeared in sec. 5. Sec. 40 makes it obvious why a further distinction is made. This section is intended to prevent the erection of buildings with basements intended for habitation that are imperfectly lighted and ventilated. Under the existing Acts it is possible to erect houses with basements unfitted for habitation. There are three sections of the old Act—section 96, referring to underground rooms used as dwellings, for which an open area and other conditions are required; sec. 29, of 18 and 19 Vict., requiring an open space of at least 100sq.ft. in the rear, unless all the rooms can be lighted from a street or alley adjoining; and Sec. 14, of 45 Vict., which provides that every new building intended as a dwelling-house should have attached in the rear an open space of specified area, according to frontage. These sections scarcely meet the case, and do not specifically provide for basements. The new section 40, which practically follows the L.C.C. amendment, but unfortunately reduces the 150sq.ft. to 100ft., as proposed by the R.I.B.A., provides that every habitable basement in a new domestic building shall have an area in the rear, and exclusively belonging thereto, of not less than 100sq.ft. free from any erection thereon above the level of adjoining pavement. This open space need not necessarily adjoin the rear boundary, so it may be inferred that the space may adjoin the side of the premises, as intended by section 29 of the old Act. With respect to domestic buildings abutting upon a street erected after the Act comes into force, an area of not less than 150sq.ft. is to be provided in the rear exclusively belonging to such building (see section 41), and extending the whole width of building, and to a depth of at least 10ft. Where there is a basement lighted and ventilated as above, or where there is no basement, but the ground story is not constructed or adapted to be inhabited, the open space may be provided above the level of ground floor ceiling, or a level of 16ft. exclusive of lantern lights from level of pavement, thus allowing shop premises to be extended backward into the area. In other cases the only erections permitted above this level are a closet and receptacle for ashes and inclosing walls, none of which are to exceed 9ft. in height.

We may now refer more particularly to the enactment respecting the height of such buildings in relation to the space in the rear given in sub-section iii. of the same section. The *modus operandi* as explained in several sub-clauses is not so explicitly worded as one would have liked. The mode of drawing the horizontal line is expressed rather clumsily, and we think that a diagram as given in a former Draft Bill would have assisted greatly to make the matter better understood. We gave last week the gist of the Act, and the angle at which the second or diagonal line has to be drawn to the horizontal line—namely, 63½°—meeting the latter where it intersects the boundary of the space farthest removed from the roadway; really, the angle would be at the extreme point of the rear boundary. An angle of 63½° is an awkward one to remember (why not one of 60°?), and will permit of the erection of houses to a greater height than is desirable for air and light. The objections raised to the former proposed angle of 45° by owners and interested parties, that it prevented the erection of houses of sufficient height, were no doubt formidable. Those of our readers who have followed the amendments made by the London County Council to their Bill on Part IV. of that Bill see that more can be urged on the other side. Originally the 45° angle was to apply to old as well as new streets; but by the amendment subsequently made it was to be confined to a street or way formed after the commencement of the Act (31, A, of the Bill). The effect of this alteration is that those areas most in need of light and air in the older parts of London will not be benefited. The new Act by the angle of 63·5° and the sub-section (*e*), which provides that "no part of the building shall extend above the diagonal line, except chimneys, dormers, gables, turrets, or other architectural ornaments aggregating in all to not more than one-third of the width of the rear elevation, &c.," will improve the condition of things very little, especially as it will allow a gable to be built in the back wall, which will practically shut out still more light.

There are several sub-sections dealing with exceptional cases. With respect to levels and boundaries, sub-section (*f*) defines certain points. If the pavement in front of building is not on one level, the mean level is to be taken for the "horizontal line," and where the rear boundary is not parallel with the building, this line is to be "drawn to a point distant from such rear wall the mean distance from such wall of the boundary of the space at the rear, whether such point be beyond the said boundary or not"; (*g*) when the boundary in rear is very irregular in shape, and a doubt thereby arises, the applicant may appeal to the tribunal; when the land at the rear abuts upon a street (*h*), or on an open public space, the diagonal may be drawn at the centre of roadway, at the surface level, or at the further boundary of the open space, and it shall not be necessary to provide any open space at the rear of building.

As to a corner building abutting on two streets (iv.), and secondly, abutting on one side upon a street, and another side upon an open space not less than 40ft. wide, the Council may "permit the erection of buildings not exceeding 30ft. in height upon such part of the space in the rear as they may think fit," provided the building be placed so as not to interfere unduly with the access of light and air to other buildings. The applicant may appeal to the Tribunal should the Council refuse permission. Again (v.), nothing as to determination of height by the diagonal line is to prevent the return front of corner buildings being carried up to the full height of the front for a distance of 40ft. or less. The Council may allow other modifications in exceptional cases. As to new domestic buildings abutting on old streets laid out before the Act, the provisions of this section are to apply; but the horizontal line is to be drawn at a level of 16ft. above level of adjoining pavement, and (except in the case of dwellings inhabited by the working class) the open space to be provided, as previously stated, may be arranged above the level of the ceiling of the ground story, or above a level of 16ft. from the adjoining pavement. It is, however, enacted as to any domestic building erected in such a street, that any part of the same may extend above the diagonal line, provided that the Council or Tribunal shall be satisfied that an open cubic space of air is provided in the rear equal to that which would have been provided if such diagonal had been drawn. Other clauses provide for open space about certain buildings for working classes not abutting on a street. A very important section is 43, which provides, when a domestic building (not one for the working class) abuts upon a street on the site of old ones existing at the commencement of this Act, or on a site occupied by a building within seven years previously, that the person who erects a new domestic building shall cause to be prepared plans of the previously existing building in its several parts, or "in the event of such building having been taken down before the commencement of this Act, or, having been accidentally destroyed, the best plans available," such plans to be submitted to the district surveyor, who shall, if satisfied, certify the same, and such certificate is to be conclusive evidence of their correctness. No more land is to be occupied by the newly-erected building than was occupied previously. Another important enactment, a vital addition to the old Act, is that of sec. 45, which refers to courts within a building for purposes of light and air; but why should the section only apply to domestic buildings, and not to large city blocks of offices, &c.? We gave the purport of this section last week. Briefly, wherever such a court exists, and wherever its depth from eaves or top of parapet to ceiling of ground floor exceeds the length or breadth of such court, ventilation is to be made and maintained by means of a "communication between the lower end of the court and the open air." Not a very clearly-worded clause, for it does not say what kind of communication. Will a tube or trunk answer, carried through the rooms or floor of one block inclosing the court? Then it enacts that no habitable room, not having a window directly opening into the external air otherwise than into a court, shall be constructed, unless the width of such court (measured from the window to the opposite wall) shall be equal to half the height measured from the sill of such window to the top of opposite wall—*i.e.*, a width or space opposite the window must be allowed that will make an angle from the sill to top of court of about 63½°. The diagonal of a double square would represent this angle. But a court of which the greater dimension does not exceed twice the less dimension is to be held to comply, if a square court of the same area would comply. By sect. 46 the superintendent is to determine which is the "front" and which the "rear" of a building, but appeal to the Tribunal can be made. We have already noticed the effect of clause 47, which limits the height of buildings, other than churches and chapels, to 80ft., exclusive of two stories in the roof and architectural features. This restriction is considerably modified by subsequent clauses, which allow buildings in blocks or rows erected before the Act to be carried to the height intended, and the Council may give consent to a greater height than that prescribed under certain conditions (sec. 48), such as that consent is not to be acted on within 21 days after such publication or service. Again, section 49 enacts that no existing building, other than a church or chapel, on side of a street formed after the 7th day of August, 1862, and of less width than 50ft., shall be raised without consent of Council, and no new building be erected on side of any such street so that the height of such building shall exceed the distance of the front or nearest external wall from the opposite side, the term "height" being taken to be from the level of footway to the top of parapet, or external wall or base of gable. In corner plots the height is to be regulated by the wider of such streets so far as it abuts upon it. Section 50 allows the increase of height of topmost stories so far as to bring them in agreement with provisions for habitable rooms.

The next Part, VI., dealing with "Construction of Buildings," has been considerably improved and revised. The structure and thickness of walls have been brought up to the standard adopted in many towns under the Public Health Act. Parts I. and II. of the schedule apply to walls of brick or of stone, or other hard and incombustible substances. Walls not built of brick, stone, or other hard substance, laid on horizontal beds, shall be one-third greater than the thickness prescribed. Hollow walls are to be constructed so that there shall be on one side of the hollow space a wall of the full thickness prescribed. The schedules of thicknesses appear no longer in tabular form, but are verbally expressed in separate clauses. The arrangement, too, is different: the walls of least height and length come first, and the schedule begins by reference to walls—not of the warehouse class—which do not exceed 25ft. in height and 30ft. in length, and ends with walls which exceed 100ft. but do not exceed 120ft. in height, and exceed 45ft. in length. These thicknesses follow pretty nearly the old schedules, but have been more clearly arranged. Thus we read (1) "When the wall does not exceed 25ft. in height, its thickness shall be as follows:—If the wall does not exceed 30ft. in length, and does not comprise more than two stories, it shall be 8½in. thick for its whole height; if the wall exceeds 30ft. in length, or comprises more than two stories, it shall be 13in. thick below the topmost story, and 8½in. thick for the rest of its height." (2) "When the wall exceeds 25ft., but does not exceed 40ft. in height, up to 35ft. in length, it shall be 13in. thick below topmost story, and 8½in. for rest of its height. If the wall exceeds 35ft. in length it shall be 17½in. thick for the height of one story, then 13in. thick for the rest of its height below topmost story, and 8½in. thick for the rest of its height," which practically is the same as the present schedule. (3) "When the wall exceeds 40ft., but does not exceed 50ft. in height, when the length does not exceed 30ft., it shall be 17½in. thick for the height of one story, then 13in. thick for the rest of its height below the topmost story, and 8½in. for the rest of its height." Comparing this with the old schedule, we find that there is an increased thickness for walls up to 30ft. long, and below the topmost story of 4½in.; for length of wall up to 45ft., two stories are to be 17½in. instead of only one, and the rest 13in. instead of 8½in. thick. But we leave the schedules for the present, and proceed with the rules as to recesses and openings, sec. 54. As to external walls, the rules are the same as now; and as to recesses in party-walls, it is provided that an arch of two rings of brickwork is to be turned of the full depth of recess on every story, except in the case of recesses formed for lifts; but corbelling in brick or stone may be used instead of arching for recesses 5in. in depth. As now, the area of recesses taken together is not to exceed one-half of the whole area of the wall of story, and they are not to come within 13½in. of the inner face of external wall. A new sub-clause prohibits an opening in any party-wall except in accordance with the provisions of this Act, and the superintending architect may consent to any modification of the requirements of this section. As to timber in external walls, we find an alteration of some import as to loophole frames and frames of doors and windows has been made. In the existing Act, loophole frames are to be fixed within 1½in. of the face of any external wall; but the new Act allows them to be fixed flush with the face of the wall. All other woodwork, except breastsummers and story-posts and frames of doors and windows of shops on the ground story, are to be set back 4in. at the least from the external face of the wall. The Council may exempt oak, teak, or other wood from this provision. Breastsummers of metal as well as wood are mentioned (sec. 56). An additional clause provides in the new Act that the district surveyor shall have power to require other story-posts, iron columns, stanchions, or piers or corbels, as may be necessary to carry the superstructure. Sub-clause 2 provides at the end of every metallic breastsummer a space equal to ¼in. for every 10ft., to allow for expansion. Corbels or templets of stone, iron, or vitrified stoneware may be tailed into the wall to a distance of 8½in., to support timber not permitted to bear on a party-wall—a useful addition.

The rules as to height of party-walls above roof have been remodelled. There was no thickness prescribed for party-walls of the warehouse class above roof, nor was an adequate height defined. They are now to be carried up of a thickness equal to that of the topmost story, and in other buildings, of 8½in. above roof of flat or gutter of the highest building adjoining, to such a height as will give a distance in a building of the warehouse class exceeding 30ft. in height of at least 3ft., and in any other building of 15in. measured at right angles to the slope of roof. The same wall to be carried up above any turret, dormer, lantern, or other erection of combustible materials within 4ft. from such party-wall, and extend at least 12in. higher and wider on each side thereof.

Section 61 relates to the construction of roofs. An exception is made for wooden cornices and barge-boards, to dormers not exceeding 12in. in depth, as well as to doors, frames, window-frames, in connection to the coverings. One important addition is that every building exceeding 30ft. in height, used wholly or in part as a dwelling-house or factory, and having a parapet, is, under the new Act, to have a dormer window or door opening on to the roof, or a trap door with a fixed or hinged step-ladder leading to roof, or other means of access. No more than two stories are to be constructed in the roof of any domestic building (62), and if the floor of any story is above 60ft. from street level, the story is to be of fire-resisting materials. By section 63, means of escape from the top of new buildings exceeding 60ft. in height is provided whenever the upper surface of floor is above 60ft. from street level—a very necessary precaution. The rules as to chimneys (64) have been revised literally, and in several details. Under the old Act, chimneys and flues having doors of 6in. square may be built at any angle; all others had to be constructed of an obtuseness of not less than 130°. Under the new Act, soot doors of not less than 40sq.in. are required; in no other case is a flue to be inclined at a less angle than 45° to the horizon. Several other important clauses are introduced, as subsections vi. and vii., the latter requiring the position and course of every flue to be outlined externally. Other new rules are introduced relating to furnace chimney-shafts (section 65).

An additional section of much importance (69) provides that, in every building constructed or adapted for separate tenements by more than two families, the principal staircase in common shall be ventilated upon every story above the ground story by windows or skylights into the external air. The staircase of every dwelling-house not subject to the above provisions is to be similarly ventilated. The rules as to habitable rooms (70) provide that, except for rooms in the roof, a room shall be in every part at least 8ft. 6in. in height from floor to ceiling; every room wholly or partly in the roof shall be at least 8ft. in height for at least one-half the area of such room; it shall have one or more windows opening directly into the external air, or into a conservatory, of a total area clear of sash-frames equal to at least one-tenth of the floor area of room, and of which a portion equal to one-twentieth of such area can be opened, the opening extending to at least 7ft. above the floor. A room having no external wall, or one in the roof, may be lighted through the roof by a dormer having a clear area equal to one-twelfth of the floor area, a portion of which, equal to 1-24th of such area, can be opened at least 5ft. above floor, or it may have a lantern light with a portion to open. Nothing in this Act is to affect, alter, or repeal any provisions of the Public Health (London) Act (1891) relating to underground rooms.

The rules as to Projections (73) are revised, the distance mentioned in the old clause of 15ft. between detached buildings and from ground of adjoining owner being omitted. All the projections enumerated are to be of brick, tile, stone, artificial stone, slate, cement, or other fireproof material, except eaves, barge-boards, and cornices to detached dwellings, in which the party-walls are corbelled out to project 4in. beyond such barge-boards or cornices. Sub-section ii. provides that balconies, cornices, &c., shall be tailed into wall and weighted or tied down, and that no cornice shall project more than 2ft. 6in. over a public way.

Sub-section iii. re-enacts the provisions now in force—viz.: in a street not greater than 30ft. wide, that any shop-front may project beyond the external wall to an extent not exceeding 5in., any cornice to project to an extent not exceeding 13in.; in a street of greater than 30ft. a shop-front may project 10in., and the cornice to 18in. beyond the external wall over the ground of the owner. No part of the woodwork of any shop is to be fixed higher than 25ft. above level of pavement, and no part of woodwork is to be fixed nearer than 4in. to the centre of party-wall, &c. Bay windows may be erected in a street of a width not less than 40ft., provided that they do not exceed three stories in height above the footway, and do not project more than 3ft. from the main wall, nor project in any part within the prescribed distance from centre of roadway, or nearer from the centre of nearest party-wall than their projection. Their united width must not exceed three-fifths of the frontage of building. Projecting oriel windows or turrets may be constructed in a street of a width not less than 40ft., provided no part of such projection extend more than 3ft. from the front wall, or more than 12in. over the public way, or be less than 10ft. above level of footway, or no part where it overhangs be within a distance of 4ft. of the centre of nearest party-wall, &c. As to separation of buildings, sec. 74 contains the provision that in every building exceeding ten squares in area used in part for trade or manufacture, and in part as a dwelling, the former part shall be separated from the dwelling-house part by walls and floors of fire-resisting materials, and all passages and staircases and means of approach to the part used as a dwelling be constructed throughout of fire-resisting materials. The part used for trade, &c., shall, if extending to more than 250,000c.ft., be subject to provisions relating to cubical extent of buildings of the warehouse class. This clause practically supersedes the existing sub-clause 4 of sect. 27. Sub-section iii. provides that, in every building exceeding 25 squares in area, containing separate sets of chambers or rooms tenanted by different persons, the floors and principal staircases shall be of fire-resisting materials. It will be noticed the existing clause requiring separate chambers contained in a building exceeding 3,600ft. in area to be divided as separate buildings has been repealed.

As to buildings of the warehouse class, the new Act provides (sec. 75) that, except as in this section provided, no building shall extend to more than 250,000c.ft., unless divided by party-walls, and no addition is to be made so that the cubical contents shall exceed that sum. The existing clause setting forth the statutory 216,000c.ft. for dwellings used, wholly or in part for trade, &c., is therefore repealed. Consent to larger dimensions (76) may be given if the Council are satisfied, provided the building shall not exceed 450,000c.ft. or exceed 60ft. in height, &c. The rules as to uniting buildings (77) require that they shall not be united except they are in one occupation, or are adapted to be so. No opening is to be made in any party-wall, or in two external walls dividing buildings which, if taken together, would extend to more than 250,000c.ft. (not 216,000c.ft. as now in force) except under certain conditions; one being that such opening shall not exceed in width 7ft., or in height 8ft., and such openings taken together shall not exceed one-half the length of such party-wall on each floor, &c.

Section 78 provides that every public building in every part shall be constructed in such manner as may be approved by the district surveyor, or in case of disagreement determined by the Tribunal of Appeal, and they are to declare their approval before it shall be used. Where houses, &c., are converted or altered into public buildings, such alterations shall be carried out as may be approved by either of those authorities. Section 80 provides that in new churches, chapels, public halls, lecture-rooms, exhibition-rooms, and public places of assembly, or additions or alterations thereof, every staircase for the use of the public shall be supported and inclosed by brick walls, not less than 9in. thick, and the treads of each step shall be of uniform width. Staircases, internal corridors, or passages for public use shall not be less than 4ft. 6in. in width. Where not more than 200 persons are to be accommodated, it may be 3ft. 6in. Staircases, corridors, &c., which communicate with any portion of building for the accommodation of more than 400 shall be increased in width by 6in. for every additional 100 persons until a maximum width of 9ft. be obtained. Two staircases may be substituted, each of two-thirds the width prescribed. Handrails are to be provided, and doors, &c, made to open outwards.

NOTES FROM THE ANTWERP EXHIBITION.

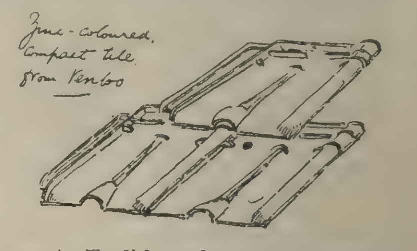
PART II.—MATERIALS.

TO speak in words of praise of Belgian materials, particularly if the particular material under consideration be iron, is one of the surest ways of rousing the ire of English manufacturers; yet what else can be done when one has to report upon the specimen exhibits of a national industry, where only the best is shown? In England, Belgian iron has a bad name, possibly as much through jealousy as through indifferent stuff having at one time been largely put upon the English market; but, to judge from the specimens at the Antwerp Exhibition, it is evident that the best English iron is no better than what can be produced in the little kingdom across the North Sea, and than will be produced, as good iron is more regularly demanded, despite its increased cost. Some specimens of slowly bent wrought iron, doubled until slow fracture set in, are especially wonderful examples of silky, fibrous structure, very difficult to beat.

It is not only in iron, however, that the Antwerp Exhibition is showing us how closely our industrious and frugal neighbours are running us, and it is a lesson which our discontented workmen may well take to heart that other industries, which we have been accustomed to consider especially our own, are being rapidly developed by them. Two firms (one bearing the English name of North), for instance, have exhibits of cements. North's are manufactured Portland cements of the English type, made at Beersse; while the other exhibit is of natural Portland and Roman cements from Tournai. The Portland is shown in the form of the clay-stone as excavated, and also as clinker after calcination; the Roman is like our own. No results of tests, however, are announced; but nothing is to be gathered from this, as throughout the exhibition (save in the "side shows" of jugglers, &c.), there is marked absence of that tendency of exhibitors to over-vaunt their goods which is so objectionable with us.

Clay goods, too, are in considerable evidence. The Tuilerie de Pottleberg at Courtrai, shows tiles of a homogeneous, terracotta-like clay, excellently made, and exhibits besides possibly the best system of fireproof flooring other than is to be found with us. It is exceedingly like that put upon the English market by Messrs. Homan and Rodgers; but the terracotta blocks are of the section of rolled-iron joists, and, unwisely, are not keyed upon the flanges for either the plaster ceiling under or the concrete floor over.

Another exhibit of roof tiles is to be found in the Dutch Court, and of these a sketch was obtained (see sketch), the shape of the tile being a new one to English workers. It is made of a zinc-coloured clay, having a kind of half glaze, is both homogeneous in structure and light in weight.



Close to this is found an exhibit of Dutch bricks, by M. Meiras. These, again, are more like terracotta than our English bricks in appearance, and would evidently not stand rubbing. They are true in colour and in form, and the moulded sections are excellently modelled. The colours, too, are hardly such as we are accustomed to. The buff and red are both of them terracotta shades, and there is besides a peculiar cool grey, which harmonises well with both the others. The ordinary bricks are made in two sizes, one $8\frac{1}{2}$in. by $4\frac{1}{2}$in. by $2\frac{1}{4}$in., and so approximating to that in use with us, and the other the common Belgian size of 7in. by $3\frac{3}{8}$in. by $1\frac{5}{8}$in., which is so exceedingly effective in the Flemish buildings.

Messrs. Utzschneider, Jaunez, and Co., who have works in Germany, Belgium, and Luxembourg, have an exhibit of floor tiles made in each country; but it is exceedingly difficult to discriminate between them. All are good, all are in the same quiet colours, and all, where showing patterns, are treated by being stamped upon the surface with equally good and simple designs.

There are other materials not so greatly in evidence. Four fine slabs are shown of Belgian encrinitic marble, highly polished, and although an attendant said that there was a large exhibit somewhere of Belgian stones, this was all that could be found after a diligent but hurried search.

Of woods, also, the only exhibit is a small one, and naturally so, as the indigenous timbers are few and small. They are well displayed, however, and a noticeable specimen is a section of oleander, a wood which, to judge from this specimen, ought to be considerably used for decorative work were it possible to obtain it in any quantity.

Another wood exhibited is the Karri wood (Eucalyptus collosea), or red-gum, from Western

Australia, now being so largely used in the London streets in the place of the creosoted fir, which it bids fair to replace entirely.

In the French courts there are several exhibits of pigments of rare brilliancy. That of Messrs. Ringaud and Meyer, of Paris, is especially rich in pure blues and reds, particularly the "laque blue," "blue de preusse," and the various vermilions, of which several shades are displayed, together with a bar of cinnabar wood.

It would be impossible to close these notes on materials without reference to the essentially Belgian mineral product—zinc. The exhibit of the Veille Montague Zinc Co. is given the place of honour of the whole exhibition, exactly facing the main entrance, and it may be said to well deserve it, rather, however, from the intrinsic value of the material than from the beauty of the exhibit.

There are many exhibits of British materials by British firms; but no mention of them is necessary here, the intention of these notes being to put before their readers such things as are to be seen at Antwerp as are not to be found with ourselves.

TESTING BUILDING STONES.

A USEFUL paper is given on "Testing Building Stones," by F. Linwood Garrison, Assoc.M.Am.C.E., in the *Transactions* of that society. Speaking of "bed, or natural position" of stones, the author shows the importance of determining the natural bed so that the pressure be applied upon the bed. The maximum strength of a stone is always developed when the pressure is applied in a line perpendicular to its natural position or "grain." This position is difficult to determine in many cases. Even at the quarry, the author says, "it may puzzle an experienced geologist to determine the original or natural horizontal bed of the rock if it be of sedimentary origin, or a metamorphic rock, and when eruptive it may be quite impossible, although most, if not all, eruptive rocks have a tendency to break in certain directions or planes in which the cohesive power of the stone is weakest." In some metamorphic rocks the bedding is made distinct by the distribution of the mica, its laminæ being arranged in parallel planes, giving a stratified appearance to the rock, as in gneiss (stratified granite). Sandstone laid on their natural bed will weather better, because they most readily absorb moisture in the direction of their grain or bed; and, further, it will withstand a greater amount of heat without disintegrating, and thus be able to resist longer during a fire. The character of the fragments produced by testing (crushing) ought to be noted, says the author, as in the stronger stones there is a tendency when the pressure is applied on the bed for these pieces to assume pyramidal shapes with round edges; in weaker samples, or if the pressure is applied edgewise, the fragments assume an angular, flaky character. Crushing, shearing, and bending strains are usefully applied to stone. The first is generally considered sufficient. As to the form of the cubes for testing, it is stated that a stone will develop its maximum resistance on the largest cubes. They should be prepared with care, sawing and grinding to the required dimensions are a better way of bringing them to the size than dressing them by hammer and chisel, which produce minute cracks. The face in contact with the compression plates of machine should be perfectly even and smooth, or otherwise cushions of plaster of Paris or other material must be provided. Shearing strength is considered one of the most useful tests, though very seldom made. Mr. Garrison, whose paper we refer to, describes a method for this test recently adopted by him.

COTTAGES OR FLATS FOR THE WORKING CLASSES.

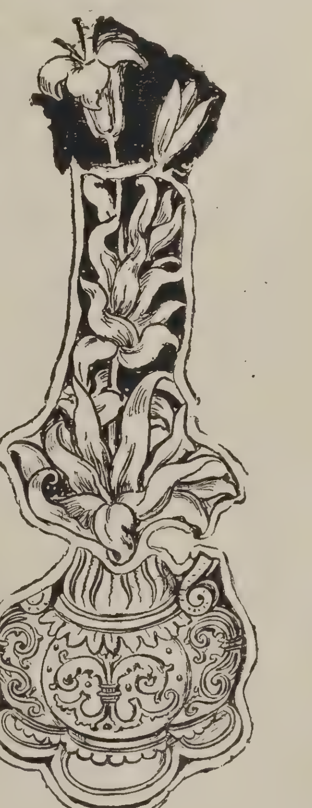
VARIOUS experiments have been made towards the solution of the problem of housing the working classes; but the general results have been far from satisfactory. The "tenement" house, or dwelling in "flats," erected in London, Liverpool, Manchester, Glasgow, and other great cities, have only proved that concentration and crowding have been attained at a sacrifice of the healthful conditions of family life, and that we must look for some other mode of providing dwellings. The suburb, served by a frequent service of trains at cheap rates, appears to be more favourably entertained by promoters of the rehousing movement, the great consideration being that land for building can be obtained at less price, and small separate dwellings erected for each family, which conditions are out of the question in the denser neighbourhoods of our towns. The land near railway stations, and the sidings of our main lines give undoubted opportunities for building this class of house. We might name both on the north and south sides of London large colonies of working-men's dwellings which have been erected near the stations, but without any apparent intention of, and certainly wanting in, those elements of appropriate design which are so necessary. They have generally been mere speculation on the part of private builders, without regard to plan or the comfort and convenience of the tenants. The requirements of tenants of the class we are treating seem to point to self-contained cottages in flats or blocks of two stories, each having an independent stairway from the street, and each containing two or three rooms. Such houses are often called "Scotch" houses, though for what reason is not very clear. In Liverpool the Corporation have set a good example to other towns in erecting several types of dwellings, to some of which we have referred on a previous occasion, and the paper read by Mr. H. Percy Boulnois, M.Inst.C.E., city engineer of Liverpool, last week reviews some of these cottage-dwellings. That gentleman lays it down as a condition based on experience, that the rent to be paid by the poorest of working people ought not to exceed an average of *one shilling* per room per week. The nearest approach made to this requirement in Liverpool has been in tenement-houses or dwellings in flats. Of the six-roomed and four-roomed houses built during the last 30 years, the former let at a rental of 7s. 6d. per week, the latter at a minimum rent of 5s. The rent of the usual house therefore averages 1s. 3d. per room per week, which is too high for labouring men who earn only 20s. to 30s. a week, which wages, if reduced to an average by want of regular work, only amount to 15s. or 20s. per week. One fifth of their income is the most they can pay in the shape of rent, or 3s. or 4s. per week, including rates and taxes. But such a low rental is unremunerative in Liverpool, and we know no decent dwelling can be obtained in London at the rental. The four-roomed cottages erected in Liverpool are the smallest which can be let at a profit. Cottages with a less number of rooms cannot be obtained unless sites filled with back-to-back houses are cleared. The demand seems to be, as pointed out by Mr. Boulnois, for cottages of two or three rooms, as there are many working men who cannot pay rent for more.

Thousands of tenement dwellings appear to have been built in Liverpool. These are erected in rows or blocks of two stories. The ground-floor of each is a complete house, containing two or three rooms. On the first-floor level the same series of complete three-roomed houses are repeated, and each of these has its own stair directly from the street. The two-roomed dwelling lets at from 3s. 9d. to 4s. per week. The earliest dwellings in flats were built before the bylaw as to open spaces in the rear was in force, and these are of three and four stories, and built on the ordinary plan with common stair in middle of block. Now a large number are unoccupied, and the net return is about 4 per cent. The lowest rent is at the rate of 1s. 4d. per room, the highest 1s. 10d.

The examples given of blocks erected by private investment of three stories have equally proved failures. Tenants could not agree to joint occupation, or refused to pay 5s., 4s. 6d. or 4s. for rooms according to their height, or for some other reason not difficult to discover, these blocks have not proved a success. The open spaces round some of these blocks are mere wastes for refuse, and are unsightly and offensive. The Corporation speculations in this direction show an improvement; many of the blocks were built from designs of Liverpool architects, and realise an interest of from 2½ to 3½ per cent. The experience gained in this large city has shown that the self-contained two-story cottage in flats satisfies the working man much more than the many-storied block of flats. The question remains how to build them. There is a tendency to repeat the same plan and elevation. We can do much better by varying both within certain limits, making some of the dwellings two-roomed, others three and four-roomed, in changing the sizes of the rooms, and giving a little variety to the elevation. Gardens or spaces in the front and rear, though small, would much add to the appearance and comfort of these tenement houses, and so would their arrangement round quadrangles or crescents. The common open spaces of the ordinary blocks of flats as we see them in London, asphalted as playgrounds, are ill-appreciated by the tenants except as playgrounds for their children; they are generally damp, draughty, and sunless; the continuous balcony along the front of each flat is the only outlet, and a poor one at the best. Worst of all, the London block of flats has too much of the barracks or workhouse about it to make it attractive to the working man. He sees the pleasant rows of detached dwellings in the suburbs for the middle-class tenants, each with its own appointments and self-contained, and he naturally asks why he cannot also have his own self-contained dwelling instead of being compelled to live in a crowded block without any space for recreation. The Liverpool by-laws make it compulsory to leave an open space at the rear of every house not less than the height of the rear wall of house, so as to limit the height of a house to a line drawn at an angle of 45° from the rear property, and each space must abut on each of the three sides on a similar open space or on a street. It also prevents any blocking in by other buildings. Rows of houses of this class might be broken at intervals by cross thoroughfares or passages by which the circulation of the air is insured and the elevation diversified.

THE RENAISSANCE AND BAROCCO IN PAINTED GLASS.

THE fourth and last volume of the "History of Design in Painted Glass," by Mr. N. H. J. Westlake, F.S.A.,* entirely bears out the character which distinguished the earlier volumes of this able and comprehensive record, enriched as it is with almost numberless illustrations, accompanied by critical and practical remarks such as only could be insured by actual experience in the practice of the art, coupled with an intimate acquaintance of the archæology of the subject. The work, which the author commenced to publish with so marked an enthusiasm thirteen or fourteen years ago, necessarily proved a task of no small magnitude, particularly for one actively engaged in the pursuit of his profession as an artist in decoration and glass. The conclusions



LILY IN POT. (FROM BASINGSTOKE.)

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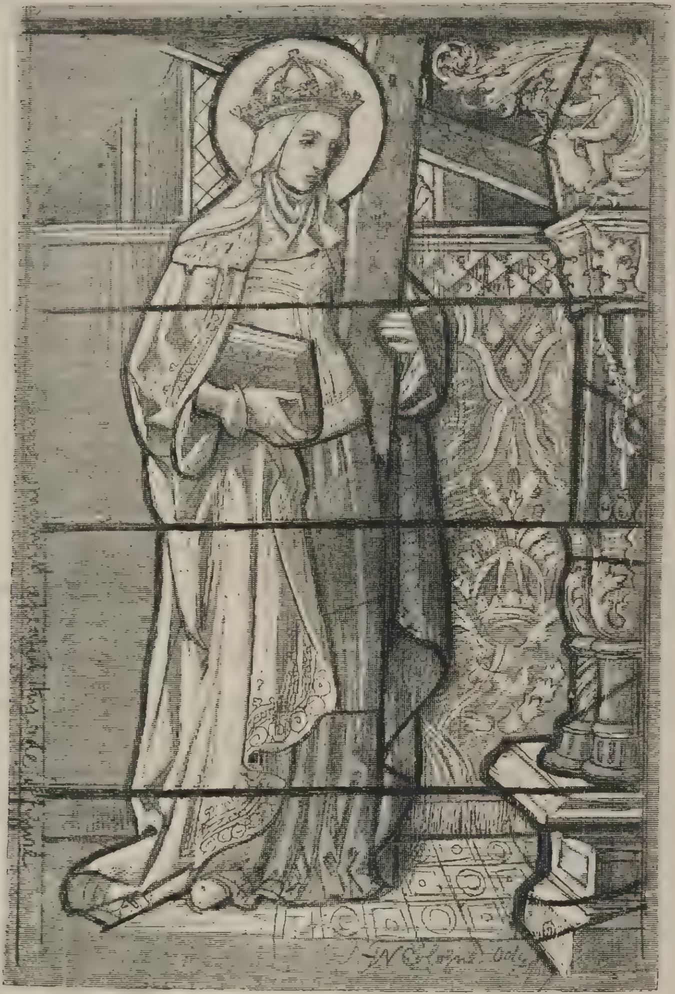
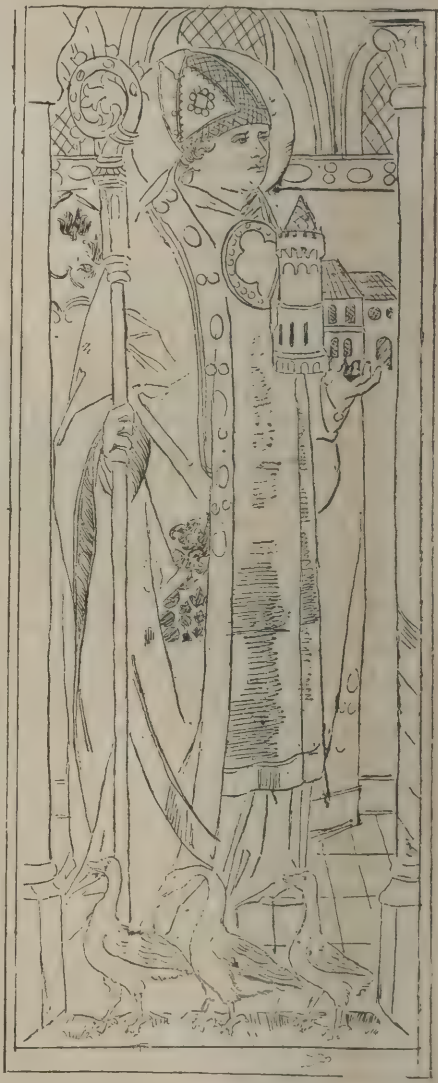
* A History of Design in Painted Glass. By N. H. J. Westlake, F.S.A. Vol. IV. London and Oxford: James Parker and Co., 1894.

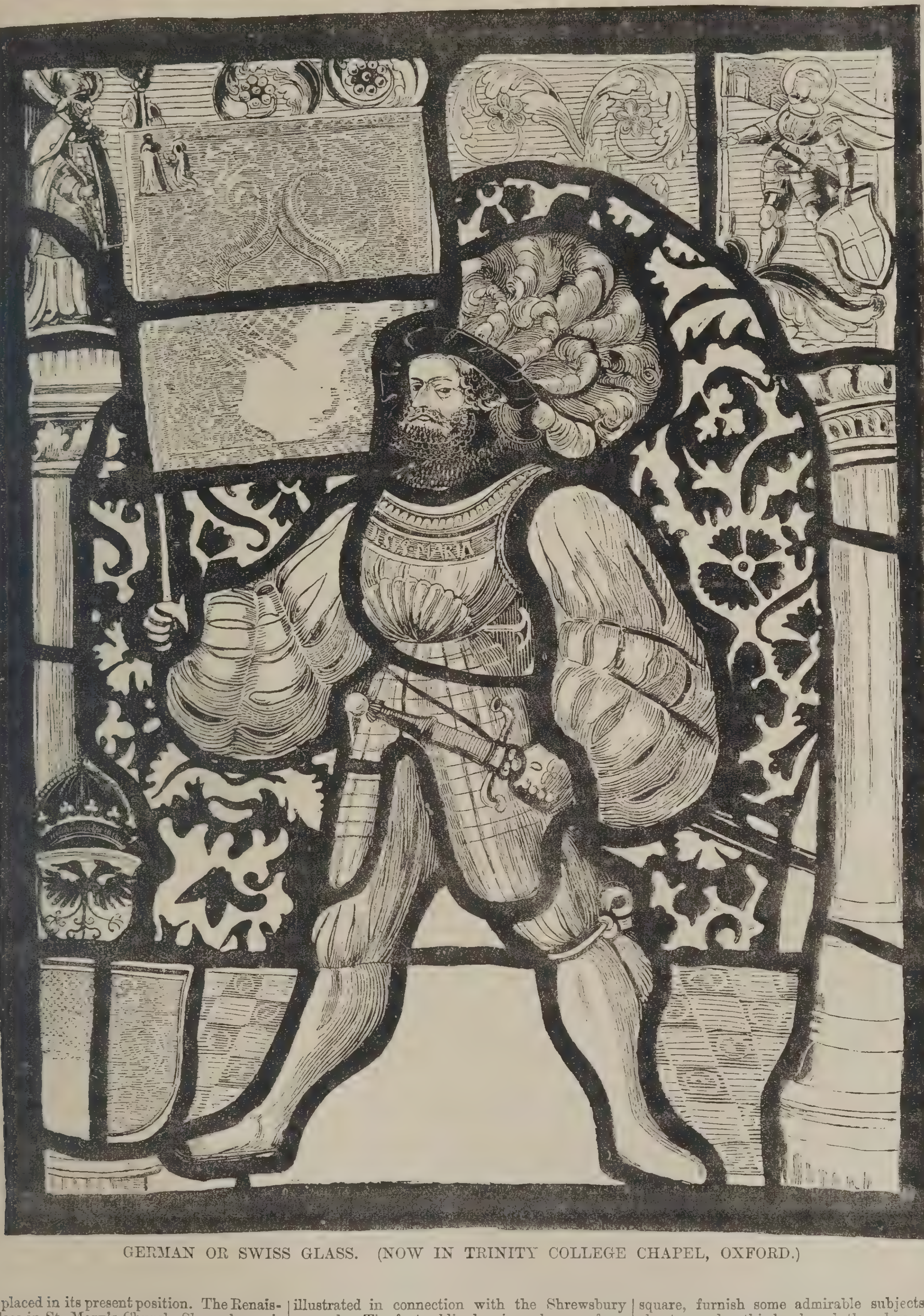


ST. HELENA. (FROM COLOGNE.)



ST. MARTIN.
(Now in St. Mary's, Shrewsbury.)

and suggestions thus put upon record in the spare leisure at his disposal naturally bear in parts of the treatise the trace of haste in style and expression; but this is perhaps more evident in some of the drawings which illustrate the text, so that in individual instances, judged as permanent records of detail in design, Mr. Westlake's sketches would have gained somewhat in value if a more careful manner had been adopted. It is, however, but right to presume that many of the outlines and illustrations are only intended to furnish a general notion of the specimens alluded to by the writer, as of course it is scarcely possible to give more than an impression of stained or painted glass in black and white delineations, seeing that so much always must depend upon the translucent brilliancy and jewel-like decorative effect of the originals, to say nothing of tone and colour, which monochrome renderings can never represent. Anyhow, Mr. Westlake has not sacrificed the character of his examples chosen for illustration by exhibiting them in a hard and mechanical way simply to secure effective blocks among the type as specimens of black and white draughtsmanship, telling enough to the superficial reader, but absolutely misleading and worthless to the professional student. The volume before us opens with an essay on painted glass in England during the sixteenth and seventeenth centuries, which includes the work of the Renaissance, or what was then called "the New Style," marking the gradual subsidence of Gothic features, and eventually developing into the degradation of the Barocco or Rococo. The ability and excellence of the artists of all periods unquestionably must be recognised in any comprehensive record of the kind, and when Mr. Westlake expresses, by way of preface, his desire to do justice to all, we accord him the credit of having accomplished with success the catholic discrimination with which he undertook his review. The names of several artists employed, both at home and abroad, during the sixteenth and following century in the production of painted glass are very useful for reference, and, although only the more distinguished designers are included, the compilation of such a list must have entailed no little labour. By no means the least interesting evidence thus introduced is that the English glass of this period ranks among the best then executed. The resemblance to foreign styles in English work is in no way surprising, it being evident that our schools were continually recruited from the Continent, as well as clear that English artists went abroad to work. The exact date of much of such work, as indeed in the earlier periods of the art, must remain a question of difficulty even among accomplished judges, seeing that the older artists still worked in the style of their youth, with only slight adaptations from the coeval schools of younger men then rising into favour. Thus at King's College, Cambridge, the glass is distinguished by a determined Renaissance character, although it was probably earlier in actual date than some of the work in St. Neots, Cornwall, and very shortly after the Late glass in the north transept at Malvern. Interweaving thus in style, it naturally follows that windows were produced which illustrate different types of detail, rendering the Renaissance work most interesting; for seldom is any striving after mere novelty allowed to assert itself, but the artistic faculty for harmonising apparently discordant features obtains the pre-eminence. Canopies were gradually abandoned, and the pictures were more frequently placed in openings without any ornamental surroundings, as at King's College, Cambridge, and in much of the work of certain French schools, though the use of accessory enrichment in Flemish, German, and Italian examples was by no means given up, and such French artists as Engrand le Prince, Jean Cousin, and Pinaigrier, uninfluenced by meretricious coeval work in their own country, rank among the foremost of their day. The figure work of this period not infrequently is gross and marked by a quasi-realism too evidently representing the artist's own models, and often very unlike the ideal which the intellect pictures of the characters depicted. The women are fat and puffy, and the men are huge-limbed as dray-horses, the refined and spiritual type by the earlier Christian artists being seldom found; the mortified look of the Mediæval and Cinque-Cento Italian representation of saints was despised and not studied at all. Notable exceptions occur, and some of these, when available, Mr. Westlake has chosen for illustration. After dealing with the draperies and the questions of profile, modelling, shadowing, chiaro-oscuro, and also the principles of composition observable in work of this period are duly described, with heraldry and pattern glazings, concluding with remarks on enamelling in various colours. Space precludes our following more fully the details thus entertainingly introduced and subsequently elaborated in the folio under notice, and we shall therefore content ourselves with a brief reference to the drawings which we have selected by way of laying before our readers in the best possible way the style of illustration which Mr. Westlake has brought together for elucidating his descriptions. The lily in its pot from the chapel of the Holy Ghost at Basingstoke is only a fragment of the beautiful work which ranked among the finest glass in the kingdom, such as that at Fairford and Canterbury. The composition, though said to be Flemish or even French in origin, is, in Mr. Westlake's judgment, most likely to be English, carrying our tradition of design from Winchester to Cambridge, where the King's "glasyers," Flower and Hone of Southwark, carried out work under Bishop Fox, who was personally interested in Lord Sandys' chapel at Basingstoke. The subjects illustrated are from the Lives of our Lord and St. Mary the Virgin, the lily pot being taken from that of the Annunciation. The date of its execution is about 1525-35. The glass is now in the windows of the parish church at Basingstoke, and was recovered from obscurity in 1869 by the vicar, Dr. Millard, from Mottisfont Abbey, where the glass had remained hidden, but safe, till Lady Mill allowed



GERMAN OR SWISS GLASS. (NOW IN TRINITY COLLEGE CHAPEL, OXFORD.)

it to be placed in its present position. The Renaissance glass in St. Mary's Church, Shrewsbury, is foreign, possibly Flemish, combining features peculiar to the Cologne school, and the figure of St. Martin with the three geese, which we illustrate, is from the "Adoration of the Magi" window, which, with the St. Bernard window, mostly in white glass, in the north aisle, is among the best to be found in this country—the figure of "Our Lady of Sorrows" in the top of the Magi window ranking among the most beautiful examples of such work which the author has ever seen Some of the smaller subjects may be German of the same type, as St. Helena from St. Mary's, Lyskirchen, Cologne, herewith illustrated in connection with the Shrewsbury example. The foot soldier bearing a banner, from Trinity College, Oxford, is a specimen of Swiss or German chamber glass in which the colour is leaded in pot-metal not enamelled. This heraldic method of decoration became the most common, and many designed in this way were most elaborate, the later examples often being marvels of enamelling. Coats of arms, picture roundels, and other subjects, enriched plain white glass, ornamentally leaded windows, as at Billing Castle, near York, in Warwick Castle, South Kensington Museum, or the Louvre. The Jesse tree windows of the sixteenth century, such as that from Mechlin now in St. George's, Hanover-square, furnish some admirable subjects in the chapter under this head, and the glass of Spain is by no means overlooked. The author finishes his work with a chapter on secular glass and plain glazing, and in a final note takes leave of his task, which he says has occupied nearly forty years to compile. In his youth it afforded recreation; its completion will leave a void like the loss of an old friend. Among his readers, however, it is not improbable that many a new friend will be secured. In modern work, which is good, consolation may be found, provided that the object which governs the making of a window is not overlooked—viz., the admission of light. Perhaps "two thirds of white glass and one third of coloured" is too great a proportion, but no doubt a simple scheme of colour insures the best effect, and at most not more than eight colours should be employed. The harmony between the glazing and its frame is another point to be insisted on, and in every case the glass used in a building should agree with it in style. Much new work complies with these conditions, and a great deal of it no doubt is very good indeed. Mr. Westlake's volumes will tend to further this standard of excellence, and make it still more general.

PRESERVATIVE PAINTING FOR METALS.

In a paper by Mr. M. P. Wood, read before the American Society of Mechanical Engineers, it is stated that graphite, mixed with pure boiled linseed-oil to which a small percentage of litharge, red lead, manganese, or other metallic salt has been added at the time of boiling to aid in its oxidation, forms a most effective paint for metallic surfaces, as well as for wood and fibre. Recent experiments with this paint applied to the surface of boiler-tubes show it to be very effective in preventing the formation of scale. Mr. Wood commends the system of requiring all iron and steel intended for structural uses to be pickled and cleansed from mill scale; declaring it to be an absolutely indispensable condition for all material of the kind intended to be preserved from rust by painting. It should then be painted two coats with pure raw linseed-oil and red lead, after which the metal will stand the weather for 50 years without further treatment. Mr. Wood gives a ready rule, deduced from his own experience, to determine the quantity of paint required to cover any structure. It is as follows: Divide the number of square feet of surface by 200, the quotient will be the number of gallons of liquid-paint required for two coats. Or, divide the area in square feet by 18, and the result is the number of pounds of pure white lead required to give three coats, where this pigment is permissible. Red-lead paint should be treated like Portland cement—applied to the work fresh, and allowed to take its initial set where it is to remain. A gallon of good red-lead paint contains 5lb. of oil and 18lb. of red lead; and it will cover, for a first coat, about 500sq.ft., and as a second coat about 600sq.ft. of surface.

BOOKS RECEIVED.

In a privately printed pamphlet on *The Relieving Arch*, Mr. W. A. Henderson discusses the theory of the Roman development of the Etruscan arch, based on recent visits to Rome, Florence, and Milan. He quotes from Professor J. H. Middleton and the late E. A. Freeman in support of his argument that the relieving arch of ancient Rome must have been a reality, and not mere surface tattooing; but complains that the majority of architectural writers have failed to adequately describe such structures as Brunelleschi's octagon, from ignorance of the structural anatomy of the relieving arch.—— *A Healthy Home*, by Francis Vacher, County Medical Officer for Cheshire, &c. (illustrated) (London, published at the office of the *Sanitary Record*, Lexham-gardens), is a little book intended as a guide to house-owners and tenants in sanitary construction and fittings. The author has given a brief summary of the sanitary requirements of a dwelling-house, a subject which he has been lecturing about at several provincial towns. The general reader will find the advice given as to site, soil, and aspect, building materials, construction, design, warming and ventilation, and sanitary appliances generally, sound and reliable. Plans and sections of labourers' cottages are given, and advice about materials and the construction of cavity walls. Sections of walls, with areas and cavities to prevent the passage of moisture, and the bond of brickwork, are illustrated; and the householder and owner of property will find in Mr. Vacher's book a variety of miscellaneous information on the points and sanitary equipments of a healthy house.—— The *Engineering Magazine*, September (London: Salisbury-court, Fleet-street), is a varied number. Mr. Dankmar Adler has a second article on "Theatre Building for American Cities," which we noticed in a recent number. Mr. Adler enters into the subject of seating, lighting of the auditorium, the colour decoration, heating and ventilating, &c. Plans and sections of several theatres are given, including the Pueblo Opera House, Grand Opera House, Chicago, the Schiller Theatre, Chicago, the Central Music Hall, of the same city. Large foyers and lobbies are recommended to insure safety and comfort; and American theatres are often deficient in these respects, as well as in dressing-room and wardrobe accommodation. Mr. Adler's remarks are worth the attention of all theatre promoters. We believe the box-office receipts would be considerably increased if the convenience and comfort of the public were more studied, instead of being subordinated to the number of people that can be crammed into the auditorium. "The Commercial Aspects of the Japan-China War," "The Richmond Electric Railway," "The Present Condition of the Panama Canal," &c., are other papers of interest.——*Notes on Docks and Dock Construction*, by C. Colson, M.Inst.C.E., with illustrations (London: Longmans, Green, and Co.), is another volume of Longmans' Civil Engineering Series, and a worthy successor to "Tidal Rivers," which we lately noticed. Mr. Colson, assistant director of works, Admiralty, does not write an exhaustive treatise on docks, but places before the student a valuable collection of notes based upon the author's observation and practice, and compiled from other sources. These "Notes on Dock Construction" will be found of considerable use and value to all engineers and others interested. The earlier chapters deal with the classes of docks, the width of basins, wharfage, jetties, tidal docks, relation of sectional area of entrance to dock area. Several examples and plans of docks are given, including the Tilbury Docks, New Tidal Docks, Southampton, the docks at Avonmouth, Hull, Cardiff, Penarth, Calais. The chapters on dams, embankments, coffer-dam construction, water on foundations, dock and quay walls, dry or graving docks, closing entrances, deposits, slipways, dredging appliances, cost of works, &c., &c., will be found of much practical value in design and the superintendence of dock works. The diagrams, plans, and sections are clear and well drawn, many of them figured from actual works.

OBITUARY.

We regret to announce the death, from gastritis, on Sunday last, at the age of 53 years, of Mr. William Topley, F.R.S., who had been for upwards of 30 years an officer of the Geological Survey. Soon after leaving the Royal School of Mines, in 1861, he became attached to the Survey, working first among the Cretaceous strata of the south-east of England, and afterwards among the Carboniferous rocks of the Northumberland coalfield. His chief literary work was a monograph on the Weald, published as a survey memoir in 1875. He also contributed many papers to the Geological Society, the Geologists' Association, the Anthropological Institute, and the Society of Arts, and leaves behind much uncompleted scientific and literary work. Mr. Topley was an authority on water questions and on agricultural geology. When the International Geological Congress met in London in 1888, he was one of the local secretaries, and he was present at the Zurich meeting of this body at the end of August last.

Mr. W. Wright Campbell, M.S.A., of the firm of Rowe, Campbell, and Spain, architects, of Vickery's Chambers, Pitt-street, Sydney, N.S.W., died on August 19, at the early age of 42 years, from an attack of influenza. Mr. Campbell was a native of Glasgow, and served his articles with Mr. William Spence, a Classic architect having a large practice both in Scotland and Ireland. Mr. Campbell afterwards entered into practice on his own account in Glasgow, and carried out several important works in that city and at Moffat and Kilmarnock. About nine years ago, owing to failing health, he emigrated to Australia, and on arriving in Sydney, he found occupation in the office of the then firm of Rowe and Green as clerk of works. His abilities were quickly recognised, and he was taken into the firm's office, and at once became their manager. Under his management Messrs. Gardner's warehouses were erected, and then followed the Centenary Hall, the A.M.B I. Buildings in Pitt-street, and the Imperial Arcade. Five years ago, when the Professorship of Architecture in the Sydney Technical College became vacant, by the resignation of Mr. Hennessy, Mr. Campbell was elected to the post by a large majority of the Board, and the appointment was more than justified by the phenomenal success attained by his pupils at South Kensington. A few months since Mr. Campbell, with Mr. Alfred Spain, joined Mr. Thomas Rowe, F.R.I.B.A., in partnership. Mr. Wright Campbell had been since 1885 a member of the Society of Architects (London), and he was a Fellow of the Institute of Architects of New South Wales and a member of the Sydney Architectural Association. He leaves a widow and two children.

The well-known explorer of the Catacombs of Rome, the Chevalier de Rossi, died at Castel-Gandolfo on Sept. 20th, at the age of 72 years. His discoveries in the catacombs not only rendered him famous, but excited much antiquarian and ecclesiological controversy; his "Inscriptiones Christianæ urbis Romæ" comprised 12,000 examples. He is best known to the British public by his "Subterranean Rome."

Mr. Launt Thompson, a well-known American sculptor, died in New York on Friday last, aged 61 years. He was born in Queen's County, Ireland, and at the age of 14 he went to America, where he studied his art under Erasmus Palmer. In 1858 he moved from Albany to New York, Here his fame as a maker of medallion portraits soon brought him numerous orders. He became an associate of the Academy of Design in 1859, and in 1862 his bust "The Trapper" secured his election as an academician. In 1868-9 he was in Rome, and from 1875 to 1881 he lived in Italy. He was vice-president of the National Academy in 1874. Among his works are "Elaine," a bust, "Morning Glory," a medallion, and portrait busts of William Cullen Bryant and of Edwin Booth as Hamlet, while his statues of prominent Americans are to be found in more than 20 American cities.

CHIPS.

The name appears in Friday's list of adjudications in bankruptcy of Charles Pinn, of Exeter, architect and surveyor.

At Rochdale, on Thursday in last week, the Right Hon. Sir J. T. Hibbert formally presented to the guardians of the poor a full-length portrait of their chairman, Alderman Schofield. It has been painted for a body of subscribers by Mr. F. W. Jackson, and will be hung in the guardians' board-room at Townhead.

The monument to the poet Shelley, which has been erected on the beach at Viareggio, was unveiled on Sunday by Signor Riccioni, President of the Executive Committee. The monument is directly facing the sea, and its total height is 15ft. The pedestal is of marble, and the bust of Shelley, by which it is surmounted, is the work of Professor Urbano Lucchesi, of Florence, and represents the poet at the age of 29. The eyes are gazing across the sea, and a pen just laid down appears from under the folds of the cloak. On the side away from the sea, encircled by intertwined branches of oak and olive, is a book bearing on its cover the word "Prometeo."

The proprietors of the Holborn Restaurant have added a new annexe to the western portion of their premises to be called the "King's Hall," and on Saturday night they gave a dinner to upwards of 600 of the workmen who had been employed in its construction. Mr. T. E. Collcutt, the architect of the new building, presided. This western block has a spacious covered entrance in Newton-street. The contractors were Messrs. Holland and Hannen, and Messrs. Maple and Co. have carried out the upholstering and furnishing.

A new gas-holder and tank have just been completed for the Gas Company at Malmesbury. The tank, resting on a solid block of concrete, 50ft. 6in. wide by 2ft. 3in. thick, is 51ft. 6in. in diameter by 16ft. deep, built above the ground level, and is made of cast-iron plates. The holder is a single lift, holding about 31,000c.ft. of gas, while the tank holds about 300,000 gallons, or 900 tons, of water.

Progress is being made with the scheme for the erection of a pleasure pier and pavilion opposite Regent-road, Morecambe, at the west end of that watering place, for which Parliamentary powers were recently obtained. At a meeting of property-owners held the other day, Mr. Littlewood, architect, Manchester, described the plans. The pier will be about 2,400ft. in length, with a pavilion 600ft. from the entrance, and approached by a covered way. The pavilion will be 90ft. in length, 50ft. in width, seat about 1,200 people, and have on each side shops. At intervals of 150ft. there will be recesses on each side of the pier, on which little covered shelters will be placed, and at the extreme end a band kiosk and seating accommodation for 400 people, in addition to refreshment-rooms, shops, and shelters. The width of the pier will be 35ft. to the pavilion, and 24ft. for the 1,500ft. beyond it. The width of the present pier is 21ft.

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ILLUSTRATIONS.

CAXTON CONVALESCENT HOME, OXTED. — CARTOONS OF ANGELS, HOLYWELL CHURCH, OXFORD.— ST. KATHARINE'S LODGE, REGENT'S PARK.—CHOIR SCREENS AND PULPIT, CROSCOMBE CHURCH, SOMERSET. — A SCOTCH SUBURBAN VILLA.—FIREPLACE AT MADRESFIELD COURT. —A CABINET IN HOLYROOD PALACE.—DINING-ROOM AT BROOKLINE.—CAMPSALL CHURCH.—LINCOLN CATHEDRAL.

Our Illustrations.

CAXTON CONVALESCENT HOME, LIMPSFIELD, SURREY.

This building, the cost of which is being defrayed by Mr. J. Passmore Edwards, the President of the institution (and the foundation stone of which will be laid to-morrow by the Lord Mayor, Sir G. R. Tyler, Bart.), is being erected for the benefit of the Printing and Allied Trades on the Chartlands Farm Estate, adjoining Limpsfield Common. The site is just below the crest of the hill, and is well sheltered from the north and east, whilst it commands a magnificent view over the broad valley below and the long range of the South Downs. The building comprises a two-storied block, with returned gabled ends, containing dayrooms and dormitories, &c., for 50 patients (men only), with one-storied extensions in the rear for administrative offices, &c. Advantage has been taken of the quick fall in the ground from north to south to construct a basement at the south end of the main block to contain, besides large cellarage, a smoking or billiard-room, with cloak-room and lavatories. The patients' general entrance is also on this floor. Provision is made for the construction in future of a number of additional rooms in the roof of the building to accommodate 22 beds. A small bedroom is provided in the tower below the cistern chamber and above the latter a "sun" room, lighted on all sides. The dormitories allow a minimum of 750c.ft. for each patient, and special care has been taken to secure ample light and ventilation to all parts. All rooms are provided with open fires, and the corridors, &c., will be heated by low-pressure hot-water pipes. The external walls generally will be faced with red bricks relieved with Bath-stone dressings, the upper story being hung with red plain tiles. The roofs will be covered with brindled plain tiles. It is only proposed at present to erect the centre portion of the building, to accommodate twelve patients, and the cost of this work will be defrayed entirely by Mr. J. Passmore Edwards, the President of the institution. The foundations of the whole building are being carried out by Mr. R. Durtnell, builder, of Brasted, Kent, under the direction of the architect, Mr. A. Saxon Snell, F.R.I.B.A. The clerk of works is Mr. A. S. Brighty.

CARTOONS OF ANGELS, HOLYWELL CHURCH, OXFORD.

These paintings have been executed in Holywell Church, Oxford, above the chancel arch. They are executed in tempera on the plaster face of the wall. The central group consists of the "Rood," with St. John and St. Mary, and on either side are figures of angels. The work was carried out last year, when the new clerestory windows were placed in the south aisle, the architect being Mr. E. P. Warren. Holywell church is situated somewhat in a sequestered position, so that few sightseers visiting the University City are aware of the work which has been done in the building. It is intended to decorate the west wall of the church in harmony with the other work which Mr. Hallward has so well carried out.

ST. KATHARINE'S LODGE, REGENT'S PARK.

Our illustration shows the alterations and additions recently carried out for Mr. C. Brinsley Marlay, under the directions of Messrs. Lee and Pain, of No. 63, Lincoln's-inn Fields, architects, by Messrs. W. Longmire and Co., and Messrs. Bush and Son, builders. The additions comprise a new wing shown on the left of the illustration, with new oriel window, and the works include the entire renewal of the stonework and partial underpinning of the house and the rebuilding of the stables, &c. The original house was built about 60 years back from the designs of the late Ambrose Poynter, architect, together with the church and almshouses opposite, when he replaced the buildings of St. Katharine's Hospital, removed for the construction of the St. Katharine's Docks.

CROSCOMBE CHURCH PULPIT AND CHANCEL SCREENS.

Last week we gave some notes descriptive of the collection of Architectural Photographs by Mr. John L. Robinson, R.H.A., now on view at the Royal Architectural Museum, Westminster, from Wells and the neighbouring country in Somersetshire. To-day we reproduce from this exhibition two specimens of his skill in illustration of the uncommonly rich and refined Renaissance woodwork from Croscombe Church, near Shepton Mallet. We gave a view of the interior of the building in our pages for August 10th last, and measured drawings both of the pulpit, with its ornate sounding-board tester canopy, and of the screen in front of the chancel, will be found in the Building News for July 26 and Sept. 27, 1889.

A SCOTCH SUBURBAN VILLA.

Mr. David B. Burnie is the architect of this villa. No further particulars have reached us in response to our usual invitation.

FIREPLACE AT MADRESFIELD COURT.

This fireplace was designed in such a way as to utilise three pairs of rare antique marble and granite columns, brought from abroad by a former Earl Beauchamp. The woodwork portions are of walnut, carved by Mr. H. H. Martyn, of Cheltenham, and the whole was made from full-size drawings prepared by the architect, Mr. J. S. Alder, of Palmerston-buildings, Old Broad-street, E.C. The fireplace is in the new staircase gallery and library, adjoining the great drawing-room of Madresfield Court, near Worcester, the seat of Earl Beauchamp.

INLAID CABINET AT HOLYROOD PALACE (R.I.B.A. PUGIN STUDENTSHIP DRAWINGS).

This is a beautiful and quaint example of inlaid work, in which the usual foliated patterns of the period are varied with a conventional treatment of landscape in the larger panels. The variety of woods and the skill displayed in their selection are manifest, and by these means the drawing in the design is greatly enhanced. The graining also assists the expression of the design, while the quality of the material shows the maker of the piece to have been a master of his craft. It is probably of Dutch manufacture, though in its delicate mouldings it has a strong similarity to the Scottish examples of this date (Late 16th century); but in these the inlay is usually much simpler, and plays a more subordinate part. J. J. Joass.

DINING-ROOM, BROOKLINE, MASS.

This characteristic interior from America, drawn by Mr. Thomas M. James, of Boston, illustrates the dining-room of Mr. J. H. Gibbs' house at Brookline, designed by Mr. Eugene L. Clark, the architect of the building. The window-opening over the buffet-like recess in the long side of the apartment indicates a somewhat unusual arrangement, probably contrived to insure a view. The cabinet fitments and recessed cupboards and drawers on either hand of the fireplace seem arranged with the object of convenience, and they take their place in harmony with the general treatment of the room. Our sketch is borrowed from the *American Architect*.

CAMPSALL CHURCH.

Between Doncaster and Pontefract, in a most delightful village, stands this remarkable church. The lofty Norman tower, with its rich doorway (and Flemish ironwork thereon) and pretty grouping of belfry windows, is particularly interesting. The church on plan has two aisles and north and south transepts, and a room over the west end of south aisle, which is rather unique. Stones denoting the graves of Knights Templar are to be seen in the church.

R. A. Easdale, A.R.I.B.A.

LINCOLN CATHEDRAL CENTRAL TOWER, ETC.

The central tower was rebuilt, having fallen down about the year 1237 A.D., during the time of Bishop Grosseteste, who carried it up to the height of the two lower stages in the purest of Early English Gothic. The upper story, begun in 1307, under Bishop Dalderby, and finished in 1311, is of extremely rich Late Decorated work. The present open battlement was erected by Essex in 1775 A.D. To William de Blois, 1203-9 A.D., is attributed the west side of the great transept and the Galilee porch. The nave was continued by his successor, Hugh de Wells, who also erected part of the west front. Chas. H. Holden.

CHIPS.

The new Roman Catholic church which has been erected on a commanding site in Penydarren Park, near the entrance to Brecon-road, Merthyr, was opened on Thursday in last week.

The Bishop of Manchester consecrated on September 27th Christ Church, Westham, in the parish of Kirkham. The edifice is built of brick, with Runcorn stone dressings, and has been erected at a cost of £3,000. There is seating accommodation for 300 worshippers.

The new schools erected in connection with All Saints' Church, Wolverhampton, were dedicated last week by the Bishop of Shrewsbury. The site for the schools was given by Lord Barnard, and the buildings will increase the accommodation for nearly 1,000 children. The contract was carried out by Mr. H. Gough, from the plans of Messrs. Veall and Son.

Mr. Rienzi Walton, C.E., held a Local Government Board inquiry at the town hall, Crewe, on Friday, with respect to the application of the Crewe Town Council to borrow £8,377 for purposes of street improvement, £500 for the erection of lamp columns, £150 for department and market purposes, and £2,500 for the making and improvement of Minshull New-road. Mr. G. Eaton-Shore (borough surveyor) explained the proposals.

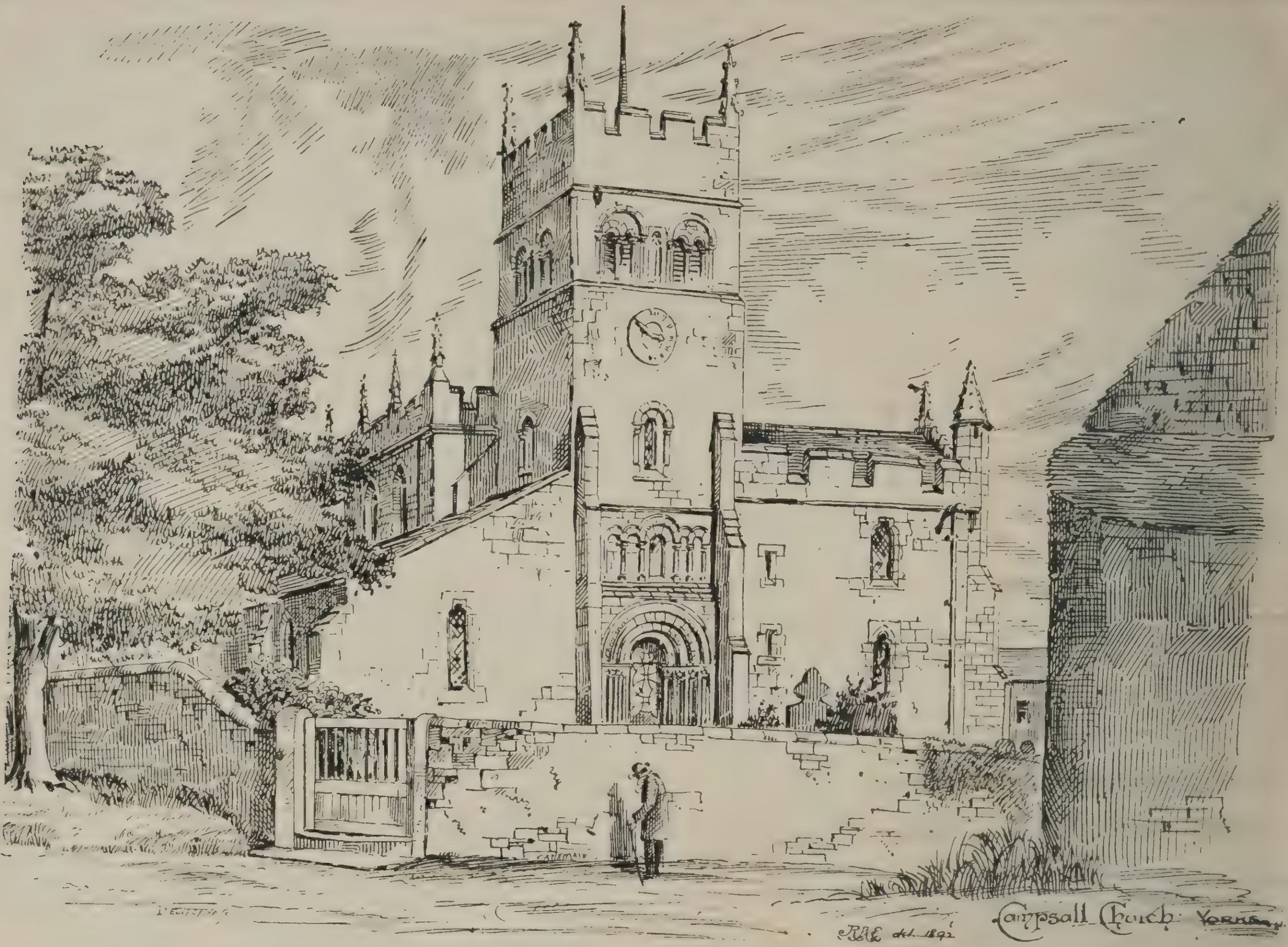
A portrait by Hoppner has lately been added to the Louvre, as well as a landscape attributed to Louis Moreau, a portrait of a man by Cranach, a Flemish picture of the 16th century representing the Virgin seated on the ground with the dead Christ upon her knees, and drawings by Monnier and L. Boivin.

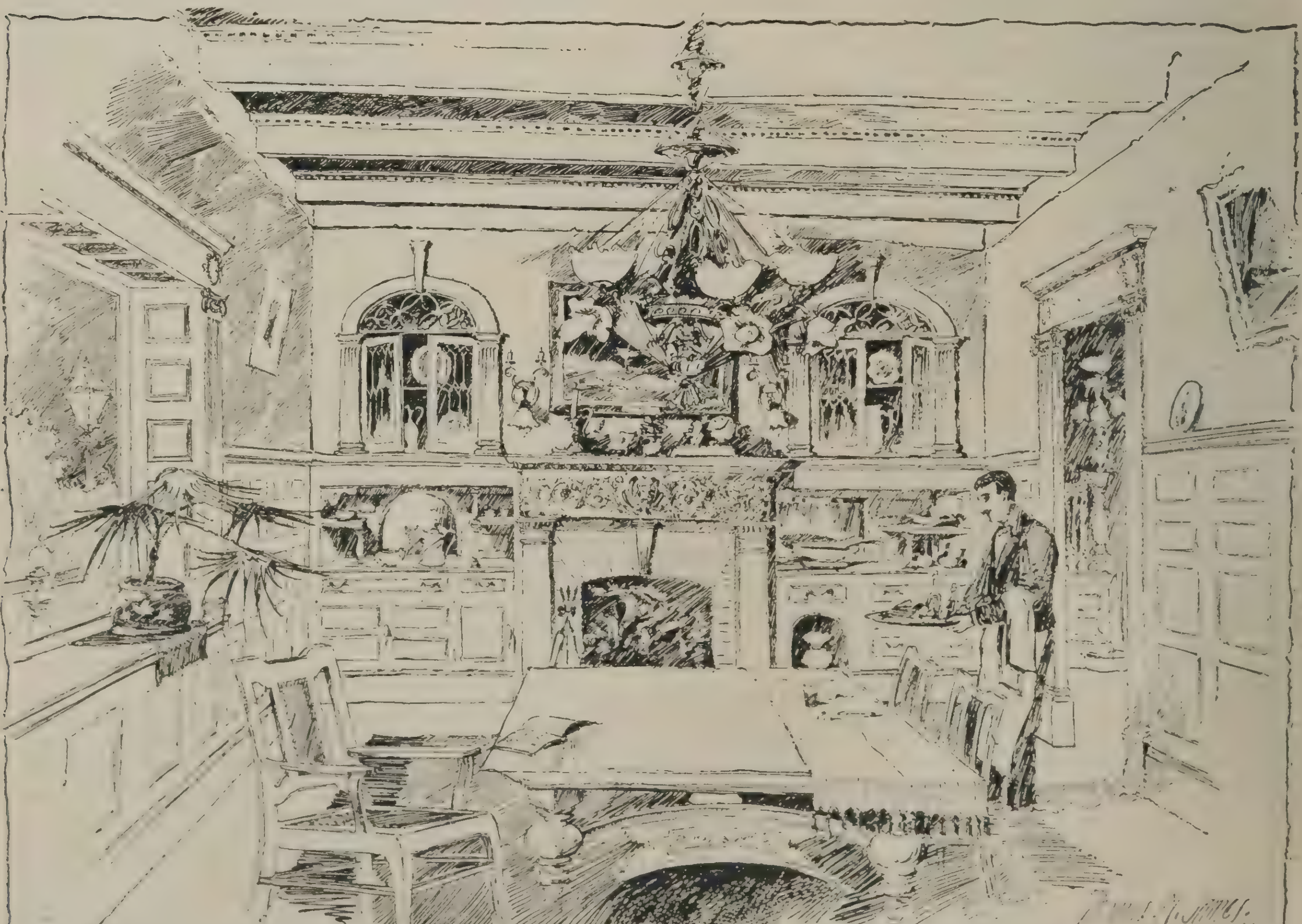
The memorials to the late Professor Jowett will take the forms of a life-size bust (for which Mr. Hope Pinker has been commissioned, and to be placed in the Bodleian Library) and a monument, to be erected in the chapel added to Balliol College many years since from Mr. Butterfield's designs.

On Thursday in last week the Bishop of Southwell consecrated the new chancel of the restored church of the Holy Rood at Edwalton. The work has been carried out from the designs and under the superintendence of Mr. Arthur W. Brewill, of Nottingham. A double-page illustration was given in the Building News for June 23, 1893, showing the old church and the restored fabric, with plan.

The subscriptions towards the rebuilding of the Swansea parish church at a cost of £24,000 now amount to £7,075, and the vicar announces that this, with £2,000 which he himself will lend and £4,500 which he and Sir John Llewelyn have guaranteed, will bring the funds up to such an amount that as soon as £425 more has been subscribed the work will begin.

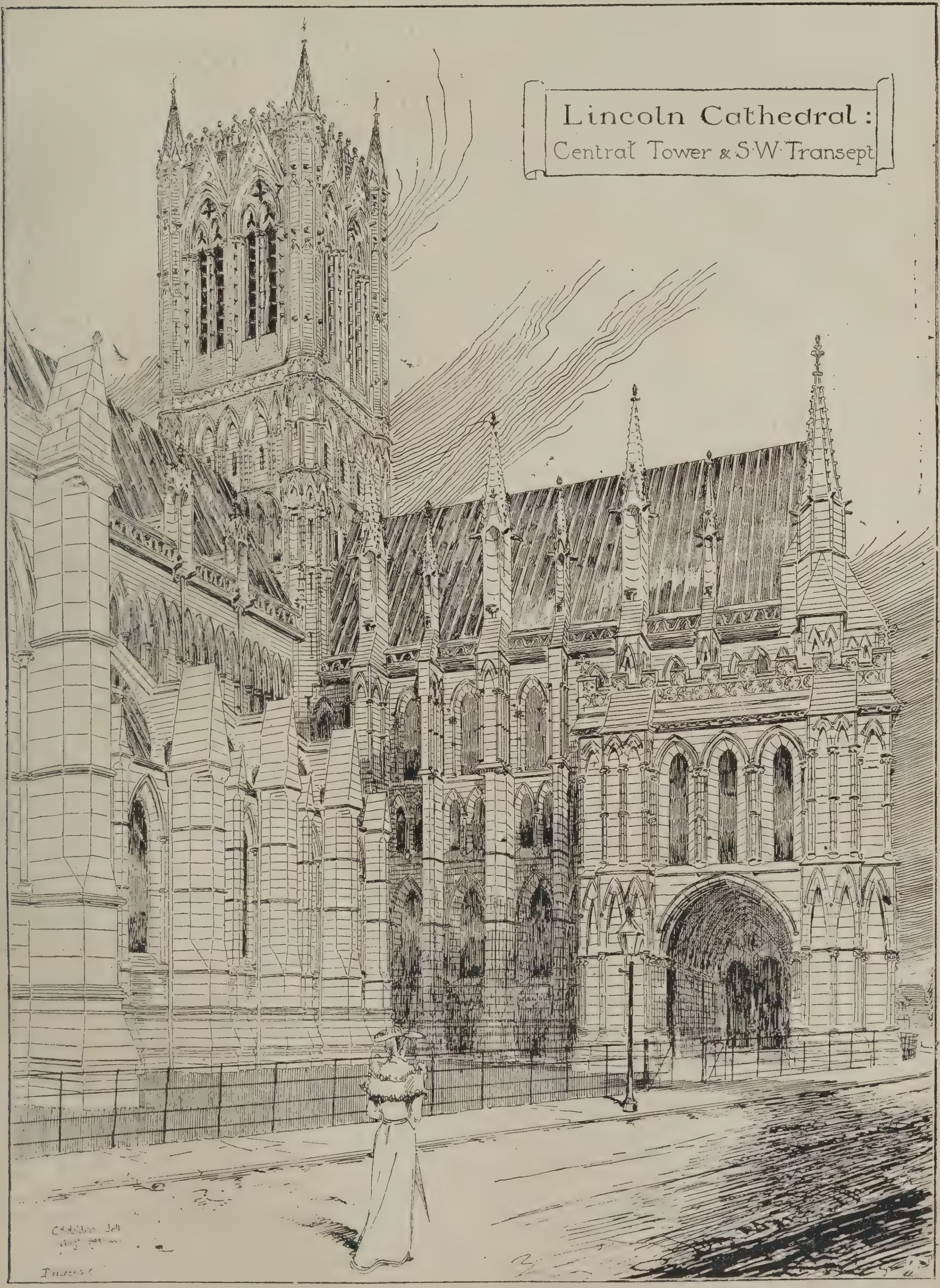
At the Quarterly Court of the Plumbers' Company, held at Guildhall on Saturday, the Master (Alderman Sir Stuart Knill) took the oath as Master on his re-election to office for the ensuing year, and Sir Philip Magnus and Mr. Philip Wilkinson were sworn into the offices of Warden and Renter Warden respectively. A return was presented of the examinations held by the company under their syllabus of practical and theoretical instruction for plumbers, showing that the examinations for the current year had been held at 24 centres in the United Kingdom, and that the percentage of passes in the preliminary grade of the examination was 30, as compared with 49 in the previous year; and the passes in the intermediate examination were 30 per cent., as compared with 63 per cent. in 1893.





DINING-ROOM IN THE HOUSE OF J. H. GIBBS, BROOKLINE, MASS.

EUGENE L. CLARK, Architect.


Lincoln Cathedral :
Central Tower & S·W·Transept

WAYSIDE NOTES.

It was a kindly thought of the proprietors of the Holborn Restaurant to inaugurate their magnificent new "King's Hall" by a "house-warming" to the workmen engaged on its construction, between five and six hundred of whom were sumptuously regaled at a banquet therein last Saturday night. The new "King's Hall" has four entrances and exits from Newton-street, Holborn, and a covered way along the whole of its passage for the accommodation of guests. Fitted throughout with every modern refinement, it is certainly, architecturally, one of the grandest rooms in London for its purposes, and its formal inauguration on the 10th inst. will be a feature of the season. The spirited enterprise of Mr. F. Gordon, of the Hotel Syndicate, has been ably seconded by the admirable administrative ability of Mr. T. J. Hamp, the managing director, and the artistic instincts of Mr. T. E. Colcutt, the architect, and the result is one of which the proprietors may be proud, and the general public are to be congratulated. As Mr. Colcutt, who occupied the chair last Saturday night, remarked, good workmanship has been encouraged in every department, and the outcome is equally creditable to the genius of the architect, the enterprise of the proprietors, and the conscientious skill of the craftsman.

The maiden effort of the committee who organised the Photographic Salon in the Old Dudley Gallery last autumn was so far a success, that the second exhibition has just been opened to the public, and I think the promoters are to be congratulated on the character and artistic merit which the gathering certainly maintains. Whether, however, many of the exhibits illustrate the legitimate aims of the photographic art without exceeding its more strictly defined limitations, must remain an open question upon which very few people are likely to agree. I for one cannot help thinking many of the pictures are by far too much manipulated to deserve approval, either as pictures or as honest productions of the camera. The "impressionist" school, which makes its home year by year in the same gallery, seems to have impressed the type of work most in favour in this ingeniously-designated "Photographic Salon."

"The flexibility and range of adaptability of photography, in contradistinction to the attributes of mechanical accuracy and subservience to scientific fact," in rather "tall" official language expresses the ideas which govern the end in view of those who have brought about these pictorial displays with an idea of illustrating the powers of the camera as a personal art. The more serious and meritorious efforts, resulting from this worthy endeavour, to my mind encroach too evidently on the results insured only by the pencil of the water-colour painter to deserve unqualified commendation. Mr. H. P. Robinson's series of prints, however, are no doubt most admirable, as in "The Storm Clearing Off," though its companion, "Ready for the Collier, Morning," is an ugly subject, only remarkable for the sky effects embodied in the picture. Mr. Ralph Robinson's print well realises its name, the "Foggy Thames," and the chill of the air is more than suggested by his "Frozen Out" scene. This effect is due rather to the incidents in the picture, which a rough sketch would, I fancy, have far better depicted than this elaborated photogram.

Colonel Gale never seems to outreach the restrictions of true photography. I hardly know which of his five exhibits please me most. "A Corner of a Surrey Common," anyway, is a pretty piece, well representing his good taste in the choice of subject and his personal style. Mr. Craig Annan is chiefly interesting because of his selections for his camera records. "A Veronese Vineyard" and "A Lombardy Pastoral" among his landscapes, and "The White Friars," one of his subject pictures, seem deserving of mention. The Macaque Monkeys, "Companions in Arms," by Mr. Gambier Bolton, like his "Martial Hawk Eagle," are "Zoo" studies, at once true to nature and to the photographic art, without any tricks and unworthy manipulations.

The silhouettes by Mr. Rowland Briant degrade photography to the level of shadow profiles, such as our grandparents had cut out of themselves in black paper, relieved by gilding. Surely the committee do not wish this sort of thing revived by the "flexibility" of the camera? Among the good portraits—and there are many in the gallery—is one by Mr. Ralph Robinson of Mr. G. F. Watts, R.A., and two or three child studies by Mr. H. H. H. Cameron; but the nude study by Mr. J. S. Bergheim, from Vienna, entitled "The Penitent Magdalene," is ungraceful, and postured too much after the fashion of an "Old Master," without success. Mr. F. E. Evans sends a well-lighted photograph of that over-belauded eccentric draughtsman, Mr. Aubrey Beardsley, who, with an "Emma" fringe to his hair, has posed his head in the most ungainly attitude with a view, of course, of being peculiar, and in order to gain notice by braggart "side." The most novel work in the gallery hangs in the doorway. It is an intaglio of a handsome boy's head in profile, done in plaster by Mr. Cameron, under the misleading title of Photo-Sculpture. As a photogravure it has undoubted merit, and hung well with regard to the light, the features are rendered with singular luminosity.

Mr. Buggins is going to join the Liberty and Property Defence League. The interference of magistrates is becoming intolerable. Mr. Charles Marsh, builder, was told that his work was unsatisfactory, and that his mortar was mixed with mould instead of sand. Whereupon Mr. Marsh defied the authorities and their representative to interfere with him, as he had "purchased the land," and could erect what buildings he liked on it. The consequence was a summons to appear before the magistrate at the West London Police-court. There the whole matter was made public, with the result that the offender was heavily fined, with an alternative of three months' imprisonment. Even in court Mr. Marsh could not understand why he could not build in any way he liked. His wife was even more indignant that disconnected drains, bad mortar, and plans which had not received official sanction should meet with any objection on the part of the local board.

This is the period of the year when, since the tourist is abroad, and presumably interested in the antiquities of the district he visits, appeals are widely distributed for funds to continue the excavation of Roman sites. Mr. J. C. Kenward, F.S.A., of Birmingham, is asking for aid in opening out the Romano-British city of Uriconium, near Wroxeter, Salop. Little or nothing has been done with the spade there for the past twenty years, although Uriconium was no mean city. The walls have been traced in a circuit of at least three miles, and it is known that the remains of numerous buildings lie within their area. Throughout the last century and in the earlier part of the present desultory researches were occasionally made around a fragment of the old wall, which has stood above ground for 1,500 years. But it was only in 1859 that a serious and systematic exploration was begun, under the direction of the late Mr. Thomas Wright, and with the concurrence of the Duke of Cleveland. The basilica was then discovered and a portion of the public baths. The extramural cemetery was traced. Human bones, pottery in various styles, coins, and implements were unearthed in abundance. Mr. Wright's valuable book and the Shrewsbury Museum contain ample records of these excavations and of the results. But funds ceased to come in, and the greater part of the small uncovered area had to be restored to its agricultural level. Since then the work of exploration has been almost wholly neglected, and the preservation of what has been excavated is very imperfect.

Then the vicar of Cardiff asks also for "several hundreds of pounds" to continue the excavation of a Roman villa on the Ely Racecourse near Cardiff. The villa was discovered by Mr. John Storrie, late curator of the Cardiff Museum, who has been engaged for the past two months in conducting preliminary excavations on behalf of the Cardiff Naturalists' Society. The articles discovered are of the usual class for a site dwelt upon in pre-historic, British, and Roman days, including flint arrow-heads, large quantities of tesseræ, fragments of Samian ware and black pottery, a considerable quantity of coloured and figured wall-plaster, Roman coins of various dates, fibulæ, and broken glass.

Rather a happy description of the effects of river pollution was given at the Sanitary Congress at Liverpool on Friday by Mr. W. Spinks, the lecturer on sanitary engineering at the Yorkshire College, Leeds. He asserted that the Mersey and its tributaries are "a sort of cross between a sewer and an ashpit." The remedies he suggested for the blocking up of streams by refuse were of an heroic character, and included the paving of the entire bed of a river, so as to form an inverted channel during the dry weather flow—a pleasing prospect this for the dwellers on the banks of the said streams, but hardly so attractive to the contributory ratepayers.

As I anticipated, the alarmist paragraphs concerning the impending failure of the water supply to Leicester, which have filled the big-gooseberry void in the daily papers during the past fortnight, have much exaggerated the facts, although they had a substratum of truth. Owing to a diminished rainfall for the past three years, the reservoirs at Leicester have, the Chairman of the Corporation Water Committee states, had a severe strain placed upon them. The storage capacity of the present Leicester reservoirs is 889,000,000 gallons of water, and at the average consumption of 17 gallons per head of the population, is capable of supplying a population of 235,000 persons. The population at present supplied with water is estimated to be 206,480. In 1890 the corporation obtained Parliamentary powers to acquire land and raise capital for the supply of water from another watershed, and the construction of an additional storage reservoir capable of holding 550,000,000 gallons, estimated to supply a population of 100,000 persons. These works are in course of construction, and when completed the corporation will have, with an average rainfall, a water supply equal to the demand of a population of over 300,000. The rainfall of the district has, however, fallen from an annual average of 28in. to under 22in. in 1893, and in the present year, to the present date, about 15½in., of which less than one inch fell in September.

The Leicester corporation took steps in the autumn of last year to obtain an auxiliary supply of about 400,000 gallons per day from a spring near one of the large collieries situated about 12 miles from Leicester. This supply has been pumped into one of the storage reservoirs since the end of December last. In addition to this, water from additional springs upon the site of the new reservoir has been pumped into one of the reservoirs since May last. The present stock in the reservoirs amounts to 109,000,000 gallons, and the corporation engineers and the medical officer of health feel there would be no danger to public health in bringing that water down a further 20,000,000 or 30,000,000 gallons from each reservoir. In addition to this, arrangements have been made with the owners of four large mills who have deep wells, the average depth of which is 175ft., and they have consented to the corporation taking from these wells all the water they can spare. This water, which is very hard, will be added to the supplies from the reservoirs, and is expected to yield 500,000 gallons per day. The engineers of the corporation are also sinking two deep shafts, and water from this source is also expected soon to be available for the use of the town. It is evident that, although at present economy has to be used, Leicester has no permanent cause for anxiety as to its water supply.

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The new school built by the London School Board at Shepherd's Bush was formally opened on Tuesday week by Mr. J. R. Diggle, the Chairman of the Board. The building, which will accommodate 474 children, has been erected at a cost of £5,871.

New National schools, Church-walk, Northwich, were opened on Wednesday. They are Gothic in style, and are constructed of brick with red sandstone dressings. The central hall is 48ft. by 33ft., and is flanked by four classrooms, each 24ft. square, while a fifth classroom is 34ft. by 12ft. Accommodation is provided for 420 boys, and the cost has been over £4,000. Mr. M. K. Ellerton, of Northwich, was the architect, and Mr. W. Molyneux, of the same town, the builder.

New carved oak stalls on an oak platform have just been substituted for the deal ones in the chancel of All Saints' Church, Okehampton. Besides the priests' desks and seats, provision is made on either side for six singing men and seven boys. These additions to the church (built originally in 1261, rebuilt in the 15th century, and after total destruction by fire—save the tower—in 1842, again rebuilt from the late Mr. John Hayward's, of Exeter, designs the year after), have been carried out by Messrs. Harry Hems and Sons, of Exeter.

SPECIFICATION WRITING.—II.*

(*Continued from p.* 450.)

BRICKLAYER.—[REFER TO GENERAL CLAUSES.]

Who supplies scaffold? who furnishes water?

Bricks:—For cellar, piers, facing, backing, footings.

What kind and colour? any particular make? how laid? what kind of mortar? If for footings, width, number of courses; what racking?

Bonding:—Old English? Flemish? behind facing? every fifth course headers?

Moulded-bricks:—Make, colour, kind. Catalogue number. Specify all inside and outside returns. Any lead-covering on moulded bricks?

Building-in blocks, strips, frames.

Levelling for joists, sills, frames, heads, plates.

Chases for pipes, flues, posts.

Arches:—Flat, semicircular, arch-head, elliptical, segmental.

Bricks ground or moulded?

Mortar:—Cement?—what kind? with sand? what proportion?

Cement tests:—Boiling, tensile, compression—what fineness? what mesh?

Lime-mortar:—What lime, if any preference? what sand? what proportion?

Coloured mortar:—What colour? any particular make of colour?

Trimmer hearths. Ash-pits. Foundation for range. Bricking of heater.

Fireplaces:—Backs and sides; what kind? state price; any dampers?

Inside hearths; what kind? specify round hole and plate.

Outside hearth; what kind? name price. Omit place in other trade?

Brick finish on face of chimney breast? what brick?

Any porch-piers? columns? any special chimneys? any brick-pavements?

Walls to be built from outside scaffold or overhead from trestles?

Clean walls; oil walls?

Cisterns:—Brick? cemented? man-holes, covers; padlocks? guarantee tightness.

Any fireproofing:—Hollow tile; porous terracotta? brick arches?

Specify sizes.

Any damp-proofing:—Inside furring bricks?

Any damp-proof under walls—asphalt? slate in cement?

Terracotta:—Name of maker; specify parts to be terracotta. Specify straightness, colour, even shade, square joints.

Modelling. Omit? name price?

Old material:—Clean and pile? use headers and bats? to be contractor's? owner's? re-used, or carted away?

Wet bricks before using; how?

Any joist-hangers or sockets? if so, notify bricklayer to build in.

Underpinning, see "Mason."

MOSAIC FLOORS AND WAINSCOT.—[REFER TO GENERAL CLAUSES.]

Name price per foot.

Specify kind and pattern.

Marble wainscot? floors? kind? thickness? finish?

Other marble-work, if any.

Tile hearths? facings? Name price per foot set. Floors, wainscot—mosaic?

CEMENT FLOORS AND PAVMENTS.

Specify method; thickness; who fills to cement level?

Name kind:—Granolithic? metallithic? any other make? require guarantee.

CARPENTER.—[REFER TO GENERAL CLAUSES.]

Does carpenter superintend work? give sizes, heights, &c., from drawings.

Who supplies scaffold for mason? for bricklayer? centres for arches? strips for furring? blocks for finish?

Joists:—Kind, sizes, backing and lining, where used? Porch?

Framing-hangers, double-trimmers, headers, double under partitions.

Framing for hearths, flues, stairways, lifts, skylights.

Bridging, kind; how often? what sizes?

Any hangers or sockets? what kind? whose make?

Joists adzed for tile-floor or mosaic?

Floor cut-in for tile-flooring or mosaic?

Girders:—Kind, sizes; bolted or spiked? framed level? or under joists? cleated?

Mill-construction: — Sizes of beams, material, plank-foor, splined.

Top floor: under-flooring specification.

Posts:— Rough? turned? What kind? any bolsters? any brackets or struts?

Studs:—Material, sizes, double at corners? at openings? Pockets for sliding-doors, line them?

Studs at corners of building:—Material, sizes, braced, what kind?

Heads to partitions? Sizes.

Sill:—Sizes, material, bed in mortar; bolted to wall?

Girts:—Sizes, material; let into studs?

Plate:—Sizes, material.

Sheathing:—Material, thickness; surfaced? matched? laid diagonally?

Sheathing paper:—Kind, trade, thickness.

Rafters:—Sizes, material, framing. Outlookers? rafter-ends cut to shape?

Trusses:—Describe fully with all rods, bolts, plates, shoes, &c.

Purlins, valley-rafters, hips:—Sizes, materials.

Roof covering:—Sheathing, same as above. Paper: kind, trade-thickness. Shingles: lengths, widths, weathering, quality; trade-terms? shapes?

Gutter-strips:—Size; iron-brackets screwed on?

Eaves-troughs:—See "Tinner."

Rough framing for cupolas, ventilators, trap-doors, cellarways, stair-horsings, porch-floors: sizes, material.

Rough doors:—Cellarway, trap-doors, thickness; dressed? matched? battened? hinged? fastenings?

Flooring:—Material, quality, thickness.

Kind: combsawed? blind-nailed? face-nailed? width; matched? scraped? planed-off all over? joints struck? put down after plastering: screwed down over pipes and wires.

Rough-floor under: kind, thickness, diagonal?

Ceilings:—Walls, lined? air-shafts, well-holes, elevator-shafts, dumb-waiter shafts, lined or cased? material; quality; beaded? matched? moulded? panelled?

Stalls:—Material; posts, turned? material. Loose boxes? standing stalls? wood-carpet? parquetry?

MILLWORK (IN CARPENTER).

Cupolas, ventilators. Mouldings, posts, caps, louvres, finials, rails, balusters, cornices.

Box-frames:—Plank-front? reveal; solid heads? jib-heads? yellow-pine sills, parting-strips, sash-beads; veneers on box-faces?

Twin frames; triple frames; double-hung weights.

Outside shutters? outside blinds? thickness, material, hinges, all hardware.

Inside blinds? thickness, material, panelled? rolling-slats? hinges; all hardware.

Rolling-blinds? kind, material; look out for pockets.

Casement-frames:—Thickness; moulded? transoms?

Sashes:—Sizes, material; any jib-head sash?

How hung: with hinges? lead-weights? iron-weights? sash-balances? brass tape? bronze chain? cords?

How fastened? look out for right kind.

Fly-screens:—What make? special? thickness, kind of wire.

Inside-sills:—Kind, material; moulded?

Aprons:—Kind, material; moulded?

Architraves, plain? with band? with cap? Material: any variation through building?

Washboards, sizes, size of cap. Sub, sizes, if any. Material: any variation through building?

Jamb-casings, head-linings: material, plain? moulded?

Rebate-strips? sizes, material.

Boards for pipes:—Material; moulded?

Casing over chases for pipes:—Panelled? screwed; brass-screws?

Shelving:—Material.

Pin-rails:—Material; hooks? wooden pins?

Dressers:—Pantry: with glass doors? panelled doors? hardware; material.

Kitchen: Material, hardware; drawers? cupboards under?

Drain-boards:—Material.

Porches:—Describe fully: mouldings? turnings? brackets? carving? lump sum? name carver? omit? contractor to supply material for carving?

Front-door:—Frame: size, material; panelled-jambs? Transom? moulded? transom sash: thickness, pivoted? hinged? fixed? all hardware.

Doors: thickness, material, moulded? panelled? with glass? double? single? Dutch? [if Dutch, look out]. All hardware? If hardwood, veneered.

Vestibule-doors:—Side-lights? fixed? sash? thickness. Transom, moulded? Transom sash: thickness, pivoted? hinged? fixed? all hardware.

Doors: thickness, material; same as front door? for glass? all hardware. If hardwood, veneered.

Inside-doors hung:—Thickness, material, number of panels; moulded? all hardware.

Closet-doors, same? all hardware. If hardwood, veneered.

Sliding-doors:—Thickness, material, number of panels; double or single? astragal or rebate joint? with edge strips? all hardware. If hardwood, veneered.

Doors to water-closets:—Slat? panelled? short? spring-hinges? all hardware.

Doors to shower-baths:—Slat? panelled? short? spring-hinges? all hardware; material.

Wainscot:—Thickness; mouldings? panels? note carving, if any.

Outside-steps: — Framing, material, moulding, setting.

Cornices, Pediments:—Material, quality, mouldings, brackets; any carving? lump sum? omit?

Stairways:—Back stairs: treads, nosed, risers, string, housings; open string? rail, balusters, posts, mouldings.

Main stairs: lump sum? without horses? without finishing?

Water-troughs: — Material, ploughed-joints? white-leaded? straining-rods?

Feed-bins:—Material; zinc-lined?

Mantels:—Price fixed? omitted?

Elevator-screens:—Material.

Dumb-waiters:—Kind, make; price allowed? omitted?

Sliding sash-partions. Pulpits. Altar. Altar-rails. Pews. Benches. Vestment-lockers. Choir-lockers. Reredos. Hotel-counters. Desks. Bank-partitions. Bank-counters. Counters. Store-fixtures. Show-cases. Bookcases. China-closets. Harness-closets. Picture-mouldings. Ceiling-beams. Panelling. Does carpenter close-in openings with muslin in cold weather before glazing?

PLUMBER.—[REFER TO GENERAL CLAUSES.]

Permits. Sewer-connections. Board of Health rules.

Drain-pipe:—Jointing, cement, sizes, kind; for soil; for rain-conductors.

Is drainage to city sewer? well? flush-tank? who digs? where?

Is drainage Waring's system? done by patentee or plumber?

Soil-pipe:—Size, weight, trade weight or mark; ccated? all fittings; trap, running-trap, clean-out, lead-joints; carry soil-pipes through roof; any anti-siphon pipes? test soil-pipes to 3lb. pressure.

Supply-pipe from main:—Materials, size, joints—wiped if lead, screw if iron galvanised; stop-and-waste; pave wash; if lead-pipe give weight per foot.

Supply-pipes in house:—Sizes, materials, to each fixture; lateral runs below floors; stops-and-wastes on rising branches; tags on faucets; boiler-connection, hot-water-supply, proper supports, brass-ferrules for lead connections, wiped-joints on lead pipe. Pipes exposed? if so, nickel, or bronzed?

Tank:—Wood? cedar, size or number of gallons; number hoops; iron? painted? galvanised? size, number of gallons; overflow; drain, where to? stop on drain-pipe.

Safety-tray:—Lead? zinc? number pounds to foot; waste from same to cellar-floor? to outside building?

Waste-pipes:—Material, sizes; when exposed, nickel-plated brass? lead? give weight; galvanised-iron? cast-iron coated? give trade weight; carry waste through roof, anti-siphon pipes? does waste join soil-pipe? any grease-traps?—brick or at fixture? does waste run separate to well? to sewer?

Traps:—On all fixtures; what kind—"Bennor?" "Cudell?" "Puro?" "Bower?" brass? lead?

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* A lecture delivered before the Architectural Department of the University of Pennsylvania, by Mr. T. Roney Williamson, Architect.

Fixtures :—Give catalogue page and numbers if possible, and how many of each.

Water-closets :—Include seat and lid? cistern? marble under water-closet?

Bath-tub :—Cased? splashboard? what kind? marble under? what waste? what faucets? sprinkler? silver or nickel?

Washstands :—Iron? marble? exposed? apron, brackets or legs? bowl—oval? round? size; decorated? plain? waste fixture, what kind—silver-plated? nickel? faucets—what make, silver or nickel?

Hip-bath ?—What kind? silver or nickel trimmings?

Shower-bath :—What kind? silver or nickel trimmings?

Pantry-sink :—Porcelain? copper? enamelled-iron? exposed? kind of faucets; make; silver? nickel? brass?

Kitchen-sink :—Size, kind, make, legs? brackets? back? faucets, kind, make; brass?

Stationary wash-trays :—What kind—soapstone? enamelled-iron? porcelain? wood? indurated fibre? with lids? what wood? what faucets—brass?

Urinals :—What kind? make? with marble or slate backs, floors, sides? Automatic, or with faucets? Waste from floors.

Slop-sinks :—Galvanised? painted? enamelled? porcelain?

Any marble or slate inclosures for water-closets? marble floors?

Do washstands stand in rows? marble tops jointed or in one?

Are shower-baths inclosed in marble or slate partitions?

Circulating-boiler :—What make? self-cleaning? on stand? on wall? waste; sediment-cock; galvanised-iron? copper? copper connections? galvanised-iron connections?

Range :—Stationary; who sets? portable? slate-bottom? slate-hearth? zinc-hearth? plate-warmers?

Hotel-fixtures ;—Broilers, boilers, steam-cookers, plate-washers, mangle, washing-machines, hot-tables?

Gas-piping :—Permits. Comply with Gas Company's rules and regulations. Test system. Cap outlets. Pipe to grade to meter connection; stop-and-waste. No drops in pipe to outlets. No cutting of joists at greater distance than one foot from bearing. Measure for all outlets to centre of ceilings or heights and position on walls. No pipe smaller than ½in. Specify sizes of mains and branches. Are pipes to be exposed?

Any hot-water heaters :—Who supplies? who connects—heater-contractor? or plumber?

Any stable? bell-traps, stalls, gutters.

Hydrants with stop-and-waste below frost?

TINNER.—[REFER TO GENERAL CLAUSES.]

Roofing :—Flat-joint? standing-groove? cleated? tinned nails?

Quality of tin, branded? IC? IX? painted? what kind of paint? paper under, what quality and make, trade thickness.

Flashings: continuous, width; broken? sizes, around chimneys, nailed? bonnetted?

Around skylights, carried-up under galvanised-iron or under sashes, if wood.

Trap-doors, up rim, tacked to top edge, over scuttle down sides of rim.

Gutter-strips: Twenty-inch tin, same quality as roof, brought once over edge of strip, tacked, paper under, same as roofing. Cut for rain-conductors.

Eaves-troughs: Quality tin? bead-edges? hung level? hung with grade? kind of hangers.

Rain-conductors: kind, size, quality, trade thickness, connect with gutters, wire-balls; do conductors connect with terracotta pipe or discharge on ground? proper shoes.

Heat-boxes :—Quality tin, bright tin, cleated, stayed, sizes, collars for registers, for heater-pipes, for radiator-boxes, asbestos-paper around studs, wire-lathing over boxes, dampers, boxes double?

Registers :—Does tinner supply or does plasterer or heater-contractor? kind, sizes.

Tin shingles :—Any particular make? painted two coats when on.

PLASTERER.—[REFER TO GENERAL CLAUSES.]

Lathing :—White-pine? spruce? hemlock? free from bark, sap. Wire-lathing? stiffened?

Other lathings: Dovetail iron? expanded metal? Are outside walls stripped? Wire-lathing over heat-boxes, or does tinner do this?

Mortar :—Lime, any make?

Sand, for brown coat? bar—? road? creek? bank—? screening.

Hair, cow's hair, fresh. Run mortar two weeks before using.

Kind of plastering :—Two coat? slip coat? three coat? with scratch coat, brown coat, and finish coat? white coat? white sand. Sand float? white sand? Lath and brown coat cellar ceiling.

Plastering free from cracks, blisters, wind, marks of float. Must stop, or is heat provided in cold weather? Who provides heat? does plasterer set registers? crocks for stove-pipes with caps and setting.

Ornamental-plastering :—Cornices—enriched? centre-pieces? panels? moulded? enriched? coved ceilings? Arches or arch moulds? soffits?

Patent-plasters :—What kind? make? guarantee?

Fire-protection :—Over beams, over columns, woodwork, what kind?

GALVANISED IRON.—[REFER TO GENERAL CLAUSES.]

Cornices, crestings, finials. Weight of iron or No. gauge; painted before setting inside and outside. What paint?

Skylights :—Hyatt's patent? ventilating? condensing? glass? does painter supply? ventilators, attachments for handling, rods, levers, cams, shafts, cog-connections. Show shapes on drawings; flat? pitched one way? hipped? gabled?

(*To be continued.*)

CHIPS.

The members of the Bradford School Board at their last meeting accepted tenders for the erection of Byron-street Higher School, amounting to £12,137. The total accommodation will be for 1,214 scholars, and the total cost, including site and caretaker's house, will be £18,400. The total cost per head works out at £16 12s. 7d.

The personalty of the late Mr. Deputy Hammack, an architect long in practice in the City, has been sworn at the net sum of £9,839.

The roll of the Institution of Civil Engineers, corrected to September 6th, shows that there were then on the books 19 honorary members, 1,837 members, 3,597 associate members, and 358 associates, making a total of 5,811. The class of students which is attached to the institution, but does not form part of the corporation, now numbers 782.

Mr. James Stabler, of Darlington, manager of the North of England School Furnishing Company, died on Sunday week. Mr. Stabler, who was born in 1833, was the leading member of the Methodist New Connexion in Darlington.

A new organ, which has been erected in the parish church, Wrexham, at a cost of £1,000, was opened on Friday.

Several of the directors of the London and South-Western Railway Company visited Southampton one day last week by special train from Waterloo and inspected the works in progress connected with the new station at Southampton West, and the contract for the erection of which has been secured by Mr. Lovatt, of Wolverhampton.

The Budget speech for Western Australia proposes that the sum of £120,000 shall be devoted to public buildings, and £47,000 to roads and bridge. A mint and a public observatory are to be established. During the past four years the population of the colony has increased by 64 per cent.

Sir G. Macpherson Grant laid, with Masonic honours, on Friday the foundation-stone of a new iron bridge across the Spey at Kingussie, which is to replace an old timber structure. The new bridge is of the lattice girder order, is of three spans, each 80ft. in length, with a clear roadway of 14ft. The foundations are laid on cylinders sunk 16ft. below the bed of the river. Over these, piers of masonry have been erected, and the iron girders are about to be placed in position.

A memorial font was dedicated in Verwood Church on Michaelmas Day. It is Early English in style, and octagonal in form. It is constructed of veined marble, the columns and base being of Devonshire marble, and the spiral cover is of oak. Messrs. Adye and Adye, MM.S.A., of Bradford-on-Avon, the architects of the church, designed the font, which has been carried out by Messrs. Harry Hems and Sons, of Exeter.

The town council of Monmouth on Monday ordered the official seal to be affixed to agreements with Messrs. Bramwell and Harris, C.E., and Mr. Charles N. Lailey, C.E., London, for preparing plans and specifications and superintending the work of a combined scheme of drainage and electric light in the borough at an estimated cost of £17,600—£12,000 for drainage, and £5,600 for electric light; the corporation to pay the engineers 5 per cent. on the total outlay, find a clerk of works, and pay for advertising and out-of-pocket expenses.

COMPETITIONS.

Burnley, Lancashire.—In a limited competition for proposed new Congregational church and school extension in Hollingreave-road, Burnley, the committee, with the assistance of their assessor, Mr. E. O. Dawson, F.R.I.B.A., of Lancaster, awarded the first premium to Messrs. Hitchon, Son, and Lancaster, architects, Burnley; and the second to Mr. J. T. Landless, architect, Nelson. The school extension is placed under the chapel, and consists of eight class-rooms and one larger room, with the necessary conveniences. The chapel proper will be 72ft. by 45ft., with shallow transept at the north end and gallery over the south end. The seating accommodation is reckoned at about 650. The committee have already met and instructed the architects to prepare the working drawings.

Eisteddfod Pavilion, Llanelly.—Arrangements for the National Eisteddfod for 1895, to be held at Llanelly, are proceeding. Among the new prizes offered for competition by the National Eisteddfod Association is one for the best design for a practical and workable movable permanent pavilion, suited to the requirements of the National Eisteddfod in North or South Wales, with complete specifications, approved estimates, and full incidental details. The prize offered is £25, and the adjudicators are Messrs. Rhys Davies, Brecon; W. E. Davies, Beaumaris; and Charles Evans-Vaughan, F.R.I.B.A., London. The second competition added to the list is for the best panel, grained to imitate wood, size of panel 30in. by 14; prize, a medal, value £3 3s. Copies of the programme may be obtained from the secretary, Mr. William Wilkins, Greenfield Villas, Llanelly.

Major J. A. Ferrier, D.S.O., of the Royal Engineers, has been appointed Assistant Director of Military Works in India.

At St. Helen's, Lancs, on Tuesday, Col. Gamble, C.B., laid the foundation-stone of an institute which is to form a central library and reading-room and a school for technical education and manual instruction. He gives the site, and will spend £20,000 on the building, which is being erected from designs by Messrs. Briggs and Wolstenholme, of Blackburn, and was illustrated in our issue of August 31st last.

The awards to exhibitors at the Antwerp Exhibition were made known on Tuesday. Great Britain and its Dependencies receive 21 grand prizes, 42 diplomas of honour, and 105 gold, 79 silver, and 46 bronze medals. Among the awards is one to Messrs. Harry Hems and Sons, of Exeter, for ecclesiastical furniture and carving.

The foundation stone of a new Wesleyan chapel at Corby Hill, Cumberland, was laid on Friday. The building is Gothic in style; the chapel will seat 200 persons, and the school 100. A partition can be removed, making the school and chapel into one. The work is estimated to cost about £300. The contractor for building is Mr. Gill, Ainstable, and for joiners' work Mr. Bell.

New premises erected facing the Corn-market, Penrith, for Messrs. Hetherington, general merchants, were opened last week, when an electric light installation was turned on, being the first introduced into the town. The buildings have been erected at a cost of over £3,000, and have been built from plans by, and under the supervision of, Mr. H. Higginson, M.S.A., of Carlisle, the contractors being Mr. W. Grisenthwaite for builder's, joiner's, and slater's work, and Mr. Joshua Dixon for plumber's, plasterer's, and painter's work.

At a meeting of the Spalding Waterworks Company, on Saturday, it was announced that, under the supervision of Mr. Isler, a new bore well had been successfully sunk at Bourne, from which place Spalding obtains its water supply. The bore was driven to a depth of 134ft., and would yield a supply of 3,480 gallons per hour, or over five millions of gallons per day. It is proposed by the board to lay new mains from Spalding to Bourne in order to make the supply available. It was stated that this was the largest yield of water of any bore well in England.

Mr. T. Codrington, C.E., on behalf of the Local Government Board, held an inquiry on Monday into the application by the Llandudno town commissioners for authority to borrow £18,000 for sewerage extension. Evidence was given by Mr. Stevenson, C.E., borough engineer, and other witnesses. Mr. Codrington subsequently sat as arbitrator in the question as to the sum per mile to be paid by the county council of Carnarvonshire for the maintenance of the main roads within the commissioners' district. Evidence was given by Mr. Evan Evans, the county surveyor, and by Mr. Thomas, C.E., county surveyor of Buckinghamshire.

Building Intelligence.

Coventry.—The old banking premises belonging to the London and Midland Bank (and formerly the Coventry Union Banking Company), situated at the corner of High-street and Little Park-street, Coventry, have been pulled down, and new premises are now in the course of erection by Mr. Charles Haywood, jun., Coventry, from the designs of Mr. Frank Barlow Osborn, architect, Birmingham. The new buildings, which will be in the Elizabethan style of architecture, will comprise, in addition to the banking premises, a suite of let-off offices, situated on the ground floor in Little Park-street, and a bank manager's residence on the first and upper floors. The buildings, which will be executed in white Hollington stone, red bricks, and roofed with tiles, are now being rapidly proceeded with.

Perry Barr.—The church at Perry Barr, near Birmingham, was reopened by the Bishop of Lichfield on Saturday, after the addition of transepts to the building, and substitution of an open roof for the plaster ceiling over the nave. This work really forms a portion of the restoration and enlargement scheme undertaken in 1887. The other portion of the work, which was completed six years since, comprised the addition of a chancel, organ-chamber, and vestries, the east end of the edifice being previously terminated in a recessed space. The roof which has now been substituted for the ugly ceiling is on the truss-rafter principle. Another feature of the work is the removal of the unsightly west gallery, and the opening out of the tower to the nave by the introduction of an arch. The nave measures 78ft. by 26ft., the chancel 36ft. 6in. by 20ft., whilst the aisles project 12ft. north and south. The work has been carried out from the plans of Mr. J. A. Chatwin, of Birmingham, and the builders engaged were Messrs. Collins and Godfrey, Tewkesbury.

Newcastle-on-Tyne.—The restored premises of the Literary and Philosophical Society, Newcastle, which have been closed since the destructive fire which followed and marred the centenary celebration in February, 1893, were formally reopened on Monday. The work has been carried out from plans by Mr. Frank W. Rich, of Newcastle. The new roof is a double one, the upper one being of plain iron work glazed with rough plate-glass, and below this three iron-framed domes with a depth of 2ft. 6in., glazed with glass bent to the form of the dome. The plaster-work, instead of being attached to laths in the ordinary way, has been attached to iron network, and put up in sections. The entire floor of the first floor has been removed and replaced by a fireproof one, with steel girders and concrete, and paved with oak blocks. The roof over the upstairs committee-room, though not injured by fire, has also been reconstructed. Open fires have been abolished, and the whole premises, except the lecture theatre, warmed with hot water. The lecture theatre is heated with steam, and new ventilating arrangements have been provided. The whole building is now lighted with the electric light. The works have been carried out by the undermentioned firms:—For the iron roofing, the fireproof flooring, and the oak floor, Messrs. Homan and Rodgers, of Manchester; for the steel domes in the ceiling, Messrs. Wenham and Waters, of Croydon, London; for the general work in restoration, Mr. Walter Baston, Newcastle; for the plumbers' work, Messrs. Emley and Sons, Limited, Newcastle; for steel girders, Messrs. Dorman, Long, and Co., Middlesbrough; for plasterer's work, Mr. William Ferguson, Newcastle; for heating, Messrs. Dinning and Cooke, Newcastle.

Pontypridd.—The new public abattoirs erected by the Pontypridd local board were formally opened on Thursday in last week. The new building occupies 1,765 square yards, on the tramroad side near the railway station. The site necessitated a large outlay in the erection of foundations, so that the total cost of land and building will approach nearly £12,000. The abattoirs have been erected from the designs of Mr. Edward Rees, surveyor to the local board. Mr. James Allan, of Cardiff, was the builder, his tender for excavations and masonry amounting to £5,435, while the ironwork was constructed by Messrs. George Kyte and Co., also of Cardiff. The buildings and boundary walls are built of native dressed stones. The main structure is divided into two floors, the ground-floor being entirely set apart as a pig slaughter-house, surrounded by a series of sties and pens. This apartment measures 71ft. by 43ft., with head-room of 13ft., and contains six tanks, three for hot water and three for cold. There also is a hydraulic lift whereby the carcases can be raised to the floor above, and thence conveyed by means of overhead rails and switches to the cooling room. Both on the ground and the first-floor the floor itself is constructed of granolithic pavement. On the first floor are three rooms, each 21ft. 6in. by 39ft. 6in., and a height of 18ft., which are devoted to the slaughtering of sheep and cattle. Adjacent to these, and under the same roof, is a paved yard. The cooling-room, 50ft. by 66ft. 6in., is also on the first floor, and provides accommodation for 300 or 400 carcases. The whole building is lined with white glazed bricks, and the roof is of wrought iron covered with slate. The premises within the inclosure also contain waiting-rooms, lavatories, hay-lofts, and a cottage for the caretaker.

Redditch.—The parish church was reopened last week, after having undergone a complete internal renovation. Plans were prepared last year by Mr. Temple Moore, of Westminster, and the contract of Messrs. Brazier and Son, of Bromsgrove, was accepted, the estimated cost of the undertaking being £5,000. The old barn-like roof has disappeared. In the nave it has been hidden from view, with its ugly rafter, by an arched ceiling, panelled and decorated with bosses. The passages through the nave have been laid with Mansfield stone, and the rest of the flooring consists of red wood blocks. In the chancel, the intervening arches have been brought forward, so that there is more accommodation for the choir, while the heavy rafters above have been removed, and in their stead a groined roof has been placed, at a higher elevation, so as to allow of the addition of a clerestory. The space between the choir stalls has been laid with black-and-white marble squares. Throughout the church has been decorated in a simple style, in keeping with the style of the building. The old chancel screen has been used again, but it is to be replaced by more ornamental ironwork.

CHIPS.

Earl Nelson laid the foundation-stone of a new church at Morgan's Vale, Downton, Wilts, on Friday, to be built in accordance with the Rev. E. Ferryman's bequest at a cost of about £2,000.

The vigorous bronze statue of "The Mower," by Mr. Hamo Thorneycroft, R.A., has been purchased for the permanent collection of Liverpool.

The Republic of San Marino, the smallest state in Europe, inaugurated on Sunday the new Palace of the Government, an edifice erected according to the designs prepared by the architect, Signor Azzurri.

The Walton Lock, which gives access to the Manchester Ship Canal from the river Mersey at Warrington, was formally opened on Monday. The new lock is 229ft. in length, and 30ft. wide, and will contain 10ft. 6in. of water at low water. On the south side there is a 20ft. sluice for flushing purposes. The lock has been in process of construction since November of last year.

The infants' school attached to St. George's Church, Brandon-hill, Bristol, was reopened on Monday, after having been rebuilt and enlarged by 30 school-places. Mr. W. V. Gough, of Bridge-street, Bristol, was the architect; and Messrs. Easterbrook and Sons, of the same city, were the contractors.

The Burlington Fine Arts Club proposes holding an exhibition of Egyptian art and antiquities in the spring of next year. The committee of arrangement has been promised contributions by well-known collectors; but there are many persons possessing collections or single objects of interest who may not be personally known to the members of the committee.

A portrait of the late ex-Provost Watt, chief magistrate of Leith during the years 1866-1875, was presented to the corporation of that burgh on Monday. The portrait, which is the work of Mr. Marshall Wane, Edinburgh, is life-size, on a canvas over 8ft. in length, and represents the deceased Provost in his official robes. It has been hung in the Council-chamber.

The new single-line railway from Seaton to Uppingham, affording access with the North-Western system at Melton Mowbray, was opened for passenger traffic on Monday. The branch is over three miles in length, and has been nearly three years in course of construction by Messrs. W. Radcliffe and Co., of Huddersfield.

Engineering Notes.

Bangor.—Bangor was on Saturday *en fête* in commemoration of the acquisition by the city council of the ferry rights from Garth Point to the Anglesey side of the Menai Straits, and of the passing of the Parliamentary Bill for the construction of a pier and landing-stage. The pier will be constructed a little to the west of the present landing slip, and will consist of cast-iron screw piles and columns supporting a steel superstructure of braced web girders, upon which will be fixed transverse steel joists, carrying the longitudinal timber joists, to carry the transverse deck planks. The length of this portion of the structure will be 1,500ft., the clear width being 24ft. for a length of 1,335ft., then opening out at the head to a width of 100ft. The span of the main girders is 50ft. between centre to centre of the columns, and at the clusters and at the head the spans are all of 20ft. The main piles and columns are 12in. diameter outside. Beyond the pier, instead of having the usual fixed timber landing-stage with landings at different levels approached with steps, it is proposed to have a floating stage, consisting of an iron pontoon 80ft. long by 18ft. wide, with timber deck. The floating stage is approached from the pier deck by a bowstring girder bridge of 120ft. span, and with a clear width of 7ft. 6in. The cost, including dredging, will be £15,000. The works have been designed by Mr. John J. Webster, M.Inst.C.E., Victoria-street, Westminster.

Society of Engineers.—At a meeting of this society, held at the Town Hall, Westminster, on Monday evening, Mr. George A. Goodwin, president, in the chair, a paper was read by Mr. T. W. Baker, B.A., on "The Utilisation of Town Refuse for Generating Steam." The refuse referred to is the usual contents of the ash-bin, with street sweepings and sludge, that is collected by the various local authorities, the disposal of which has been for years a growing source of expense. The recognised means of disposal is now by fire, so destroying all germs of disease and the heat set free by the process of destruction, the author reasoned, should and can be utilised. The large bulk of 420 tons per week, collected from an average vestry area, necessitates a special furnace or destructor, while the noxious fumes arising have also to be destroyed. Up to the present time this has been imperfectly and unsatisfactorily done, most of the heat having been allowed to go to waste. The author submitted his new system as meeting the difficulties, and the results deduced from his calculations and experiments showed that, after paying for the plant, working expenses, depreciation, interest and redemption, a net saving of £2,666 per annum could be obtained on a plant capable of dealing with 420 tons per week. The author claimed that his scheme is particularly applicable to the generation of electricity by the steam, providing a means for heat-storage arrangements to meet the fluctuation in demand; and that for pumping, baths, and washhouses, it is equally applicable.

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A reredos of alabaster and stone was unveiled at Melksham parish church on Sunday. It incorporates the Caen stone wings of a reredos erected two generations since; it measures 8ft. 8in. wide, and rises to a height of 10ft. 6in. It has been designed by Mr. Charles E. Ponting, F.S.A., of Lockeridge, Marlborough, and carried out by Messrs. Harry Hems and Sons, of Exeter. The super-altar is of Staffordshire alabaster, the statues and groups of sculpture are of white Castellino marble, and the fabric generally is of Painswick stone. The style chosen is 15th-century English Gothic, and the subject of the three panels, which are treated as one composition, is the Nativity.

An inquiry was held at the Guildhall, Hereford, on Friday, by Colonel C. H. Luard, R.E., with reference to an application made by the town council of Hereford to the Local Government Board for sanction to borrow the sum of £3,800 for works of water supply, and £300 for provision of gas mains. The city surveyor, Mr. J. Parker, explained that the existing waterworks were opened in 1856, and cost £35,000, and increased pumping power was seriously needed. The proposed new plant would be capable of lifting 2,166 gallons per minute, or 1,300,000 gallons per day of 10 hours. The waterworks committee proposed to construct a new engine, engine-house, engine and boiler, and such connections with the suction and rising mains as would enable the whole of the existing engines and machinery to be held in reserve.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Manchester Society of Architects.—The first meeting in the session of 1894-5 was held at 36, George-street, on Monday evening, when the president, Mr. John Holden, F.R.I.B.A., F.S.I., delivered his address to the members. After reviewing the proceedings connected with the reconstruction of the society in 1891, which had resulted in a large increase in the membership (now numbering 135), he paid a tribute to the memory of those gentlemen who had been removed from the roll of members by death—viz., Messrs. John Elgood, Joseph S. Crowther, William Charles Tuke, James Maxwell, and Lawrence Booth; also of Mr. J. H. P. Leresche, barrister-at-law and stipendiary, who had for the last ten years occupied the position of honorary legal adviser to the society. The council had nominated Mr. William Goldthorpe, barrister-at-law, as Mr. Leresche's successor, and he had accepted the appointment. After briefly touching upon the questions of competitions, of builders depositing priced quantities for works to be carried out, and other matters, he said that he hoped before long to see a Chair of Architecture founded at the Victoria University; this would be a great advantage to the students, and he advised them by increased efforts to show that it would be appreciated by them. He then addressed the senior members, strongly urging them to contribute to the education of the younger members by reading papers, by giving information on matters connected with the profession, and by supplementing the books in the library, and referred to the very generous gift of books by Mrs. Whitaker, the relict of the late William Wilkinson Whitaker, architect, of Manchester. In addressing the younger members, the president urged them, by careful study, to qualify themselves to in their turn carry on the work which had for the last thirty years been going on, and which had given the society the first place out of London. The president afterwards delivered the prizes awarded to the students for work during the past session. The principal prize, of books of the value of ten guineas, for the most satisfactory progress made by the society's students in the architectural classes arranged by the council with the committee of the technical school, was awarded to John Ormrod; and the second prize of five guineas was divided between William S. Beaumont and Alfred R. Parker. The other prizes went respectively to A. E. Corbett, J. C. Dewhurst, Isaac Taylor, and T. W. Hoolley.

ARCHÆOLOGICAL.

Wallsend.—A correspondent writes:—The search for Roman remains at Wallsend has been for the present abandoned. What the members of the Newcastle Society of Antiquaries were anxious to learn was the point at which the wall diverged from the Roman station of Segedunum at Wallsend, and as several relics of the Roman occupation were recently unearthed in the vicinity of the ancient camp, Mr. Spence, treasurer of the Newcastle society, and other members, visited the ground, and entered into an agreement with Mr. Gainer, a builder, on whose property excavations for the foundations of new dwellings were being carried out, to the effect that the trenches should be widened, and the remains of the Roman works laid bare. The workmen first came upon a stone 3ft. square, and about 15in. in depth, which seems to have formed the basis of the pillar of the central arch at the south-west entrance to the camp. Part of a hand millstone was also unearthed, and several pieces of Roman pottery. The chief point of interest has been the uncovering of the foundations of the ancient wall over the entire width of 9ft., thus confirming the impression held by the members of the Newcastle society, that its junction with the camp was on the south-west. In consequence of the close proximity of the remains of the wall to Neptune-road and the adjoining property, the excavations had to be discontinued on Friday, after which the uncovered works were photographed.

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The award of the arbitrator in the recent arbitration between the Cheltenham corporation and the corporation of Tewkesbury, as to the charge for supplying the latter authority in bulk, was made known on Monday. The arbitrator decides that the charge shall be 7¾d. per 1,000 gallons. Cheltenham asked for 10d., and Tewkesbury offered to pay 6d. per 1,000 gallons.

Intercommunication.

QUESTIONS.

[11221.]—**Fibrous Plaster Refuse.**—Could any reader kindly suggest how the clean refuse of fibrous plasterwork can be disposed of to advantage?—Platrier.

[11222.]—**Cologne.**—An exceedingly fine church or cathedral is being built just off Freiheits Strasse, at Deutz. Have any particulars or illustrations of this building appeared in any of the professional papers? Or can any of your readers furnish any?—W. J. M.

[11223.]—**Back-to-Back Houses.**—Will some one give a sketch plan of this class of artisans' dwellings, as built at Leeds, and rightly or wrongly commended by Mr. A. M. Fowler at the Sanitary Congress at Liverpool?—W. J. M.

REPLIES.

[11213.]—**Tall Mill Chimneys.**—Consult Bancroft's "Tall Chimney Construction" (Calvert, Manchester), in which several mill chimneys are described.—G. H. G.

[11214.]—**Safe Load.**—The crushing strength of bricks joined with half cement and half sand on a pier 13½in. by 12in. by 9in., is 299lb. per square inch, according to John Grant's experiments; but no two authorities agree. In stone lime the crushing resistance might be taken as one half of the foregoing for stack brick. (See D. Kirkaldy's work.)—G.

[11220.]—**Electric Lighting.**—So many elementary treatises and textbooks have been published on electric lighting, that it is difficult to recommend any one handbook. As practical guides to fitting, F. C. Allsop's "Practical Electric Light Fitting" (Whittaker) and Urquhart's "Electric Light Fitting" (Lockwood) may be consulted. For elementary purposes, Swinton's "Elementary Principles of Electric Lighting," a little book by Verity, and many other books may be studied. But for the general requirements of an architect I do not know of any one book to recommend, as so many of the textbooks and handbooks are compiled by electricians and others for the purpose of advertising themselves and certain appliances, and are filled with illustrations of apparatus that are lent by manufacturers and engineers in the trade.—G. H. G.

CHIPS.

At Newton, Lanarkshire, a Roman Catholic school-chapel and presbytery, built from plans by Mr. Joseph Cowan, have just been opened.

The new Primitive Methodist chapel in Stratford-road, E., was opened on Sept. 27th. The building is in the Gothic style, measures 62ft. by 42ft., and will accommodate about 400 people, classrooms and vestries being added. The contract has been carried out by Messrs. Atkin and Green, of East-road, West Ham.

Bishop Barry unveiled, on Tuesday, two memorial windows and a mosaic panel which have been been erected at St. Augustine's, Highbury New Park, in memory of the late Rev. Prebendary Gordon Calthrop.

Alterations are being made to the Albert Institute, Windsor, embracing the ventilation, which will now be effected on the Boyle system, the latest patented improved form of self-acting air-pump ventilators being adopted for the extraction of the vitiated air.

The West Ham school board have adopted plans by their architect, Mr. J. T. Newman, for new schools for 1,000 children, to be built in Whitehall-place.

The partnership heretofore subsisting between A. C. D. Hicks and W. H. Alton, architects, surveyors, house, land, and estate agents, Bexhill, under the style of Hicks and Alton, has been dissolved.

At a meeting held at Donington, near Spalding, on Friday, Mr. Bicknell was appointed surveyor to the Black Sluice Commissioners, a Lincolnshire drainage authority. There were 95 applicants for the post, rendered vacant through the resignation of Mr. James Lancaster. The post, with other appointments which follow, is worth £300 per annum.

At the opening of the Public Library for Walthamstow (illustrated by us last week), by Mr. Passmore Edwards, on Saturday afternoon, Mr. Edwards said that hitherto when a public library was opened in London it had been his privilege to present 1,000 volumes, and he would do the same for Walthamstow. Dealing with the selection of books, Mr. Passmore Edwards advised his hearers always to read the best. During the last few years he had presented to public libraries between 50 and 60 thousand volumes, and it was a pleasure to know that more than half were constantly in the homes of the working men.

New offices and works are about to be built for the Reading Electric Supply Company, Limited, from plans by Mr. F. W. Albury, architect, of that town. The whole of the stonework, comprising heavily moulded sills and heads, cornices and pediments, circular windows, finials, &c., is to be supplied in buff concrete masonry from the works of Messrs. Fambrini and Daniels, Lincoln.

Legal.

BUILDERS' BANKRUPTCIES.

THE Bankruptcy Report for the year 1893 shows that builders generally have been having a bad time. There has been an increase in the total number of failures everywhere, but the building trades seem to have been especially unfortunate. The whole of the bankruptcies of all kinds for the year 1893 came out at 4,874, as against 4,635 for 1892, thus giving an increase here of 239. But the rise is even greater in the matter of deeds of arrangements, where the total of 3,333 for 1892 was increased to 3,938 in 1893, making an advance of 605. In other words, the year's insolvencies are in number 844 more than in 1892. We cannot give the number of builders and contractors who failed; but the report contains a table showing the increase in the total liabilities for various trades during 1893 as compared with 1892 and 1891. From this we find that the building trade comes second, grocers and provision dealers being first, and farmers third.

The total liabilities in the building trades failures, both by bankruptcy and under deeds of arrangement, came to £734,726, which gives an increase of £107,932 over the corresponding total for 1892, and that again was higher than the total for 1891 by £103,860. Putting the two together, we have the very heavy total increase during the past two years of £211,793. Evidently the breaking-up of builders and contractors has been considerable, and we fear we have not yet reached the bottom of this depression. The Report contains comments upon two cases of contractors' failures, which are instructive, at all events, if not entertaining. In one the debtor was a builder, brickmaker, and contractor, and at the date of his failure he had contracts in hand amounting to about £450,000. His capital got locked up in large houses, which he could neither let nor sell. He had to raise money on mortgage at high rates of interest and heavy expenses. The mortgagee stopped supplies, and so he came to grief with over £55,000 liabilities, and assets of very "uncertain value." In another case practically the same story is repeated: no free capital; all obtained on mortgage as he went along; engaged in large building speculations, and failing for the third time; liabilities over £33,000, and assets that may possibly bring in £5,000.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Doubtful.—Drains.—Closets.—It must depend upon the Act and regulations that apply to this district, which is not stated. Generally speaking, the sanitary inspector has very wide powers, and can compel the doing of the things which are here required.

* * *

The Archbishop of York opened on the 27th ult. the new High School for Girls, belonging to the Church Schools Company, at Hull. The building was formerly the Hull and East Riding College, and since its acquisition by the company it has been enlarged and altered at a cost of £1,500. Accommodation has been provided for 300 pupils.

New board schools in Wrotham-road, Gravesend, were formally opened last week. They have been built from designs by Messrs. Cobham, selected in competition, and consist of two departments for girls and boys, each including a schoolroom, 40ft. by 20ft., to accommodate 80 scholars, and two classrooms, each 30ft. by 20ft., for 60 children. The infants have a schoolroom, 40ft. by 20ft., for 88 infants, two classrooms, 30ft. by 20ft., for 75 each, and a babies' room, 20ft. by 20ft., for 50. The cost of the building, exclusive of cost of site and of furniture, is under £7,000.

Electric lighting is making progress in Leeds. The works of the Yorkshire House-to-House Electricity Company were formally opened in Leeds in May, 1893, with a capacity of 600 I.H.P. The number of 8c.p. lights now connected is over 15,000, and the mains extend about eight miles. Additional plant has therefore become necessary, and is now being laid down at the company's station in Whitehall-road. The engine-house has been extended in length from 68ft. to 124ft., the width remaining 63ft. The Leeds corporation are arranging terms for a two-years' supply of the light to the Town Hall and Municipal Buildings, and also for street-lighting, and for the illumination of City-square and public markets.

LEGAL INTELLIGENCE.

In re Mrs. Turner, Cardiff.—A meeting of creditors of Mrs. Jane Turner, builder, Manor-street, Heath Estate, Cardiff, was held at the official receiver's, Cardiff, on Sept. 27. The statement of affairs gave the gross liabilities at £1,106 6s. 7d., of which £306 6s. 7d. was expected to rank. The assets amounted to £100, leaving a deficiency of £206 6s. 7d. She alleged that the cause of her failure was inability to sell her property at its value. No resolution was passed, and the official receiver remains trustee.

Heavy Fines for Building Offences.—At the West London Police-court on Saturday, Charles Marsh, of Chiswick-lane, was summoned by Mr. R. F. Finnis, clerk of the Chiswick Local Board, for offences alleged to have been committed in the erection of a building. There were three summonses: for not giving notice of an addition to his building, covering up drains without inspection, and using bad mortar. Mr. Ramsden, the Board's surveyor, said plans for a stable were sanctioned; but he found that additions had been erected, the place occupied, and the drains not connected. A sample of the mortar was produced by Mr. Ramsden, who said it was mixed up with mould instead of sand. He told the defendant he could not pass the work, but he said he did not care for him or the local board, that he had purchased the land, and should do as he liked. Mr. Curtis Bennett thought it was a bad case, and said it was a proper thing to stop what he called jerry building. He fined the defendant in each summons £5, with 2s. costs, or one month's imprisonment—in all £15 6s.—with the alternative of three months' imprisonment.

CHIPS.

Some large new stables are just being completed for Sir Peter Walker, Bart., at Osmaston Manor, Derbyshire, and the large clock has been erected by John Smith and Sons, Midland Clock Works, Derby.

The Rhondda and Swansea Bay railway line is to be completed in about a month's time.

The London County Council has decided to set apart a certain portion of their establishment at Spring Gardens for the reception of any relics of ancient London which they may come across in the carrying out of public works, or the demolition of old buildings. These, it is hoped, will form the nucleus of a very interesting collection, similar to that at the Guildhall, and will no doubt be steadily added to from time to time.

The directors of the South Kensington Museum have recently purchased from various private collections several hundred pieces of wrought-iron work, representative mainly of early German manufacture.

A stained-glass window, representing "Abraham Entertaining the Three Angels," has been placed in Winkleigh parish church, Devon. Mr. F. Drake, of the Cathedral Close, Exeter, carried out the work.

The chancel of Middlewick parish church is about to be restored from plans by Messrs. Douglas and Fordham, of Chester. The works will include the raising of the east window and the addition of two side lights, new window on south side, the tiling of the sacrarium, and a new reredos.

The town council of Folkestone have decided to light the town by electricity at a cost roughly estimated at £12,000, and have instructed Mr. Medhurst to prepare plans, estimates, and details at a retaining fee of 50 guineas.

Messrs. Andrews have offered the corporation of Hertford the encaustic tiles found in the foundation of the old church of St. John discovered some time ago on their premises at the Priory Wharf. The gift has been accepted, and the tiles will be put into a glass case at the public library.

A new branch bank for Lloyds has been opened this week at Stokes Croft, Bristol. The façade is of Doulting stone, with brickwork in the upper portion. Mr. H. J. Williams, of Bristol, was the architect of this and four other branches of the same company's bank, and Messrs. R. Williams and Son, of Surrey-street, Bristol, were the contractors.

Messrs. Jones and Willis have recently completed three stained-glass windows for St. Clement's Church, Fulham. The subjects are: The Light of the World, Hope, and the Presentation in the Temple. The work has been carried out at their studio, 43, Great Russell-street, London.

The Queen's Theatre at Longton, Staffs., was destroyed by fire on Friday. The building originally cost £15,000, and was a stone structure, having shops next the street, and offices above. It was built in 1887 from plans prepared by Mr. John Taylor, Mr. T. S. Bromage being the contractor, and about four years ago extensive alterations and decorations were carried out at a further cost of £5,000. The origin of the fire is a mystery. The directors have decided to rebuild as soon as possible.

WATER SUPPLY AND SANITARY MATTERS.

Oldham.—On the invitation of the engineers, Messrs. Henry Law and Son, London, the members of the Sanitary Congress made an inspection on Saturday of the works in course of construction at Oldham for the treatment of sewage. The works have been in progress for about a year, and other two years will be needed to complete them. The whole cost will be about £200,000, of which about £70,000 is for land. The outfall works are at Slack's Valley, Foxdenton-lane, some distance outside the boundaries of the borough. Here the corporation have purchased 72 acres of land. There are about ten miles of intercepting sewers, which range in diameter from 15in. to 6ft. A considerable portion of the outfall sewer is completed. When the sewage reaches the outfall works it will receive chemical treatment, and then flow into the tanks, twelve in number, each 125ft. long, 30ft. wide, and 6ft. deep, where it will be allowed to settle. The effluent, when drawn off, will pass over filtration beds, and then be allowed to flow into the stream. The sludge will probably be pressed and disposed of as manure. The committee have not yet decided what chemicals will be used for precipitation. Oldham has at present a population of 130,000, and the scheme is designed for a population of 250,000, allowing 35 gallons per head and a rainfall of $\frac{1}{4}$in. in twenty-four hours. The existing sewers in the borough will be used to run off storm-water. A novel feature of the scheme is the extent to which concrete is used. All the sewers over 2ft. in diameter are being made of concrete blocks, which are manufactured at the outfall works. The settling tanks are also being constructed of concrete. The work is being done by the corporation without the intervention of a contractor, the engineers undertaking the supervision.

Edinburgh.—At a meeting of a sub-committee of the Works Committee of the Edinburgh and District Water Trust, held on Friday, Mr. Wilson, engineer to the trust, submitted a supplementary report, in which he showed in detail the comparative merits of the Talla or Tweed scheme and the St. Mary's Loch scheme, concluding by recommending that the Tweed scheme should now be fixed upon as an additional source of water-supply for Edinburgh and district. This concurred with the advice given by the three consulting engineers called in. The committee passed a resolution recommending the adoption of the Tweed scheme. They propose that the tunnels and aqueducts should be constructed to carry 24 million gallons of water per day; that the pipes be laid capable of conveying 10 million gallons per day for a first instalment; that the construction of the Menzion tunnel be deferred until more water than 8 million gallons per day is required from the Talla, which will reduce the cost of the first instalment to £631,371. In order to give the trustees a *locus standi* in Parliament for the purpose of the Bill, Parliamentary notices will be given and the plans lodged forthwith, subject to the ultimate approval of the scheme by the corporations, and the engineer and Parliamentary agents have been instructed accordingly.

Macclesfield.—The town council have, after a long and animated debate, decided to apply to the Local Government Board for power to borrow £60,000 for main drainage and sewage disposal works. A proposal to engage the International Company to treat the sewage was rejected by 22 votes to 6, the council's opinion being that it was premature to decide as to the treatment until the constructive works were completed. Mr. W. H. Radford, of Nottingham, is the engineer. His estimate was £65,000, but the borough surveyor's estimate of £60,000 was adopted.

Parbold.—The township of Parbold was put in possession of a public water supply on Monday. The provision has been made by the Parbold Parochial Committee, acting in conjunction with the Wigan Union Rural Sanitary Authority. By tapping a spring in a park and constructing in the millstone grit of the hill, 205ft. above sea level, a covered reservoir, a supply sufficient for the needs of the present population, and for 150 per cent. increase has been obtained. The reservoir has a capacity of 60,000 gallons, and will afford 11,500 gallons every 24 hours, or equal to a supply of seven gallons per diem per head for two-and-a-half times the present population, which was 630. Provision has been made to apply filtration whenever considered desirable. The total cost has been £1,300.

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A fresh illustration of the necessity that exists that architects should specify and carefully inspect the erection of temporary platforms for memorial-stone-laying ceremonies is afforded by the accident that occurred on Wednesday afternoon at Plymouth during the ceremony in connection with the formal commencement of building a Wesleyan schoolroom. The staging collapsed, and 50 persons were thrown a depth of 14ft., 26 of them being more or less injured, some sustaining broken limbs.

Our Office Table.

The Metropolitan Building Act, 1894, will form the principal subject of Professor Roger Smith's lectures to his class for Modern Practice, at University College, London, in the session about to commence. "Discoveries in Architecture" is the title of the Free Public opening lecture with which Professor Roger Smith will resume his classes at University College, London. The lecture is to be delivered on Thursday evening, the 11th inst., and among the illustrations to be shown by the lantern are photographs of the remarkably fine Greek sarcophagi discovered at Sidon, but now removed to the Museum at Constantinople. These objects are enriched profusely with fine sculpture and architectural ornament.

The Director of the French School at Athens reports to the French Minister of Public Instruction, that the work at Delphi, resumed on March 14, is progressing very favourably. Excavation is being carried on at three points on three different levels—the temple of Apollo, the treasure-house of the Athenians, and the Hellenikon or great retaining-wall of classic times. The number of workmen employed is 220, and the earth is carried away by a light railway. The Apollo temple has not yet been entirely cleared away; the foundations have been laid bare to a considerable extent, as well as part of the *peribolos* or sacred inclosure, but very few architectural fragments and no decorative remains have yet come to light—not a single metope, relief, or recognisable portion of the pediment. Only some carved lion-head waterspouts of the cornice, the drums and capitals of columns (all of porous stone, with traces of stucco coating) have been unearthed. There has also been found the pedestal of the statue of Victory, erected, according to the accompanying inscription, by Gelon, tyrant of Syracuse, after his great victory at Himera; the treasure house of the Athenians, with numerous reliefs representing the deeds of Herakles and Theseus, and many official inscriptions; the treasure-houses of the Bœotians and of the Siphnians, the former containing numerous relief-carvings; and the Hellenikon. Among the single remains are a Kerkyræan bull, two marble horses life-size, mutilated statues of Apollo and of athletes, and reliefs representing sacred dances. Inscriptions have been discovered in great numbers. Some new fragments bearing musical notation have been discovered within the past fortnight, and are thought to be supplements to the mutilated portions of the Apollo Hymn discovered last autumn.

Classes have been arranged between the Council of the Manchester Society of Architects and the Technical School Committee of that city for the instruction of students in architecture. A regular course, extending over two years of instruction in architecture, building construction, and modern practice, leads up to the examination for the Associateship of the Royal Institute of British Architects. The lectures are delivered on the afternoons of the Mondays and Wednesdays, between the hours of 2 and 5. The society has issued a circular to every architect practising in Manchester, urging the desirability of impressing upon pupils the necessity for their attending these classes, in which they will receive that instruction which it is impossible for a busy professional man to find time to impart to them, and at the same time requesting the employers to allow their pupils to have these afternoons at their disposal so as to enable them to attend.

The London County Council considered on Tuesday a report from the Public Health and Housing Committee as to the provision that should be made for washing and drying the tenants' clothes on the Boundary-street area, Bethnal Green, who had come to the conclusion that a common laundry was preferable. The superintending architect had submitted a plan of the proposed building, the site of which lies in Turville-street and Charlotte-buildings, showing 42 washing stalls and as many drying houses. The estimated outgoings and receipts showed an anticipated annual deficit of £392 18s. 3d., representing an additional rent of $\frac{3}{4}$d. per week per room. On the other hand, by abandoning the laundries in the dwellings, a capital outlay of £13,125 would be saved, equivalent to a saving of an annual expenditure of £700 13s. 9d., or $1\frac{1}{4}$d. per week per room. The total gain therefore to the tenants would be ½d. per room. After some discussion the recommendation of the committee was adopted, and instructions were given for detailed drawings to be prepared.

The autumn exhibition at the Castle Art Museum, Nottingham, for the present year, takes the form of the works of the essentially modern Cornish schools of painters. Mr. G. Harry Wallis, the art director of the Nottingham Gallery, has brought together over 220 representative works by members of the Newlyn, Lelant, Falmouth, St. Ives, and other colonies of artists in West Cornwall, and has published an illustrated catalogue of the exhibition. The display, which was opened on Friday, is a remarkable one, and will be of much value to the student and the general public. A new system has been adopted in hanging, the works of each artist being grouped together. Landscapes and seascapes, of course, predominate; but there is a good sprinkling of *genre* and impressionist works. The place of honour is occupied by Stanhope Forbes's "Forging the Anchor," and he is also represented by "The Village Philharmonic." From the Chantrey Bequest comes Frank Bramley's "Hopeless Dawn," Chevallier Tayler's clever effect in lighting, "A Dinner Party," and his "Departure of the Fishing Fleet from Boulogne," and "Confirmation Day" are worth notice; and other prominent contributors are Alfred East, Walter Langley, T. C. Gotch ("Crown and Sceptre"), H. S. Tuke ("The Bathers"), C. Napier Hemy (river and canal scenes from Venice and Putney, and two fishing incidents), Adrian Stokes, Mrs. Marianne Stokes ("Hail, Mary!"), Mrs. Stanhope Forbes, Fred Hall, and F. W. Boudillon.

It is proposed to remove the well-known parish church of St. Enoch, at Glasgow, from its present position in St. Enoch-square "to some locality where it may be of greater benefit." Subway and other operations have cracked its walls, and as it would take a very considerable sum to execute the necessary repairs, the Presbytery think removal best. A site in New City-road, a district "where church accommodation is much required for the poor," has been suggested. The churches committee of the town council are to make a full report, and the general question of the relations between the corporation and the whole city churches is to be discussed.

In a paper on "Domestic Boiler Explosions and Cylinder Collapses, their Cause and Cure," read by Mr. James Walker, at the Sanitary Congress at Liverpool, on Friday, the author, after tracing the cause of boiler and cylinder explosions to the formation of steam under pressure in the cylinder, and the choking of the relief vents, which were generally in exposed and inaccessible places, described an arrangement by which he considered these evils might be avoided. The water from the boiler, instead of circulating through the whole of the cylinder, is confined to an inclosed portion at the bottom, heating the other water in the cylinder by conduction only. This arrangement allows of the boiler and lower portion of the cylinder being freely ventilated at the low level, so that steam, if produced, would not be a source of danger. The other water in the cylinder and that circulating in the house-pipes, being only heated by conduction, could not produce steam. A siphon feed was arranged for the supply of water to the boiler, to prevent water entering the boiler when empty.

Mr. J. P. Norrington, the surveyor to the Fulham Vestry, is a strong advocate of wood for paving, and in his latest report to his vestry he remarks:—"It is becoming more and more evident that granite macadam is not a suitable material for the formation of carriageways with much traffic in large towns, both on account of the cost of scavenging and the noise of the traffic; asphalte is too slippery for fast traffic, although in the City its cleanliness and durability render it very suitable for the excessively heavy traffic and slower moving vehicles. The hard woods of Australia are both antiseptic and durable, and as the competition becomes more keen every year, a considerable reduction in the price of them may be looked for." Taking into account their evenness of quality and durability, he regards the woods from Western Australia as the cheapest for paving purposes. He gives details showing a considerable saving on contractors' prices by carrying out works of paving under his own supervision.

Some experiments were recently made by the Buildings Inspection Department, Vienna, on the protection of iron from fire by incasing it with brick. A wrought-iron column, 12ft. long, and built up of two channels connected by lattice bars, was used. This was set up in a small chamber constructed of brick, and the column was loaded by levers. This done, it was surrounded by a 4½in. brick wall laid in fireclay mortar. Between the wall were fixed samples of fusible metals, which should serve as a gauge of the temperature attained. Various samples of stone concrete and other materials were also placed in the chamber within the column. This chamber was then filled with firewood, which was lighted, and the doors were walled up. An examination of the room after the fire had burned itself out showed that the walls of brick laid in Portland cement retained their strength, whilst most of the natural stones left in the chamber had been destroyed. The ceiling had been lined partly with plaster of Paris and partly with terracotta tiles. Both were damaged. The inclosure round the iron pillars was still standing firm, though corners of the brickwork were chipped 1in. or so, and the fireclay mortar was largely washed out of the joints. On removing the casing, however, the pillar inside was found to be uninjured, even the paint being unscorched, and the fusible plugs only showed a temperature of 149° Fahr.

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MEETINGS FOR THE ENSUING WEEK.

Monday.—Liverpool Architectural Society. Opening Address by the President, Henry Hartley, F.R.I.B.A. 6.30 p.m.

Tuesday.—Royal Society of Antiquaries of Ireland. Meeting at the Royal Dublin Society's House, Dublin. 4.30 p.m.

Thursday.—University College, London. Free public lecture, "Discoveries in Architecture." by Professor T. Roger Smith, F.R.I.B.A. 7.30 p.m.

Friday.—Architectural Association. Conversazione at the Queen's Hall, Langham-place, W. 8 p.m.

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The foundation-stone of new Church schools for Wetherby was laid on Tuesday by Colonel Gunter, M.P. The schools, which are from designs by Mr. A. A. Gibson, architect, Harrogate, will cost £1,300, exclusive of land, and will accommodate 412 children. All the work is being executed by Mr. G. B. Thain, contractor, Wetherby.

As a consequence of the tension in the architect's branch of the United States Treasury, resulting from the adoption by a Committee of Congress of the McKaig Bill, by which the designing of all public buildings in the States is to be thrown open to competition by outside architects, Mr. Carlisle, the Secretary of State, has, in a curt note, demanded the resignation of the supervising architect of the Treasury Department, Mr. Jeremiah O'Rourke.

The opening of the Poplar Public Library, situate in the High-street, took place on Wednesday. The site was purchased at the cost of £2,000, and the edifice has been erected for £7,000. The building has been erected from designs by Messrs. J. and S. F. Flint Clarkson, of Great Ormonde-street, W., and High-street, Poplar, and was illustrated in the Building News by plans, elevations, and sections on Oct. 14, 1892. The library contains 7,500 volumes, and shelf-room is provided for 40,000 volumes. Mr. Passmore Edwards contributed 1,000 books.

On Monday there was opened at Swansea a new temperance hall, which has been erected at a cost of £10,000 (including the freehold site). Shops, with suites of offices above, are provided in Gower-street, and the hall itself fronts in Orchard-street. The ground floor is arranged as a coffee-tavern, with dining-rooms, billiard-room, and friendly societies' room. Above is the hall, which has accommodation for 1,400 people. It has a permanent platform and a gallery. The exterior of the hall is of grey polestone, with red sandstone dressings, and the style is Jacobean. The architects were Messrs. Hannaford and Wills, and the contractors Messrs. Gustavus Bros.

In memory of the late Bishop Charles Wordsworth, a tablet bearing a Latin inscription has been recently placed in Thurbern's chantry, in the chapel of Winchester College, of which the late Bishop of St. Andrew's was second master, and for the last 20 years of his life a Fellow. The memorial is fixed below the tablet in memory of the Bishop's first wife. It is of white statuary on a black marble ground, treated in the Later Perpendicular style, so as to harmonise with the architecture of the chantry. It has a cusped four-centred arch with carved spandrels, inclosing the inscription, together with panelled quatrefoils and bands of Tudor foliage. The mitre, with St. Andrew's cross, has been worked in at the top. Messrs. Cancellor and Hill, of Winchester, designed the work, which was executed by Mr. Marsh, of Fulflood.

Trade News.

WAGES MOVEMENTS.

Bristol.—A Building Industries' Federation has been formed for Bristol and District, and a compiling committee has been elected for the purpose of drawing up a final code of rules, to be issued to the various sections of the building trades.

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CHIPS.

The Blackpool town council decided on Tuesday to proceed with the widening of the Promenade for a distance of about 650 yards between Station-road and Alexandra-road. Mr. J. Ireland's patent system, which fulfils the dual object of widening the footway and at the same time forming a sand shield, is to be adoped, and the estimated cost of the work is £15,000.

Works are in progress for making a dam across the Coal Burn in Haselton Wood to form a reservoir for an additional supply of water to the thriving Northumbrian port of Blyth. The reservoir will hold twenty million gallons of water, and the contract for its construction has been taken by Mr. Bailey, of Gateshead.

The new reservoir for the city of Bath, now being constructed at Monkswood, is to be brought into use in March, 1896. Mr. Fox is the engineer, and Messrs. W. Neave and Son are the contractors.

The new church of All Saints, Hertford, will be dedicated by the Bishop of St. Alban's on December 21st, that being the anniversary of the day on which the old church was burnt down. The building has been re-erected from plans by Messrs. Paley, Austin, and Paley, of Lancaster, and was illustrated in our issue of January 6, 1893, by a double-page perspective and plan. The arrangements follow those of the old building, the style being Perpendicular, and there being no chancel arch. The outlay has been over £15,000.

Twenty-three competitive designs have been sent in for the statue of Edward Colston, proposed to be erected in Bristol, from sculptors residing at Edinburgh, Manchester, Birkenhead, London, Bristol, and other towns. Eight designs have been chosen for the final selection, to be made next week. The cost of the 23 models in wax and plaster is estimated at over £500, whereas the total amount subscribed for the statue is under £400.

The extensions to the Royal Hospital, Richmond, Surrey, are now nearing completion. A new children's ward, called the "Princess May" ward, has been added, which is being warmed and ventilated by means of Shorland's patent Manchester stoves, with descending smoke flues, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester. The architect is Mr. Frank J. Brewer, of Richmond.

A new church erected at Ynysyfeio, near Treherbert, was opened last week. It is Gothic in style, seats 350 persons, and cost over £2,000.

Mr. R. W. Macbeth's painting "In Clover" has just been presented to the permanent collection of the Walker Art Gallery at Liverpool by Mr. Temple, of Aigburth.

Mr. Codrington, C.E., on behalf of the Local Government Board, held an inquiry at Penmaenmawr, on Tuesday, respecting an application by the local board for a loan of £2,500 for the construction of a road from the railway station. Evidence in support of the application was given by Mr. J. S. Coverley, the surveyor.

The foundation stone of a new Free Church was laid at Gretna on Wednesday week. The church will seat 200 persons, and will cost about £500. The walls will be of red Corsehill stone, and the style will be a simple type of Early English. Mr. T. Taylor Scott, of Carlisle, is the architect, and the chief contractor is Mr. James Rae, of Springfield.

The foundation-stone of Portskerra Harbour, on the west coast of Sutherlandshire, was laid on Wednesday by Lady A. Gordon Lennox.

The Prince of Wales will open St. Saviour's Public Library, Southwark, on November 2. The library is situate at the corner of Southwark Bridge-road and Union-street, and is of an ornate type of Italian. The architect is Mr. John Johnson, of Queen Victoria-street, E.C., whose design was selected in competition just two years ago.

On every hand there are, in Canada, indications of a revival of trade. The settlement of the American tariff question has had a beneficial influence on commerce in the United States, which is extending to Canada. As the result of the free exportation of Canadian lumber into the United States market, we may expect to witness great activity in the manufacture of rough and finished lumber in Canada, and this must have a beneficial influence on every department of trade in the Dominion.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Ammanford.—For alterations and additions to Bettws vicarage, for the Rev. E. Lloyd. Mr. David Jenkins, F.R.I.B.A., Llandilo, architect:—

Davies, J., Swansea (accepted)	£153	0	0

Belgravia.—For shop fittings, &c., at No. 12, Lower Belgrave-street, S.W. Messrs. Morley and Letts, 185, Earl's Court-road, S.W., surveyors:—

Smith, W. J.	£247	0	0
Whitaker, J.	229	0	0
Drew and Cadman	193	0	0
Williams, T. F., 30, Moreton-place, S.W. (accepted)	189	10	0

Bridgend, Glam.—For the construction of eight miles of railroad on the Bridgend side of the Vale of Glamorgan Railway:—

Woolley, of Wrexham (accepted).

Bristol.—For repairs to machinery at the swing-bridge, Cumberland-basin, for the Bristol Docks Committee:—

Spencer and Co. (accepted)	£123	0	0

Bristol.—For rehanging the peal of eight bells in the tower of St. Thomas's Church. Mr. W. V. Gough, of Bristol, architect:—

Llewellin and Janes, of Bristol (accepted).

Camberwell.—For alterations to Lording's, 156, Denmark Hill, for Mr. Charles D. Tustin. Mr. Percy H. Clarke, 2, Lancaster-place, Strand, London, surveyor:—

Parker, G., Peckham	£1,812	0	0
Evans R. and E., Peckham	1,721	0	0
Burman and Sons, Kennington	1,604	0	0
Parsons, J., Kennington	1,567	0	0
Balaam Bros., Hatcham (accepted)	1,489	0	0

Cardiff.—For the erection of a new mission hall, Grangetown, Cardiff, in connection with the "Cardiff Forward Movement." Messrs. Habershon and Fawckner, Cardiff, Newport, and London, architects. Quantities supplied:—

Davies, D. J.	£3,200	0	0
Firbank, J. H., Newport	2,955	10	0
Dunn, C. C.	2,950	0	0
Griffiths, G.	2,950	0	0
Best, W., and Co.	2,905	14	0
Lattey and Co.	2,865	0	0
Hatherley and Carr, Bristol	2,853	0	0
Trotman, E.	2,837	15	7
Howell, A. J., and Co.	2,836	0	0
Evans, E. R.	2,834	2	9
Wood, T., and Son	2,830	0	0
Shepton. S., and Son	2,785	0	0
Davies, D.	2,778	0	0
Gibbon, H.	2,700	0	0
Rutter, G., Barry	2,647	0	0
Turner, E., and Sons	2,638	0	0
Davies, H.	2,579	0	0
Knox and Wells (accepted)	2,368	0	0

(Rest of Cardiff.)

Crewe.—For the erection of the new church of St. John in the south end of the borough:—

Cotterill, A. P., Crewe (accepted) about £4,000

East Ham, E.—For furniture and fittings for the Shaftesbury-road School, for the East Ham School Board:—

For three revolving shutters:—

Francis and Co.	£108	15	0
Hoskins, S.	94	0	0
Clark, Bunnett and Co. (accepted)	79	18	6

For cupboards and desks:—

Hammer, G. H., and Co.	£67	0	0
Educational Supply Association*	66	6	6
Taylor	65	0	0
Wake and Dean	61	7	6

* Accepted.

Eastleigh, Southampton.—For new roof and additions to the drill hall, Desbrough-road, of the 1st Hants Volunteers, S.D.R.A., for Colonel Bance, D.L. Mr. R. M. D. Lucas, Southampton, architect. Quantities by the architect:—

Jordan, G. B., and Co.	£420	7	0
Stevens, H., and Co. (accepted)	420	0	0

(Both of Southampton.)

Eccles.—For boring a trial hole adjoining the public baths, for the town council:—

Thorn, J., of Patricroft (accepted).

Fulham.—For engineering works, consisting of steam and condense mains, hot-water supply, and warming apparatus, &c., at the Western Hospital, Seagrave-road, Fulham, for the Metropolitan Asylums board. Messrs. A. and C. Harston, 15, Leadenhall-street, E.C., architects:—

Matthews and Yates, Ltd.	£5,312	12	0
Fraser, J., and Son	4,971	10	0
Clements, Jeakes, and Co.	4,500	0	0
Kite and Co.	4,395	0	0
Burn Bros.	4,359	0	0
Christie, J. C.	4,137	0	0
Clarke, J., and Sons	4,099	0	0
Purcell and Nobbs	3,982	0	0
Easton and Anderson, Ltd.	3,965	0	0
May, J. and F.	3,945	0	0
Strode and Co.	3,793	0	0
Brown, Kearley and Co.	3,700	0	0
Sugg and Co., Ltd.	3,625	0	0
Ellis, J. C. and J. S., Ltd., Sheffield*	3,340	0	0

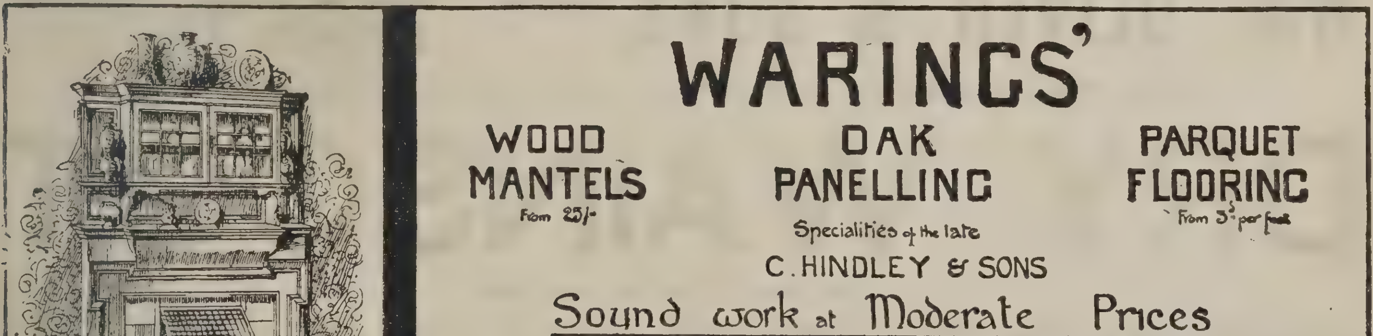
* Accepted.

Grimsby.—For fitting up the chemical laboratory with desks, at the technical school, for the town council:—

Carter, G. (accepted)	£45	0	0

Hanley.—For the erection of a bandstand in the public park:—

Cornes, C. (accepted)	£325	0	0



Hampstead.—For new sanitary items, &c., at No. 27' Belsize Park, N.W. Messrs. Morley and Letts, 185' Earl's Court-road, S.W., surveyors :—

Whitaker, J.	£449	0	0
Gregory and Bence	427	0	0
Head, H.	410	0	0
Myring, J., and Co., 67 and 69, Abbey-road, N.W. (accepted)	395	0	0

Horselydown.—For the erection and completion of an addition to the Anchor Brewery, Horselydown, for Messrs. Courage and Co., Limited. Messrs. Inskipp and Mackenzie, architects. Quantities by Messrs. R. L. Curtis and Sons :

Nightingale, B. E.	£17,850	0	0
Munday and Sons	17,479	0	0
Kirk and Randall	17,000	0	0
Lawrence, E., and Sons	16,500	0	0
Williams, H. J.	15,987	0	0
Watson, W.	15,524	0	0

Ipswich.—For the supply of 138,000 wood blocks (the standard size being 9in. by 4½in. by 3in.) for paving the Butter-market and Fore street, for the town council. Mr. E. Buckham, borough surveyor :—

	Per 1,000.		
Burt, Bolton, and Hayward, Rotherhithe	£5	17	6
Acmé Wood Flooring Company	5	15	0
Christie, F. A., Ipswich	5	12	6
English Brothers, Wisbech	5	5	0
Wade, Son, and Co.	5	2	6
Bennetts and Co., Grimsby	4	11	9
Allen, T. W., Hull	4	2	6

Kensington.—For sanitary and decorative reparations at 101, Earl's Court-road. Messrs. Morley and Letts, 185, Earl's Court-road, S.W., surveyors :—

Rugg, J.	£340	0	0
Whitaker, J.	291	0	0
Edwards and Son	260	0	0
Hancock and Son, 49, Marloes-road, Kensington (accepted)	249	0	0

Lancaster.—For roof over the economiser at the central electric supply station, for the town council :—

Richardson, W. (accepted)	£43	0	0

Llandebie.—For building six workmen's dwellings at Penygroes, for Mr. William Williams, schoolmaster. Mr. David Jenkins, F.R.I.B.A., Llandilo, architect :—

Davies, L.	£1,207	0	0
Davies, J.	1,155	0	0
Jones, D.	1,080	0	0
Evans, P.	930	0	0
Davies and Jones	840	0	0
Evans, D.	825	0	0
Jones, D. H., Llandilo (accepted)	800	0	0

Ledbury.—For alterations to the board schools. Mr. Godsall, architect :—

Smith, of Ledbury (accepted).

London.—For the erection of a block of warehouses, High-street, Stratford, E., for Messrs. A. T. Morse and Co. Messrs. Newman and Jacques, 2, Fen-court, E.C., architects. Quantities by Messrs. R. L. Curtis and Son :—

Newman, J. H.	£5,546	0	0
White and Son	5,186	0	0
Catley, J.	5,150	0	0
Craig, T. H.	4,999	0	0
Sabey and Son	4,900	0	0
Howlett and Co.	4,890	0	0
Calnan and Co.	4,830	0	0
Hearle and Farrow	4,800	0	0
Bishop and Webb	4,790	0	0
Coxhead, F. J.	4,770	0	0
Maddison, W. J.	4,717	0	0
Scott, S. J.	4,675	0	0
Nightingale, B. E.	4,669	0	0
Kirk and Randall	4,649	0	0
Reed and Son	4,640	0	0
Higgs, F. and H. F.	4,632	0	0
Pattison, S. and W.	4,538	0	0
Fortescue, W.	4,498	0	0
Sharpe, G.	4,445	0	0
Gregar and Son	4,444	0	0
Batley, Sons, and Holness*	4,439	0	0

* Accepted.

Maidstone.—For the reconstruction of the sewer in Upper Fant-road, for the town council :—

Wallis and Sons (accepted)	£142	0	0

[Lowest tender received.]

Newport, Mon.—For the erection of an infectious diseases hospital, for the town council :—

Morgan, A. S., and Co., Newport	£8,800	0	0

(Accepted).

Plymouth.—For the erection of two limekilns at Deadman's Bay, Plymouth, for Messrs. Sparrow and Co. Mr. H. J. Snell, architect :—

Partridge, J.	£1,040	0	0
Lethbridge, A. R., and Son	815	0	0
Jinkin, W. T.	800	0	0
Blowey, P.	686	0	0
Finch, J. (accepted)	480	0	0

(All of Plymouth.)

Sandy.—For new store rooms at Sandy. Mr. E. Twelvetrees, Sandy, architect :—

French and Co., Sandy	£135	0	0
Cope and Hendry, Sandy	112	10	0
Hendry, R. A., Sandy (accepted)	108	10	0

Sandy.—For the erection of two villa residences. Mr. E. Twelvetrees, Sandy, architect :—

Hendry, R. A., Sandy	£607	10	0
French and Co., Sandy	576	0	0
Cope and Hendry, Sandy	576	0	0
Coleman. Bedford	575	0	0
Fathers, Bedford	523	0	0
Rainsford Bros., Potton (accepted)	517	0	0

[Including a separate tender for plumbing, glazing, and painting.]

Saxmundham.—For the erection of a board school :—

Knowles, G. P., Aldeburgh	£2,052	0	0
Cutting and Sons, Saxmundham	1,894	0	0
Leggett, R., Middleton	1,804	0	0
Gibbs, W. H., Saxmundham	1,800	0	0
Barrell, G., Woodbridge	1,732	0	0
Smith, W. J., Woodbridge	1,720	0	0
Carter and Son, G., Saxmundham*	1,565	0	0

* Accepted.

Southborough, Kent.—For isolation hospital buildings and water supply :—

	A.			B.		
Langley and Co., Crawley	£2,798	0	0	—		
Jarvis, J., Tunbridge Wells	2,843	15	0	—		
Strange and Sons, Tun. Wells	2,776	18	0	£169	0	0
Langridge, R., Snodland	2,775	7	7	116	16	0
Avard, R., Maidstone	2,727	0	0	—		
Davis and Leney, Goudhurst	2,692	0	6	201	11	0
Punnett, E., Tonbridge*	2,688	0	0	—		
Porter, D. H., Queen Victoria-street, E.C.	2,359	0	0	97	0	0
Seal and Austen, Tonbridge*	—			111	6	6

A.—Buildings. B.—Water supply.

* Accepted.

Spitalfields.—For new building on site of Nos. 20 and 22, Hanbury-street, Spitalfields, E., and buildings in rear. Mr. Alfred Conder, F.R.I.B.A., Palace Chambers, Westminster, architect. Quantities by Mr. Edward J. Paine, F.S.I., of 11, Great James-street, W.C. :—

Chapman, J.	£2,679	0	0
Chessum, J., and Sons	2,547	0	0
Knight, T.	2,529	0	0
McCormick and Sons	2,482	0	0
Holloway, H. L.	2,339	0	0
Stimpson and Co.	2,334	0	0
Greenwood, J.	2,263	0	0
Brady, G. F. (accepted)	2,200	0	0

York.—For strengthening Lendal Bridge, for the city council :—

Cleveland Bridge & Engineering Co.	£702	0	0

(Accepted.)

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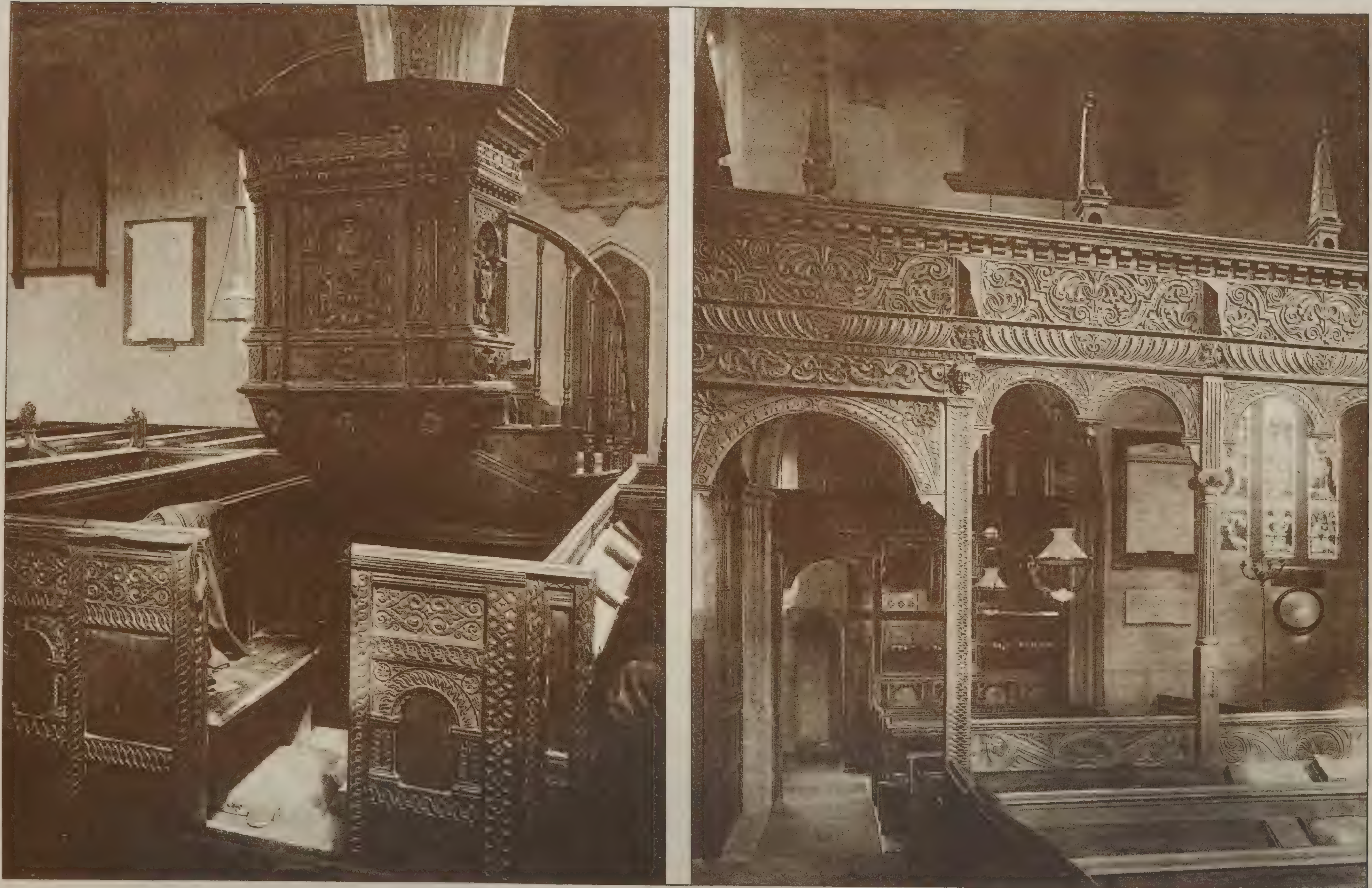
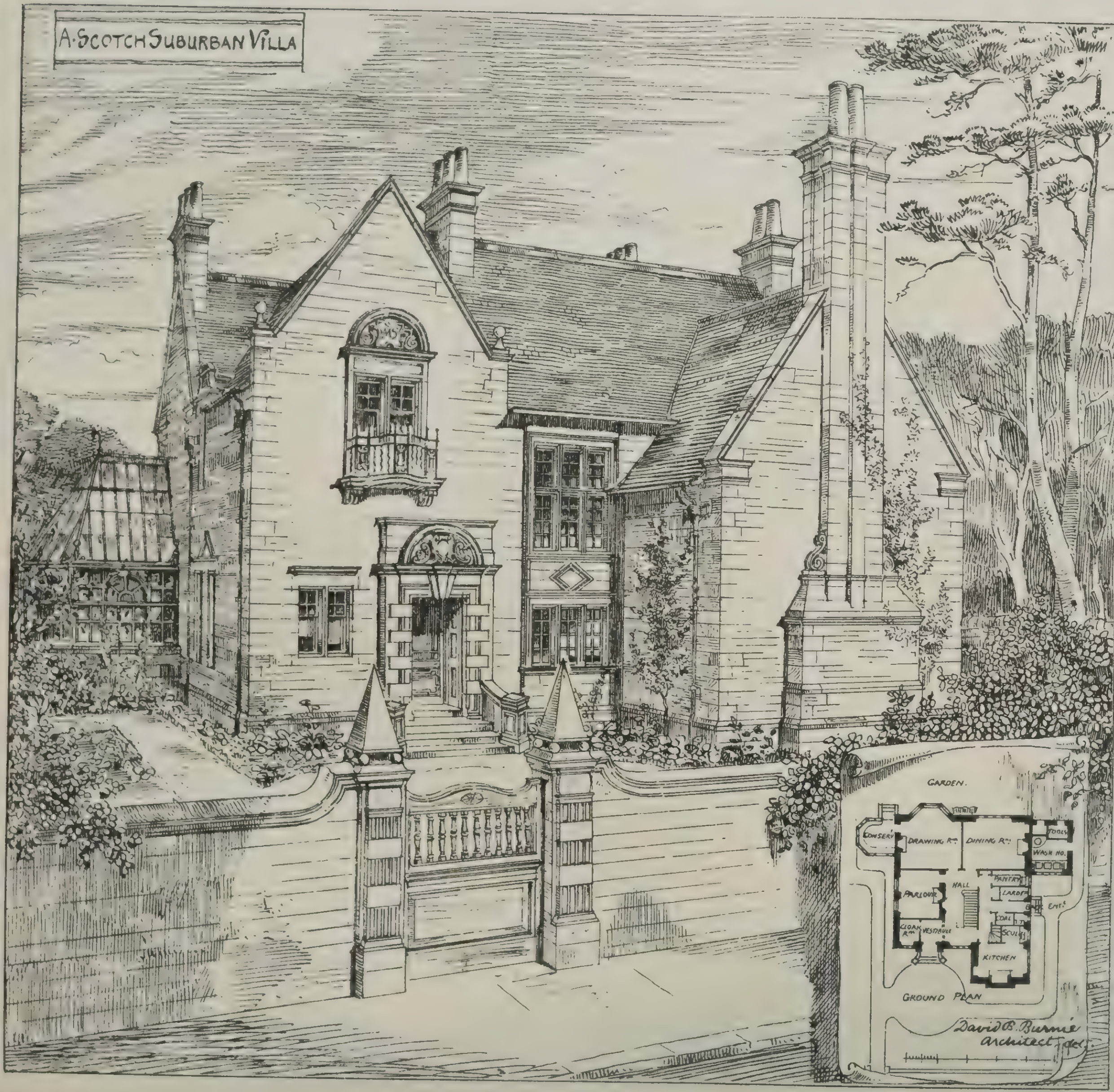


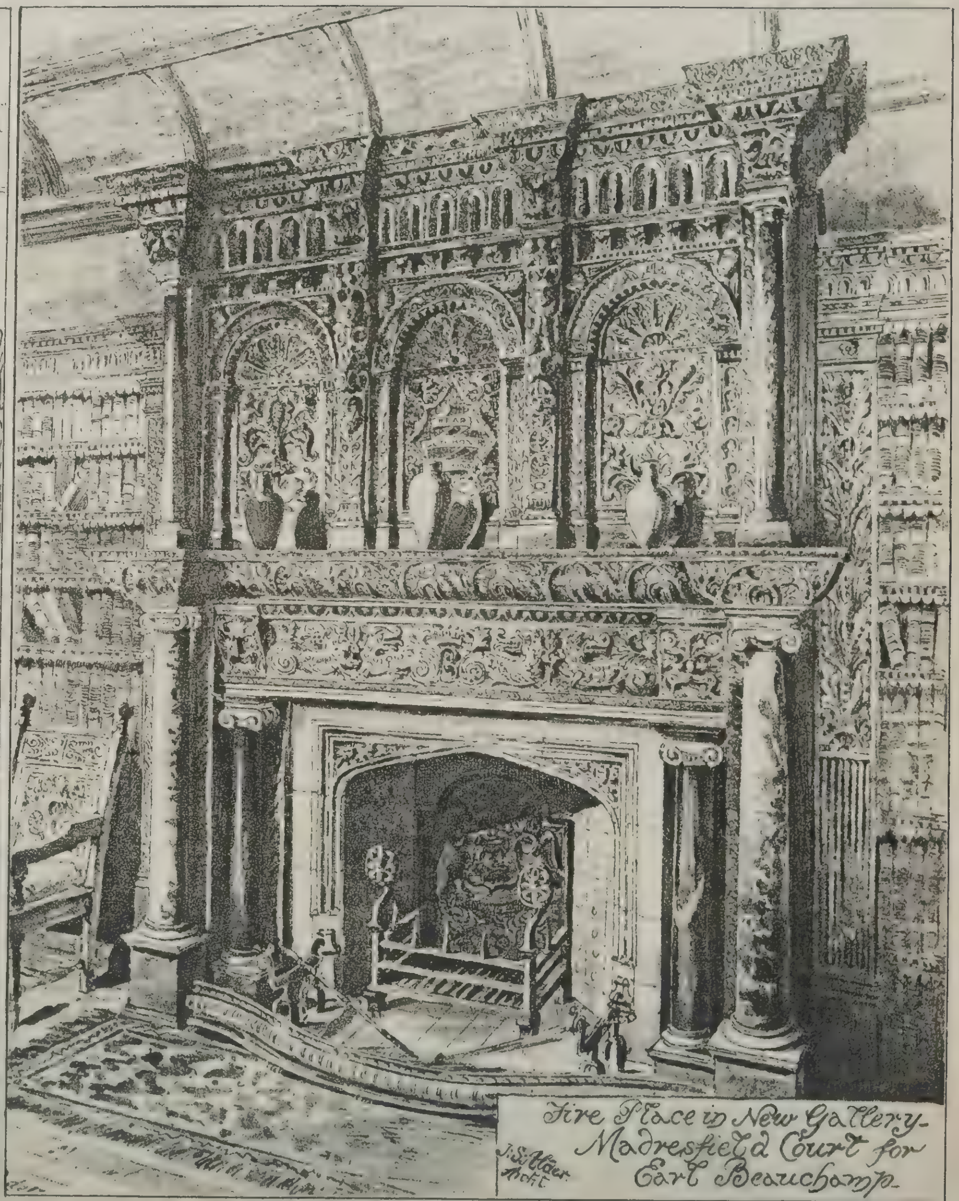
"Photo-Tint," by James Akerman 6 Queen Square London W C

Choir · Screens & Pulpit · Croscombe · Church · Somerset · Photographed by John L. Robinson



A·SCOTCH SUBURBAN VILLA

David B. Burnie Architect del.



Fire Place in New Gallery-
Madresfield Court for
Earl Beauchamp.

J. S. Alder Archt.

"PHOTO-TINT," by James Akerman. London W C

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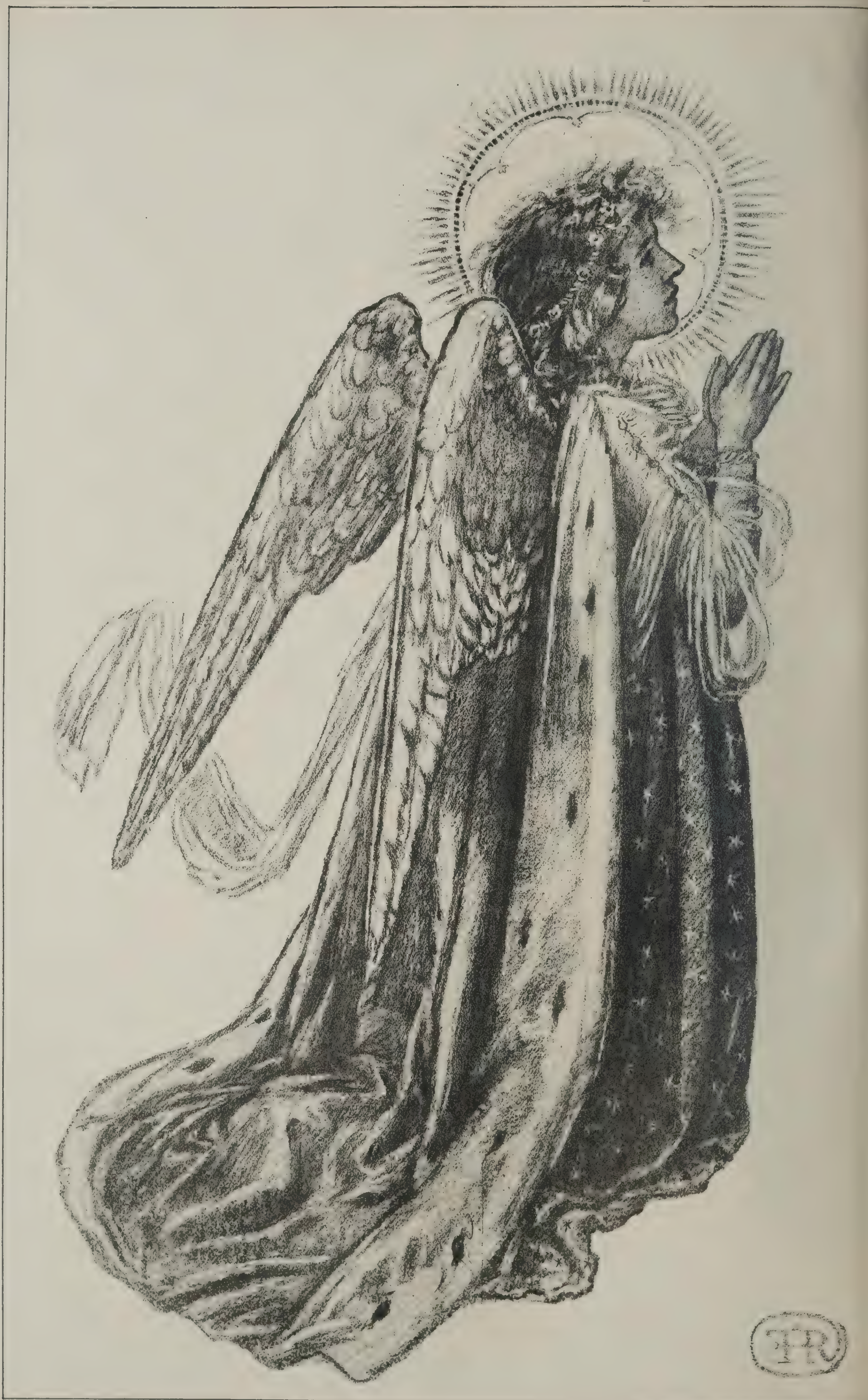
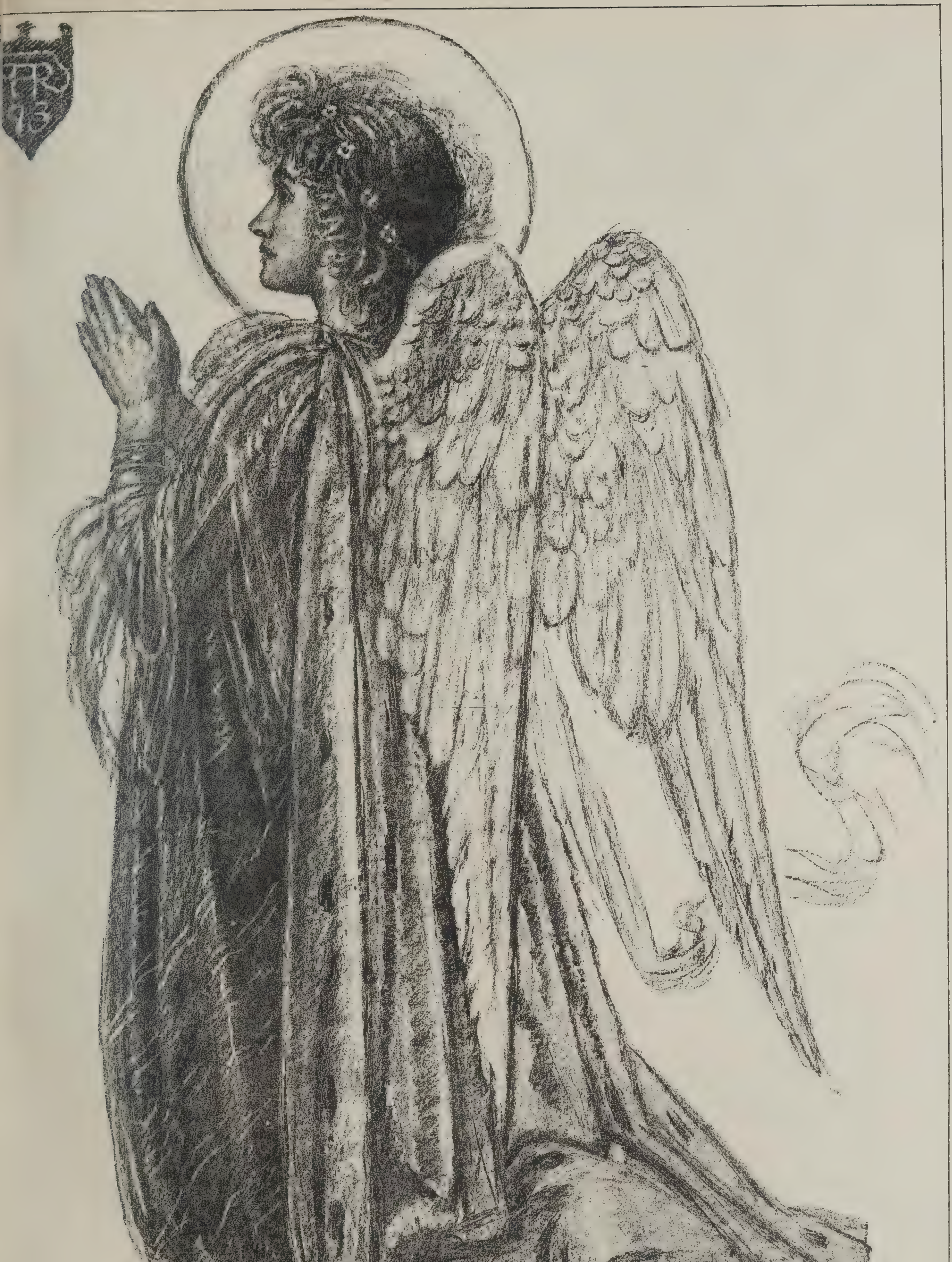


CARTOONS OF ANGELS FOR HOLYWELL



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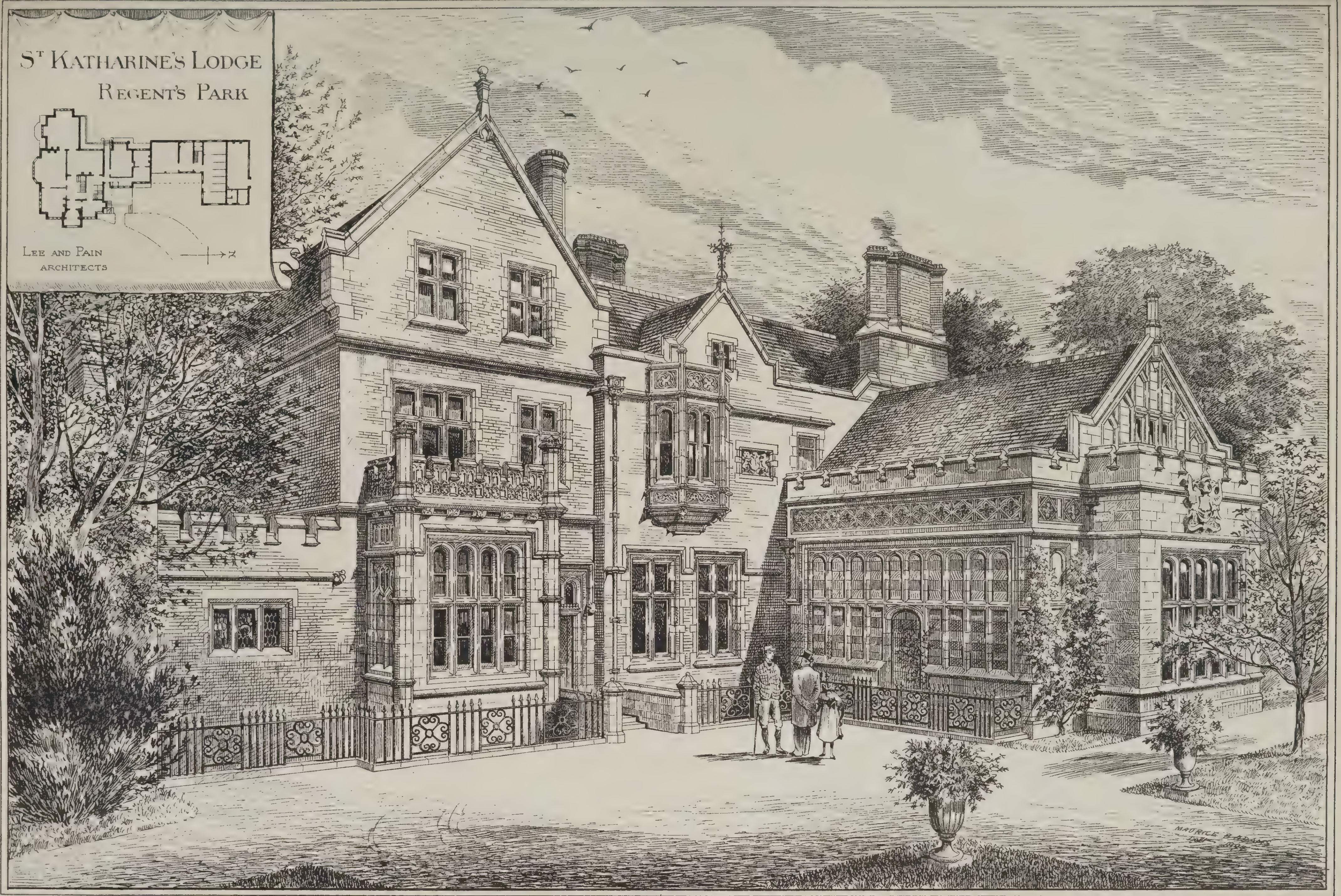
H · Oxford · by · Reginald · Hallward ·



St Katharine's Lodge
Regent's Park

Lee and Pain
Architects

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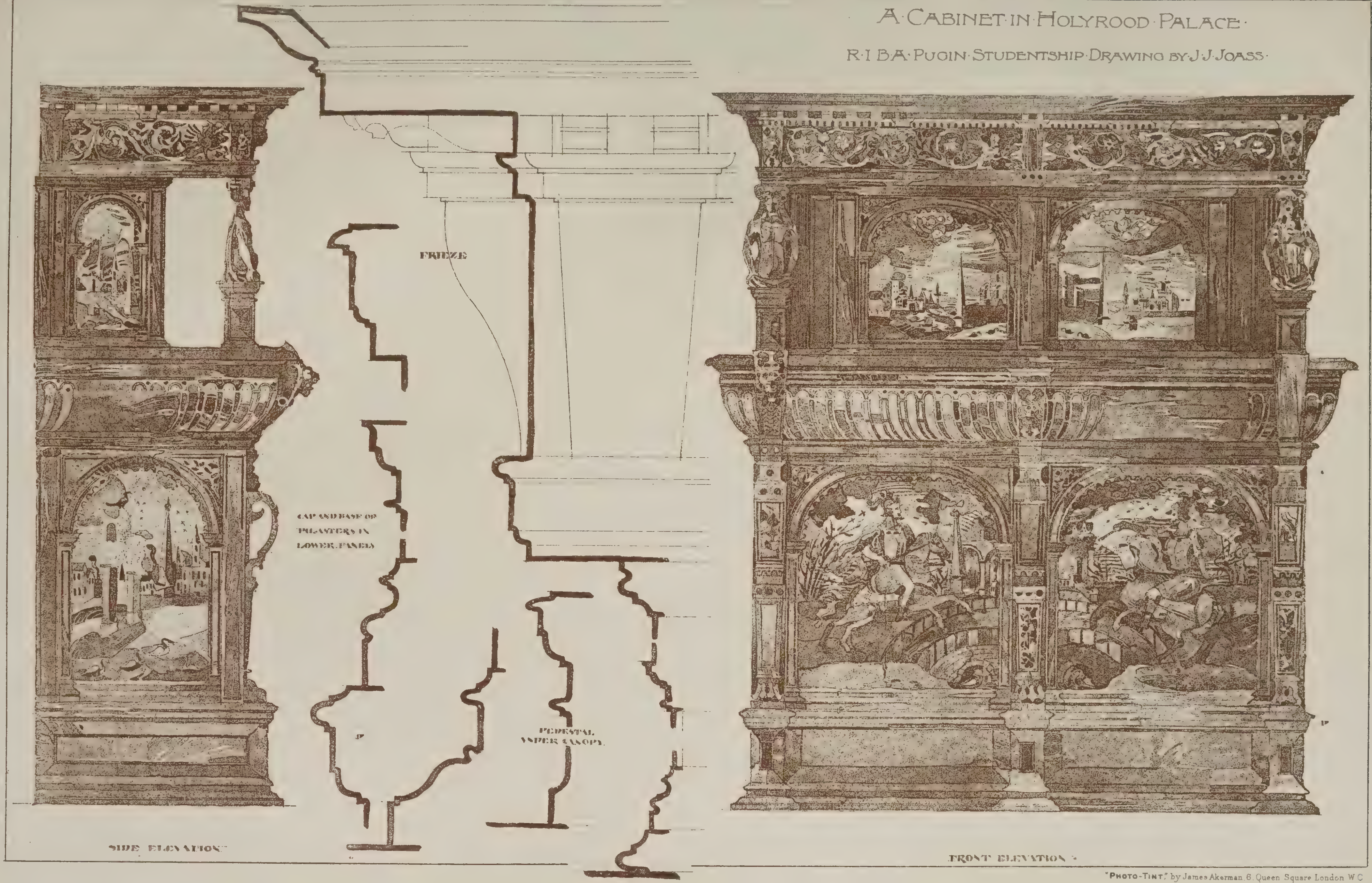
A·CABINET·IN·HOLYROOD·PALACE·

R·I·B·A·PUGIN·STUDENTSHIP·DRAWING·BY·J·J·JOASS·



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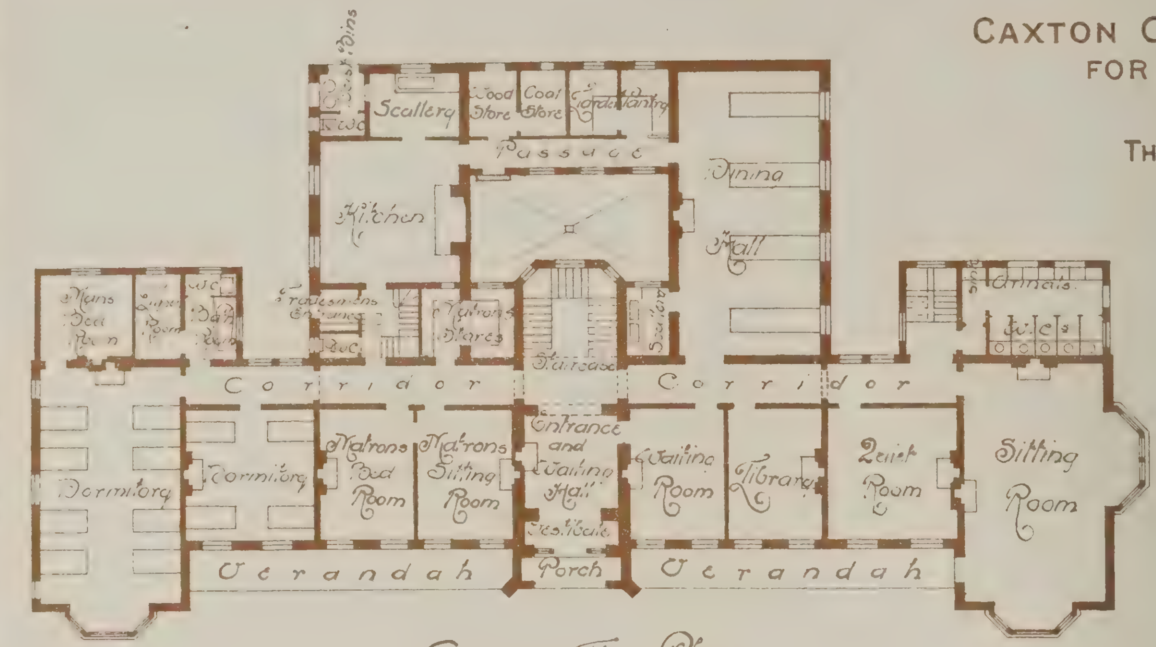
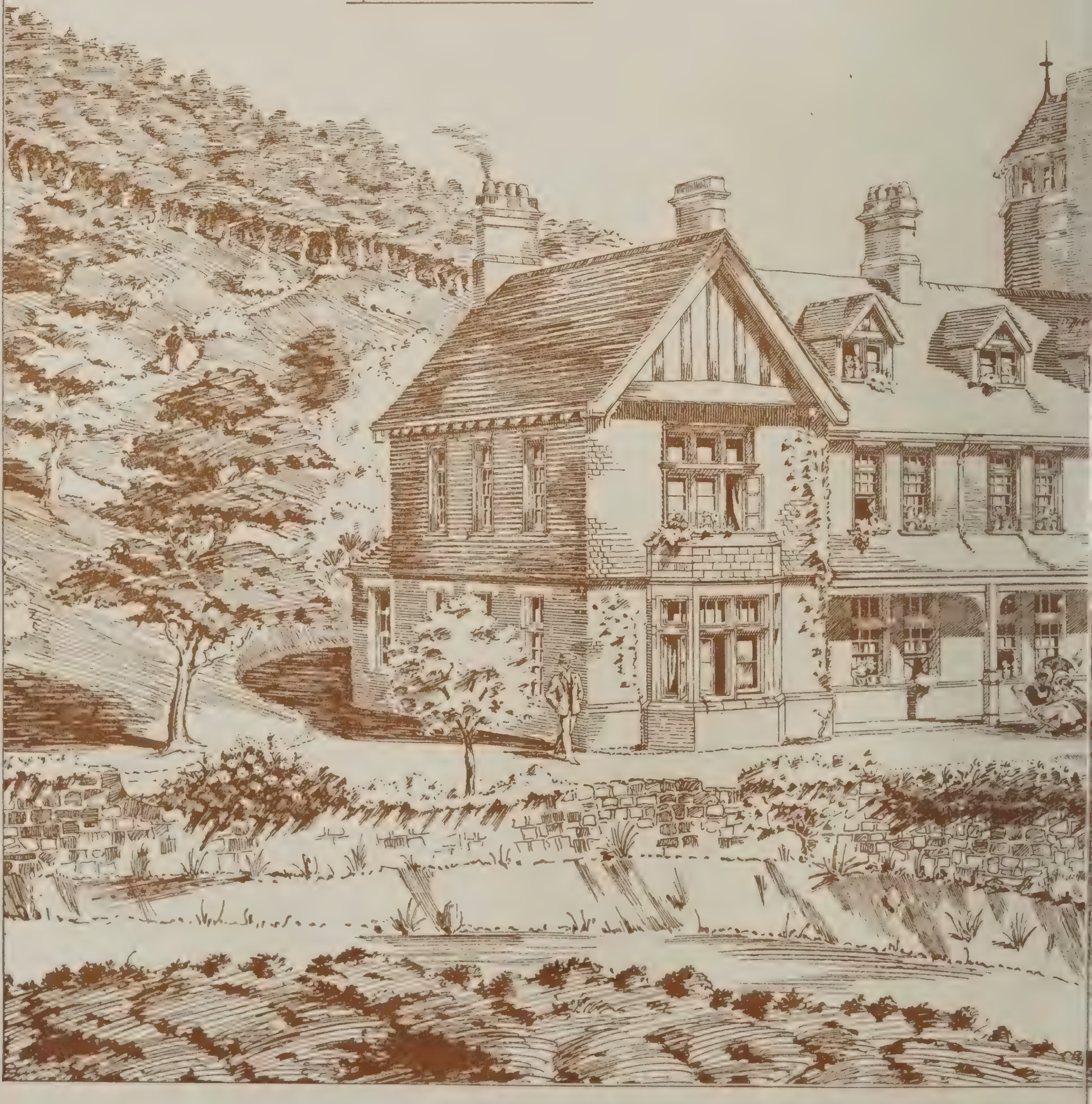


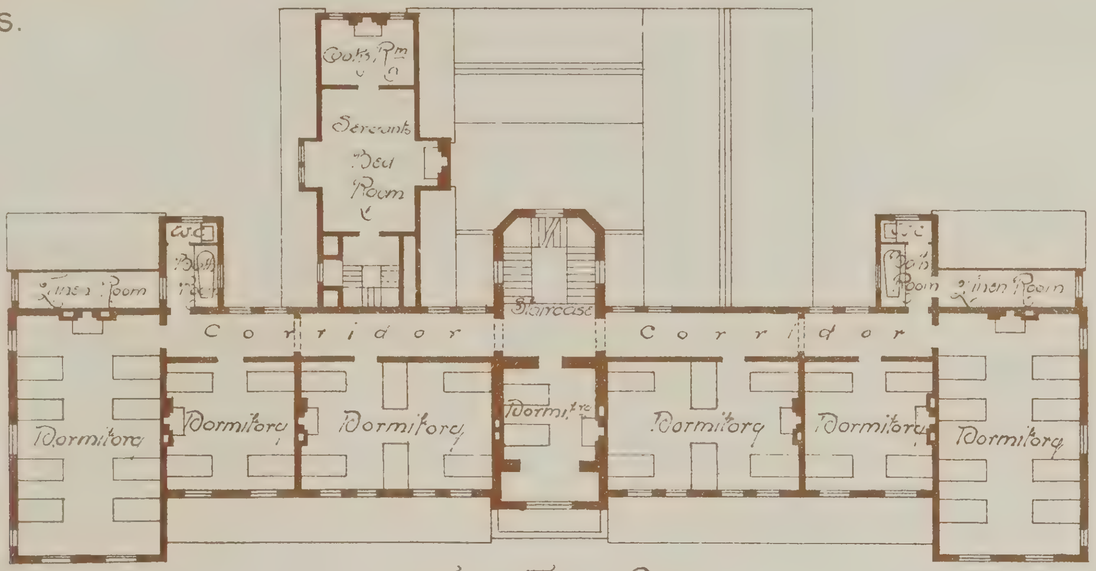
Ground Floor Plan



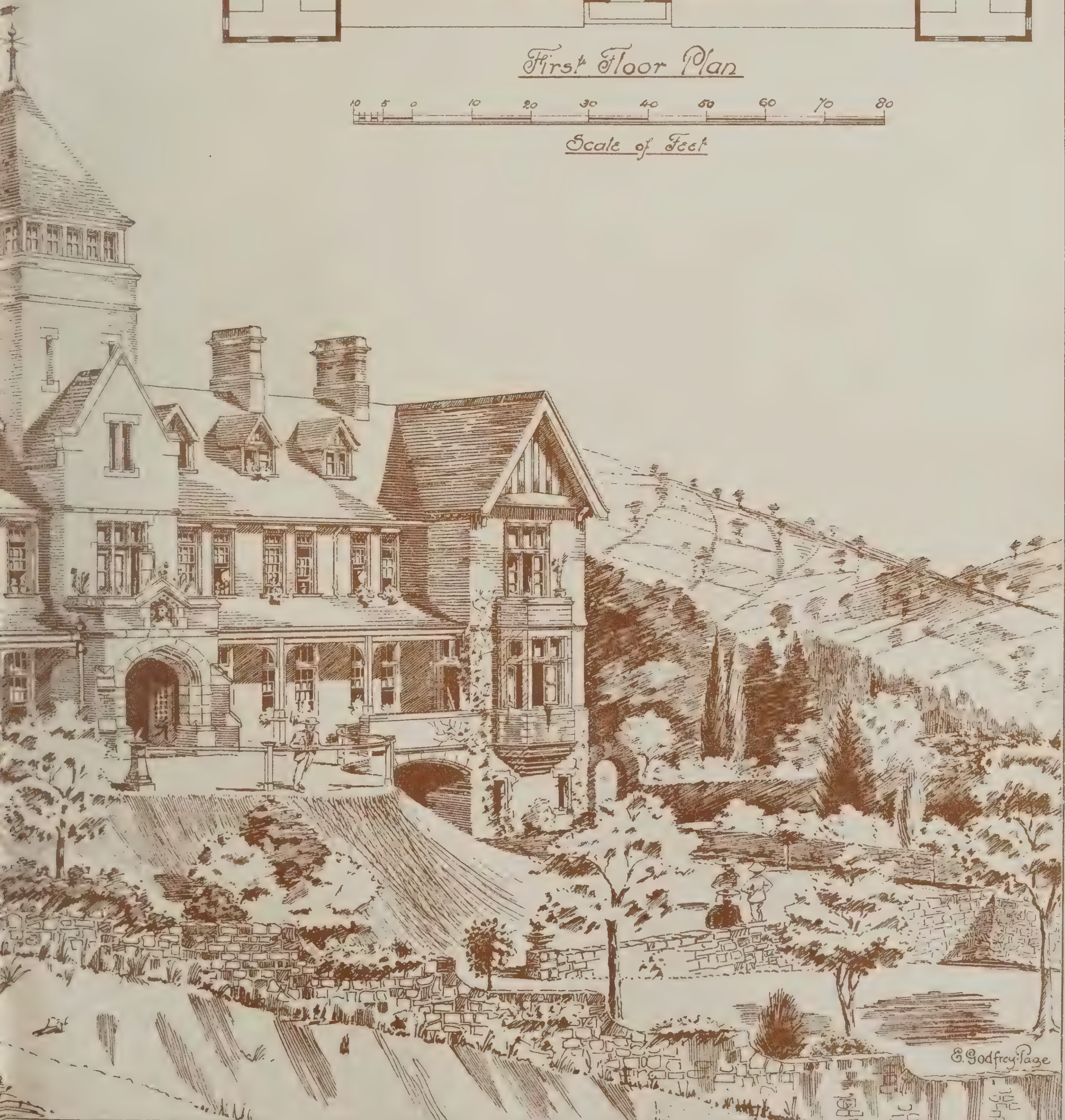
HOME, OXTED, SURREY,
ND ALLIED TRADES.

SSMORE EDWARDS.

F.R.I.B.A., ARCHT.



First Floor Plan



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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2075.

FRIDAY, OCTOBER 12, 1894.

THE COMING RACE.

As another autumn begins, bringing with it fresh opportunities of training for the young architect, and of study for the older one, it is natural to ask what all these opportunities are doing for us. To some extent we can see what they are doing for those who are in practice. Their works speak for them, or against them, in a language which all can understand. Of those who have not got so far, it is less easy to judge. Time tries all, and of these some may turn out better and some worse than there now seems reason to expect. Under the present aspect, however, they are marked off with unusual clearness into two classes—the promising and the unpromising. Never before, perhaps, was there so much to be hoped for from the one set, and so little from the other.

The best men in the coming race have had advantages which their predecessors never enjoyed, and they have profited by them as it was right they should do. The pupil who was articled 30 years or more than 30 years ago was generally started on the wrong track to begin with. If he was in a so-called "Classic" office, he was simply taught how to affix the "Five Orders" as an external application or dressing to all sorts and conditions of buildings. If he was in a "Gothic" office he too often learned no more than to apply ecclesiastical details of the 13th or 14th century to churches, houses, shops, and offices alike. It was the theory of the time that whatever was good for one of these was good for all. Even then, archæologists saw that this was not quite the practice of the Middle Ages. The doors and windows in a 13th-century house were not exactly like the doors and windows in a 13th-century cathedral, and when the 14th or the 15th century was in question. the difference was still greater. But this little difficulty never staggered the Mediævalist of the bygone generation. If the ancient builders did not insert ecclesiastical details everywhere, he thought it was only because the ancient builders did not live up to their own principles. For his part, he scorned such inconsistency. Purity was his war-cry, and he meant to be purer than English art at its purist. Gothic, he said, was an arched style, therefore a straight window-head was a sin. It did not dawn on him that architecture had its poetry and its prose—its separate ways of dealing with lofty things and low ones. He only saw that the poetry was the higher of the two, and could not understand why, this being so, there was any need for the lower. So he went on with his arches and his shafts, his canopies and his tracery, making the vulgar laugh and the judicious weep. Look through the volumes of any architectural journal from 1850 to 1870 or later, and you will find his works, and will see what it is to abjure the right of private judgment, and "go it blind," as the Americans say, on the advice of some eloquent oracle.

The young architect of to-day has been saved from all this. Not by words, but by works, which spoke louder than words, a few able men, of whom Mr. Norman Shaw was perhaps the most influential, long since turned the efforts of the Gothic school into a more sensible direction. He, and others who proceeded nearly on the same lines, showed the wonderful beauty and picturesqueness which might be brought out of architectural forms, which the art-dogmatist had condemned as indefensible. They took up 15th, 16th, and 17th century domestic details, the very things which the pure and correct men of the Scott and Parker period made a point of shuddering at as "debased," and made out of them compositions so admirable that all the world fell in love with them. They showed that form, like colour, is mainly relative; that everything depends on selection and arrangement. We might almost say they rediscovered art—no doubt, it must be said, with reservation. By a few men art had never been quite forsaken; but the crowd, both in the profession and out of it, knew of nothing, cared for nothing, worshipped nothing but style. If a building was in the right style, and had the correct details of the style, everybody was satisfied. There was often indeed one exception—namely, the person for whom the building was erected, and who found himself saddled with many things which he did not want, and deprived of many which he did, because the style required these, and forbade the others. But nobody minded him: style-worship went on gloriously, and might be going on still if the vision of art had not drawn its worshippers away.

Style-worship is over now: the coming race has escaped from this superstition. Not by any means has it got rid of the need for studying style; but it has been taught to study it as a means towards producing art—not as an end in itself. At last a generation is springing up with the advantages of liberty as well as of training; and its most promising members are working with a spirit and freshness which those find it hard to attain whose youth was wasted in the slavery of mechanical repetition, and whose ideas were shaped to suit a set of exploded beliefs. With older men, style was a master; with some of the rising group, it promises to be a servant, and an obedient one. Nor are they bound to one style, as their predecessors generally were. Whatever they have an affinity for they can adopt. It is the age of experiments, and happy are those who begin life now with opportunity, ability, and adequate instruction.

So much for the coming architect of the best type. Three generations, to adopt Carlyle's simile, have fallen to fill up the ditch, and he walks into the fortress over their bodies. It is only fair to remind him that he would hardly have got there without them. A Pugin had to write his "Contrasts," and a Scott to build his churches, and a Shaw to show us all what Domestic work could be, that this heir of the ages might learn with ease all they learned with infinite labour. Let him learn it, and add to it all he can for his successors to learn. But there is a class—and a large one—which does not care to learn. Delivered from one danger—that of mistaking style for art—it is running into the opposite one: that of neglecting style altogether. It makes no serious study of ancient work; in fact, it does not so much as know the most suggestive of ancient works by name. It takes a casual glance at the designs of some clever contemporary, and does what it can, in a careless way. to repeat their details. Its productions might be labelled "Attempt at Imitating Mr. Collcutt," "Attempt at Imitating Mr. Ernest George," "Attempt at Imitating Mr. Sedding," and so on. We may call this class the tribe of the brain-suckers.

The characteristic of the brain-sucker is that, instead of filling his own head with thought and information by learning all he can of what art has done already, he fastens on some one man who has gone through this labour, and tries to appropriate the ideas that have resulted from it. Fortunately, ideas cannot be successfully carried off in this way. The parasitical architect is soon detected—at least, in his own profession. His imitations are too feeble. and, above all, he has not the art—the supreme art—of composition. Even if he could copy the details of his model line for line, he is hopelessly lost when it comes to putting them together. Now, it is in the putting of things together that art mainly consists. When they are thrown into a heap by chance or clumsiness, every one spoils the others. It takes the highest skill so to join them that each gives beauty to the rest, and that all unite into one organic whole. Everybody who has a dictionary has at command the words which make up the finest lines in Shakespeare, and Keats, and Tennyson. Which of us can make out of them, or out of the thousands of others at our service, a line like those in the moonlight scene in the "Merchant of Venice," or half a verse like those in the "Ode to a Nightingale"? Everybody who has a piano can strike the notes which enabled Handel and Beethoven to do all they did; but who can combine them afresh into music like theirs? Now the architectural brain-sucker, when he has plagiarised his details, has only got hold of a set of words like those in a dictionary—a set of notes like those in a musical scale. He is not within measurable distance of producing what deserves the name of a design.

To make any advance, it is necessary to know what has been done before. Half the difficulties we meet are not new difficulties. They were met and conquered ages upon ages before we saw the light. And half the possibilities before us are not new ones either. Generations ago, other workers, it may be, in many a country besides this, have had the same chances, and have used them—some to better purpose, and some to worse. The obtuse man thinks their ideas can have nothing to teach us, because, forsooth, they were expressed in a different style. They have everything to teach us. We must look through the thin disguises of style, and grasp the underlying thought. It is this we want to get at; and this, once seized, we may work it out in our own way, and clothe it with our own details. What are some of the cleverest designs of the day but Mediæval thoughts skilfully translated into Renaissance language? The art of composition may be learned from works in every style. The same geometrical forms underlie them all. The laws of proportion apply to them all. They can all teach those who have eyes to see and minds to understand, how this type of form injures that, and improves the other. It is such lessons as these that a tentative and experimental period most needs. They are only to be learned by a thorough and systematic study of the best examples.

If there is one member of the coming race more unpromising than the brain-sucker, it is certainly the examination-passer. He is the man who can pass examinations, and can do nothing else. To him they are not, as they ought to be to every student, a motive for acquiring indispensable knowledge; on the contrary, they are a sufficient end in themselves. The examination-passer crams for the occasion, scores a success, and straightway forgets all he learned to secure it. Ask him, a year or two afterwards, for a bit of the knowledge he was supposed to have made his own for life, and it has quite escaped his memory. Ask him to make such a calculation as he had to make before, and he has no notion even of the elementary principles on which it proceeds. He has given up study—his education is finished; the examiners, he says, consider him qualified to be an architect, and that is enough for him. So it happens that, between the best and the worst of the coming race, there is a gulf so wide and deep, that our profession hardly ever saw its like before.

THE ART OF SPECIFYING.

Two ways of writing specifications are known to architects and builders—one the perfunctory and ambiguous, and the other the explanative. The former of these modes is most common among those who have to make a compromise between the owner and contractor, who have to disguise the real requirements while pretending to make the specification a complete list of requirements. It is the old story repeated of holding with the hare while running with the hounds. As a matter of fact, the perfunctory specification is a loosely-drawn-up document, on this account easy, not written till after the drawings are prepared—often not till the quantities are being taken off, as then it is easier to make the provisions agree with the surveyor's. Often it is little more than a copy of the preambles of the bill, a bare recital of provisions of the "provide and fix" order. The quantity surveyor generally prefers this method, as it does not handicap him at every turn; it allows him full play in putting down just what he thinks necessary to make his bill tally, and there can be no disagreement between the documents. By the help of the drawings he can take off his items much quicker when he has no specification to hinder him, provided, of course, he is an expert at his business, and is not forgetful of requirements. Yet to a man with imperfect memory, or who has not a free hand, it will be allowed that a specification is a great aid, as he can simply transfer a great many of the items to the bill. The latter plan has, however, the risk of adding to the responsibility of the architect if the document is deficient in any important particulars. There is only one way of writing a perfect specification, and that is to begin to write it when the contract drawings are being prepared, and to make a list of provisions and items as the drawings and details proceed, making one explain the other. This simultaneous method has the great advantage of making the tangible and palpable expression of the building assist the memory, and of precluding any serious omission. Every section and elevation suggest questions of construction of technical requirements; the drawings of floors and roofs bring to the mind the scantlings and the actual details which have to be specified. While the drawings and details are being thought out, the mind perceives the requirements, and apprehends them more perfectly than when they are finished. What the drawing only shows partially or on one side, the real thought of the designer may put down in words, thus making the specification explain those parts or operations which cannot be represented by lines. Many architects very usefully adopt the plan of supplementing their working drawings with notes in the margin or in the drawing itself. All these thoughts and suggestions, which occur while the architect is thinking over the problem, disappear or are lost sight of when the drawings are finished. The specification writer can then only guess at what he sees, and loses sight of the actual requirements which occurred to the designer or draughtsman.

The instructive paper on "Specification Writing," read before the Architectural Department of the University of Pennsylvania by Mr. T. Roney Williamson, architect, and reprinted in our present and last two issues, suggests a few considerations to the young architect who is anxious to write a specification that can be put into the hands of any builder or tradesman. We are sorry to say many of the specifications placed in the hands of practical men rather provoke disrespect or excite laughter, as when, for instance, a certain kind of timber is specified that cannot be obtained, or something is described which is impracticable or ridiculous on the face of it, and which a practical architect would never have thought of describing in such a way. Can we expect an engineer or plumber to do his best when a specification describes a method of doing a thing which would result in failure if it was, or if it could be, done in the manner described? In dealing with masons' work or bricklayers', carpenters', or sanitary work, great care is required not to specify anything about which one has not actual knowledge. To specify a particular timber that is not obtainable in the market, or a mode of setting ironwork, like an oven or a boiler, that is wrong in principle, is to inflict a wrong on the client, and to obviously impugn the architect's credit for competence. Sometimes the textbook is at fault which may be consulted about some detail, as the strength of cement. Mistakes, as Mr. Williamson says, are two-edged swords, as they "destroy your client's confidence as well as your own." Exact knowledge is absolutely essential, and we can only acquire this by long and careful study, and by a knowledge of buildings and workshop details. No book reading will give the young architect the requisite knowledge without having the mind, the eye, and the hand brought into actual touch with real materials and the methods of workmanship. Even the technical school, unless it is applied, is misleading, for it confines the attention to particular demonstrations in the classroom or workshop.

We see a number of specifiations that are ambiguous, and loosely worded. The clauses are too general in their phraseology—a fault that is most common in the perfunctory specification prepared to obtain low tendering. They may mean a good deal, or they may mean nothing at all. The vague specification is the speculating builder's opportunity. He will find room to twist and wriggle about, to evade the true intent and meaning, and put in a tender which is ridiculously below the real cost. More cautious contractors will make it the opportunity of increasing their tenders by a large percentage, to cover all contingencies that they do not clearly foresee. To general clauses we owe all our wide tendering. The advice given is to make your paths straight and narrow, so that there shall not be any doubt about the meaning, and no room to wobble. We admit also that it is helpful to use trade terms—the builders understand them better than general terms. And the same as to goods. Mr. Williamson says it is better to specify two or three makes "equally good" than one of a particular manufacture. No doubt, if the condition "equally good" is complied with; but sometimes it is impossible to name more than one make. To name as optional one of two or three makers would often lead to undesirable competition among the tradesmen specified. It is no less necessary to be precise about matters which cannot be shown in the drawings—such as scantlings and sizes of beams and girders, the kind of glass to be used, the fittings and ironmongery, wall-papers and finishings. Exact and minute descriptions are absolutely essential to accurate and careful estimating. We cannot conceive a fair tender without definite and clear particulars. In fact, it is a common thing for a contractor to add 15 or 20 per cent. to items which are uncertain or ambiguous. When a thing is definitely expressed, there is no room for guessing.

When it becomes impossible to describe clearly any particular fitting or decoration—say, for example, a tile pavement, or chimney-piece or grate, or a wall-paper or leaded glass—and where a drawing may be impossible or misleading, a fixed price or a lump sum is generally provided. The provisional sum has the advantage of fixing the amount to be included in the tender, allowing each owner to select his own goods. Such things as electric-light fittings, gas-fittings, stoves, closet apparatus, ranges, and a variety of other things can only be properly dealt with in this manner, as, if they were left open to the contractor, a considerable margin would be left for underbidding. As to the arrangement of the trades, specifications differ much in form; the most rational order is that which is really followed in the building. As Mr. Williamson says, each trade should be complete in itself, so that the work may be let out separately if necessary. Yet this is sometimes impossible, as when a particular trade—say, the engineer—has to be attended to by the bricklayer and carpenter. In every building there are certain things to be done to render each trade complete: thus the bricklayer has to wait upon the carpenter, the plasterer on the joiner, and so on. Work and materials are to be supplied in connection with some particular trade, and these have to be specified. The interference of one trade with that of another is a frequent source of trouble and imperfect finish, yet no doubt it is a good plan in some cases to get the plumber or the engineer to do the necessary woodwork, painting, papering, necessary to complete his own work, and to make him responsible for it.

An accurate and comprehensive knowledge of materials, building appliances and fittings, and improved methods is absolutely essential to the specification writer, and we can easily imagine what serious mistakes a man ignorant of these things might make in accepting fittings that were not up to approved standards, or are out of date. It is well for the architect to be tolerably well read in the literature of manufacturers' catalogues and advertisements, as these trade announcements "post him up" in a number of new things, like fireproof floors, sanitary traps, and new decorative materials, that are not to be learned by any other means. Representative technical museums and exhibitions of building appliances are useful, too, when they can be depended on, though of late these means have been untrustworthy, or conducted on very narrow commercial lines. The division of a specification into trades is not likely to fall into disrepute, notwithstanding many leading quantity surveyors suggest the "group" system of "taking off," instead of the former. To a certain extent, indeed, it is carried out in some of the trades specified, as in the bricklayer, carpenter, and joiner. In describing the framing of a roof mention is made of iron bolts and straps, in doors of butts and ironmongery; but to bring together all the trades required in making a roof or a floor would be to complicate and render the document useless for the distinct trades. The "group" system, as proposed by Mr. Searle in his new work, is certainly a more rational and scientific mode of classification than the present plan for quantity taking on the basis of trades, as it simplifies the process, and, above all, allows a quick analysis to be made of a bill in case of alteration or omission. As the memory is assisted by the grouping of particulars and items according to purpose, there is much less chance of omitting any important items. There may be a little more trouble in extracting the distinct trades for specification purposes.

All suggestions which help towards the framing of a perfect specification are useful. We do not place much reliance on stereotyped forms of clauses such as our American cousins have published, nor to works which pretend to give models of specifications, however useful in their way. The real secret of specification writing is to know clearly what is wanted, and how it should be done. No conventional phraseology need trouble the student if he only masters a method of treating each trade, and is perspicuous in expressing himself. Each trade he should know thoroughly—the materials and technical processes used, and the methods of workmanship. He should make his drawings and specifications agree, one explaining where the other is silent, and for this purpose the system we have referred to is the one which has been found to give the best results.

Mr. Shaw Lefevre visited Grimsby on Tuesday for the purpose of opening the new workhouse, which has just been completed at a cost of £30,000.

THE LONDON BUILDING ACT.—III.

We must pass more rapidly over the remaining portions of the new Act, and we next take up Part VII. relating to "special and temporary buildings and wooden structures." Section 82 re-enacts sec. 56 cap 122 of 18 and 19 Vict. of the present Act, though in somewhat different terms, as to the erection of an iron building or structure, to which the general provisions of the last part are inapplicable. The builder is required to make an application to the Council accompanied by a plan of the building and such particulars as may be required. If satisfied, the Council may signify their approval of the same in writing, but they shall not authorise any building of the warehouse class to be erected of greater cubical extent than 250,000c.ft. (not 216,000c.ft. as heretofore), except in accordance with the foregoing provisions. A copy of the plans, &c., are to be furnished to the district surveyor, whose duty is to see that the building is erected in accordance therewith. Clause 83 provides control by the Council of certain temporary buildings on similar terms as the present Act (45 Vic. sec. 12)—that is to say, the Council may, if they approve the plans and particulars, limit the period during which the temporary building is to remain, and may make their approval subject to such conditions as to removal, or otherwise, they think fit. The Council may serve notice requiring removal, and if not complied with, they may incur any penalty, and cause the building to be removed after complaint before a Petty Sessional Court. Section 84 prohibits the setting-up of any wooden structure (unless exempt from this part of the Act), except hoardings inclosing vacant land, and not exceeding in any part 12ft. in height, without a license from the Council, which may contain certain conditions as the Council may think expedient. Such license is not to be required in the case of any wooden structure of a movable character erected for a builder's use during the construction, alteration, or repair of any building, unless it be not taken down after such construction; but this section does not apply within the City. The above section is only a slight verbal revision of that now in force (section 13, 45 Vic.)

The rights of building and adjoining owners, Part VIII., have been improved and rearranged. Section 87 is not found in the existing Part III. of the present Rules. It provides that where lands of different owners adjoin and are unbuilt on at the line of junction, and either owner desires to build, the following provisions shall have effect:—(1) If the building owner desires to build a party-wall he may serve notice on the adjoining owner describing the intended wall; (2) if the latter consent the wall shall be built half on the land of each owner, or in such other agreed position; (3) the expense of the wall is to be defrayed from time to time by the two owners in due proportion, regard being had to the use made of the wall; (4) if the adjoining owner does not consent, the building owner shall only build the wall as an external wall on his own land; (5) the building owner may build an external wall on his own land by giving notice to the adjoining owner, describing wall; and (6) where the building owner builds an external wall, he shall have the right, at his own expense, at any time after a month to place on the land of the adjoining owner below level of the lowest floor the projecting footings of the external wall with concrete or other solid substructure, and make compensation to the adjoining owner for any damage occasioned thereby, the compensation, if any difference arise between owners, being determined in the manner directed.

The rights of building owners (section 88) are practically the same as those now in force (section 83), a few literal revisions only being made of a trivial kind, as the insertion of the word "underpin" in the clause "A right to make good, underpin, or repair any party structure which is defective or out of repair." One additional sub-clause (12) is introduced which gives a building owner right to raise a party fence wall, or to pull the same down and rebuild it as a party-wall. The next section, 89, as to the rights of adjoining owners, is also, with a few literal alterations, the same as that of the present Act. One of these is that "the adjoining owner may *by notice* require the building owner" to do certain works, &c. These include "copings" as well as jambs or breasts or flues, &c. Any difference between the owners to be determined in the manner directed. The rules as to exercise of rights by building and adjoining owners (section 90) have been recast. Sub-clause (1) reads "A building owner shall not, except with the consent in writing of the adjoining owner *and of the adjoining occupiers*, or in cases where any wall or party structure is dangerous (in which cases provisions of Part IX. shall apply), exercise any of his rights under this Act in respect of any party *fence wall*, unless, at least, one month, or exercise any of his rights under this Act in relation to any party-wall or party structure other than a party-fence wall unless, at least two months before doing so, he has served on the adjoining owner a party-wall or party-structure notice, stating the nature and particulars of the proposed work, and the time at which the work is proposed to be commenced." This amended clause is more definite and liberal in its terms than the old one. The *italicised* words are new and important, as, for instance, adjoining occupiers are to have a word in the rebuilding of any party-wall. The original clause requires three months' notice to be given to the adjoining owner; the new one says one month's notice for party-fence walls, and two months for a party-wall. The other sub-clauses require the building owner at his own expense to make and maintain a proper hoarding and shoring for protection of adjoining land and building; not to cause unnecessary inconvenience to the adjoining owner or occupier. The work to which the notice refers must begin within six months after service, and it will be seen, on comparing these clauses with the old ones, that requirements in respect to notices have been simplified. In the new Act the settlement of differences constitutes a new section, and these have been revised, and re-embody those of 45 Vic. sect. 21. Section 91 practically recites the same mode of settling differences as exists now by the appointment by each party of a surveyor (unless they both concur in appointing one), and the two thus appointed selecting a third surveyor; and such one surveyor, or three surveyors, or any two of them, shall settle any matter from time to time during the continuance of the work. Any award given to be conclusive, except that either of the parties may appeal to the County Court within fourteen days from the delivery of the award. Sub-clause (5) allows the appellant, if the sum he is liable to pay exceeds £50, to bring an action in the High Court, if he can prove to the County Court judge his liability. The subsequent clauses (8 to 12) relate to the refusal, neglect, or death of the surveyor or surveyors appointed, and to appointment of others having the same powers and authorities, &c. If either of the two surveyors appointed by the parties refuse, or for seven days neglect to act, the other surveyor may proceed *ex parte*, and his decision shall be effectual. Section 92 is modified: it re-enacts the power for building owner to enter premises to execute any work which he was entitled to in pursuance of this Act, and his servants, agents, and workmen, at all usual times of working, may enter and remain on any premises; but before entering the building he is to give fourteen days' notice of his intention, except in an emergency.

Section 93 provides that when a building owner intends to erect within 10ft. of an adjoining building, any part of which extends to a lower level than such building, he may, and if required shall, underpin or otherwise strengthen the foundations; two months' notice to be given of his intention, accompanied by plans and sections, and if the adjoining owner within 14 days disputes the necessity, a difference shall be deemed to have arisen. The building owner is liable to compensate the adjoining owner for any inconvenience, loss, or damage. This new provision will prevent many accidents to adjoining structures, and guarantee the adjoining owner against settlements, which often occur. The next section requires the building owner to give security, also the building owner may serve a counter requisition requiring the adjoining owner to give security for payment of expenses for which he is or will be liable, &c. The rules as to expenses in respect of party-structures (95) are only slightly different to those of the present section 88, and these rules generally provide that if any party-structure be defective or out of repair, or be pulled down and rebuilt, or if any timber partition dividing a building be pulled down, and a party-structure be built instead, or any rooms or stories be pulled down and rebuilt, in conformity with this Act, the expense of such work shall be borne by the building and adjoining owners in due proportion, regard being had in each case to the use that each owner makes, or may make, of the structure, &c. As to expenses borne by the building owner, the existing sub-clauses are unaltered, with two additional ones; one to the effect that if any party fence wall be raised the expense thereof is to be borne by the building owner; also, if any such wall be pulled down and built as a party-wall, the expense thereof shall be borne by him. The adjoining owner is to pay a due proportion of the expenses of any party structure or wall made use of by him beyond the use made by him before the alteration—i.e., the expenses of raising or underpinning such party structures; and making good and carrying up all flues and chimney-stacks belonging to adjoining owner, and of pulling down and rebuilding party-fence wall. The following four sections relating to "account of expenses of works delivered to adjoining owner" (96), "appeal against account" (97), "building owner may recover if no appeal made" (98), "structure to belong to building owner until contribution paid" (99), are unaltered. Section 100 makes the adjoining owner liable for all expenses incurred on his requisition, and payment may be recovered as a debt; and 101 enacts: Nothing in this Act is to authorise any interference with an easement of light or other easements in or relating to a party-wall, &c. This last clause is a necessary addition to the old Act.

"Dangerous and Neglected Structures" form Part IX. of the new Act, and comprise the enactments of the 18 and 19 Vic. cap. 122, 45 Vic. cap. 14, and other sections. These sections have been remodelled and made more concise. The present section 69 appears in a less involved form. The meaning of "structure" is first defined (102), and "includes any building, wall, or other structure, and anything affixed to or projecting from any building, wall, or other structure." As now, section 103 stipulates that the Council shall require a survey of any structure in a dangerous state to be made by the district surveyor or other competent surveyor, and he is to make known to the Council any information he may receive, and to make a survey of such structure. Within the City, the Commissioners of Sewers are to take the place of the Council (section 104). The surveyor is to give certificate to the Council of his opinion (105), and if it is to the effect that the structure is in a dangerous state, the Council is to cause the same to be shored up or otherwise secured, and a proper hoard or fence to be put up for the protection of passengers, and notice to be served on owner or occupier, &c., as in the present Act (section 106). If the owner fail to comply, a Petty Sessional Court, on complaint by the Council, may order the owner to take down, repair, &c., the structure within a certain time, and if the same be not done within the time stated, the Council may cause the work to be done in the manner set forth in the Act (section 107). If the owner dispute the necessity of the requisitions in notice, he may, within seven days after service of notice to himself, require the subject to be referred to arbitration, and appoint an independent surveyor to report on the condition of structure in conjunction with district surveyor, and all matters in dispute not agreed to between them be referred to a third surveyor previously appointed. The award to be made within 14 days. The expense to be paid by the Council if the award is adverse to the district surveyor, or by the owner if adverse to him. By 108 the Petty Sessional Court, on complaint of Council, may make an order, notwithstanding notice as to arbitration, to take down, &c. All expense incurred by the Council on obtaining any order, is to be paid by the owner, but without prejudice to his right to recover the same from any other person (109). The other clauses respecting missing owner, selling structure to pay expenses (109), and provisions respecting sale of dangerous structures (110), proceeds if insufficient, recovery of expenses, re-enact the present provisions—sections 74, 18 and 19 Vic. and Amendment, but are simpler and consolidated. Section 114 recites section 80 of the old Act respecting removal of inmates from dangerous structures, and section 115 re-enacts the removal of dilapidated and neglected structures as exists under 45 Vic. sec. 17, though in fewer words and with less circumlocution. The provision for enforcing repayment of expenses incurred by Council (116) also repeats the existing section, and directs that no part of the land occupied by dangerous or neglected structure shall be built upon, or, if it is rebuilt or repaired, shall be let for occupation until after payment to the Council.

Part X., on "Dangerous and Noxious Businesses," the 7 and 8 Vic. section 54, of present Act is re-enacted, which makes it unlawful to erect any building nearer than 50ft. from any building used for any dangerous business, provided that where a building erected before the 9th of August, 1844, within 50ft. from any building for the time being used for any such dangerous building is pulled down, burnt, or destroyed by tempest, such building may be rebuilt. Section 54 of the present Act remains in force, which makes it unlawful for any person to carry on a dangerous business in any building, vault, or in the open air, at a less distance than 40ft. from any public way, or than 50ft. from any other building or vacant ground belonging to any person other than his landlord. Then follow the businesses deemed to be dangerous, which list has been slightly altered. The next section provides, no dwelling-house is to be erected or rebuilt nearer than 50ft. to a building used for any noxious business, except in the case of a house built before 9th of August, 1844. The other clauses follow the present Act, and prescribe the same distances from public ways and dwellings of 40ft. and 50ft. respectively for businesses in buildings, vaults, and open air. Section 120 provides for noxious businesses existing before 9th August, 1844 (see sections 54 and 58 of that Act, and the legal proceedings in such cases). Public gasworks and distilleries are exempt from these provisions.

Part XI. section 122 retains the very desirable legislation relating to "Dwelling-houses on Low-lying Land," which are now dealt with under 56 and 57 Vic. section 5, and which prohibits the erection of any building, used wholly or in part as a dwelling, upon land of which the surface is below the level of Trinity high-water mark, or which cannot be drained by gravitation into any sewer, except with the permission of Council. They may also (clause ii.) regulate the erection of dwelling-houses on such land or any defined area; and (iii.) prescribe the level at which the under side of the lowest floor of any permitted building shall be placed on such land. Persons are to make application to the Council for a license to erect on any such land, and the question is to be referred to the chief engineer of Council, who shall decide the conditions upon which the erection or adaptation may be permitted; if dissatisfied, the person may appeal to the Tribunal. The Council may make regulations, &c. (sections 123, 124.)

Part XII. section 125 treats of "Sky-Signs." It re-enacts the provisions of the London Sky-Signs Act, 1891. The term "sky-sign" is defined in that Act as any "letter, model, sign, or device, or representation in the nature of an advertisement, &c., supported on or attached to any post, pole, standard, framework, or other support wholly or in part upon, over, or above, any building, &c., which, or any part of which, shall be visible against the sky, &c." The expression also includes any balloon, parachute, or similar device, &c., but is not to include (i.) any flagstaff, pole, vane, or weathercock, unless adapted for advertising; (ii.) nor any sign, board, frame, or other contrivance fixed to, or on the top of, a wall, parapet, cornice, blocking-course, or ridge of roof, provided it be of one continuous face and not open work, and is not more than 3ft. above the same. We may ask, Why is not such a board equally as dangerous and unsightly, and for what reason is it excluded? Clause (iii.) excludes also any sky-sign which belongs to a railway company, and which is placed so that it could not fall into any street. District surveyor of each district is to inspect and survey sky-signs (section 126). Section 127 enacts that from the commencement of this Act it shall be unlawful to erect any sky-sign as defined. Section 128 regulates existing sky-signs, except those erected in accordance with the terms of a license granted before this Act under the Sky-Signs Act, 1891. The next section provides for a renewal of such license for a further period of two years, and for further renewals not exceeding six years. Forms of certificate of surveyors, respecting sky-signs, refusal of certificate and forfeiture of license in certain cases, removal of signs, &c., are contained in subsequent sections 130—135.

Part XIII. section 136 relates to the appointment of superintendent architect and district surveyors, examination of candidates for that office, powers of Council to alter limits of district; also as to exclusion of surveyor from acting in case of works under his own superintendence, notices to be given to surveyor by builder in certain cases (145), power of entry to inspect buildings, notices of irregularity (152), payment to surveyors (154), monthly returns by district surveyors (160).

Part XIV. sect. 164 treats of the power of Council to make by-laws as the level, width, surface, and inclination of new streets, foundations and sites of buildings; foundations, materials, thickness of walls; dimensions of bressummers, of joists, protection of ironwork, external woodwork, materials for plastering, regulation of lamps, &c. Part XV., on "Legal Proceedings" (166), enacts that all offences, penalties, costs, and expenses under the Act are to be recovered under the Summary Jurisdiction Acts. County courts having jurisdiction may settle the time and manner of doing any work, and any person may appeal from any decision. Other sections refer to application of penalties, power of Council to demolish buildings and sell materials and recover expenses, procedure of local authorities in case of buildings in advance of general line, &c. The Tribunal of Appeal (sect. 175) is an important creation of the new Act. One member is to be appointed by Secretary of State, one member by the Council of the Royal Institute of British Architects, one member by the Council of the Surveyors' Institution; but no member or official of the London County Council shall be eligible. Members of the Tribunal shall be appointed for a term of five years, and any such member shall be eligible for reappointment. The Lord Chancellor can, if he think fit, remove for inability or misbehaviour, or other reasons, any member. When any vacancy or illness occurs of any member, the Secretary of State, or the particular society, whichever appointed the member, shall appoint a fit person to take his place. Each member of the Tribunal of Appeal is to be entitled to remuneration by annual salary or by fee, as may be fixed by Secretary of State. Other sections provide for the appointment of officers, the powers of the Tribunal to state case for opinion of High Court, procedure of Tribunal to hear and determine appeals, and to have power to hear counsel, solicitors, or agents, as well as the interested parties; to administer oaths, to hear evidence, &c. Sect. 185 enacts, any order of the Tribunal of Appeal may be enforced by the High Court, as if it had been an order of that Court. All fees, &c., paid to the Tribunal shall be paid over to the Council and carried to the County Fund. The last part of Act deals with miscellaneous matters, such as expenses, power to annex conditions to consent, &c.; proceedings where no notice is given; plans, &c., to be property of Council; offences against Act; buildings and works exempt from the operations of the Act. These include greenhouses not attached to other buildings, also those attached so far as regards the necessary woodwork of sashes, doors, and frames—a provision that will be welcomed. Certain rules as to conversion of buildings (211) will also safeguard the public against undesirable and unsanitary arrangements. To some of these, and other special sections of the new Act, we may return. We now complete our summary of the leading provisions of the Act, and reserve any critical remarks to another occasion.

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL.—IX.

TO be able to calculate the stresses upon a girder, a bridge, a roof, or any other example of architectural or engineering constructive work, arising from a concentrated or uniformly-distributed loading, will not in itself make a man a good designer of steelwork. He must have some knowledge of the fitter's craft, and be thoroughly conversant with the methods usually adopted in the workshops for framing or putting together the component parts, and the various members of large and heavy trusses, gantries, cranes, and other forms of steel and ironwork generally. It is for this reason that we have given the double title to our series of articles, insomuch as a practical knowledge is as essential, or even more so, than a theoretical. Having already determined the stresses due to the maximum loads which can possibly affect either the principal or the cross girders, and assigned to them their proper respective net sectional areas, we have now to consider the best means of putting them together, so as to form one substantial and complete structure. In the first place, before the rest of the platform and roadway can be arranged, it is necessary to connect the cross girders with the principals. For this purpose bolts are sometimes employed; but it is preferable, especially in

FIG. 1.

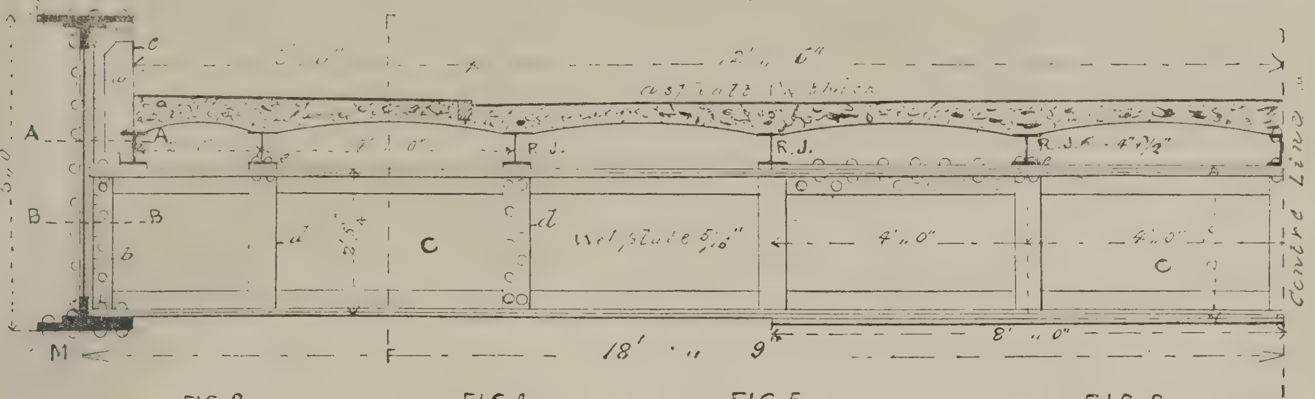


FIG. 2.

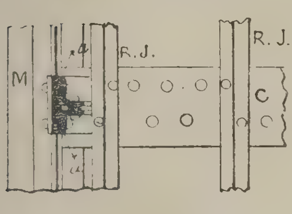


FIG. 4.

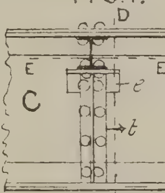


FIG. 5.

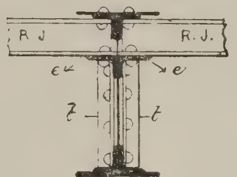


FIG. 8.

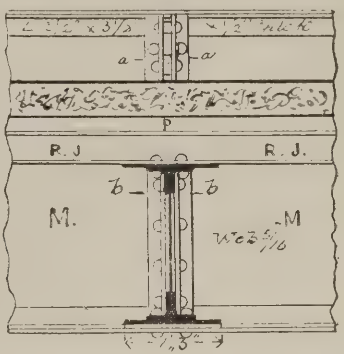


FIG. 3.

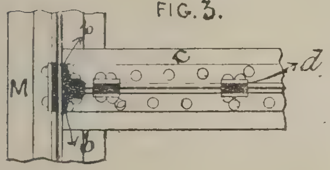


FIG. 6.

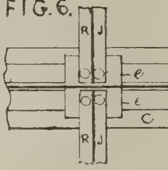
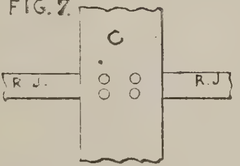


FIG. 7.



bridges of the solid web or plate type, to use rivets. When very large bridges are in evidence, and with open webs, with great panel-length, it sometimes becomes an open question for discussion whether both bolts and rivets cannot be discarded, and another method adopted for forming the required connection. It must be kept in view that great panel-length, in an open-web bridge girder, signifies a correspondingly large interval between each successive bay, which again necessitates a lesser number of cross girders, and, consequently, an increased sectional area and weight for each individually. This increased weight is unavoidable, since, as a general rule, liable to very few exceptions, each separate cross girder is attached to the principals at the junction of the diagonal bars of the web with the booms, that is, at the apices of each panel-length. As an instance may be mentioned the Rue de Tolbiac bridge, recently constructed in Paris. It was a bowstring of great panel-length, and the heavy cross girders were slung or suspended from the lower chord or boom by especially designed steel stirrups. As far as we are aware, this is the only example of this particular description of attachment.

A general detail cross section, drawn to scale, of the bridge under design is given in Fig. 1, and the mode of connection of the main girder M and the cross girder C requires attention. It will be seen that the connection is discontinuous, owing to the fact that in order to secure as much bearing as possible of the cross girder on the main girder, which, at the most, is barely 9in.; the ends of it, Figs. 1, 2, and 3, abut close up to the longitudinal angle irons of the main girders. A couple of angle irons, A, 3in. by $2\frac{1}{2}$in. by $\frac{3}{8}$in., join the cross girders to the main. They are riveted to the upper flange of the cross girders, to the web of the main girders, and then cranked so as to be riveted to the upper flange of the main girders, as in Fig. 1.

The two angle irons, *a*, at A A, Fig. 1, shown in Fig. 2, *a a*, which is a horizontal section along the line A A, do not touch each other, as the small return piece of the part bent down on the upper flange of the cross girders is riveted to it by the ordinary flange rivets. Where the rivets occur, small distance pieces or washers are inserted to maintain the angle irons at their proper distance apart. These angle irons, *a*, are shown cranked at their upper end in Fig. 1, in order to stiffen the upper flange of the main girder at the points where the load is brought upon it. In the case where this flange is, as in Fig. 1, only 1ft. 6in. in breadth, the additional stiffening is really not needed. But since in instances where the breadth of the flange is 2ft. or upwards, it becomes necessary to stiffen the extreme edges of the flanges of the main girders at the points where the cross girders are attached, the manner in which to accomplish it has been demonstrated. When it happens that the main girders are deep, and their flanges consequently wider, angle irons or tee irons are riveted also the whole depth of the rib and cranked to both the upper and lower flanges exactly as in Fig. 1. Instead of the double angle irons, *a a*, one single tee iron might have been employed, but in order that the table part might take the two flange rivets of the cross girder, it must have been 7in. broad and correspondingly thick, which would have rendered it exceptionally heavy and out of keeping with the rest of the steelwork. It is impossible to lay down hard and fast rules for the use of angle, tee, channel, or other sections of steel. The particular section to be employed must depend upon the especial conditions of each individual case, and something also must be left to the judgment and discretion of the designer. It is perfectly well known that both architects and engineers differ in their opinions respecting the relative merits of different sections of steel joists and other shapes, and some deference and respect are due to their experience und decision.

The cross girders are riveted directly to their bearings on the inner half of the lower flange of the main girders by rivets $\frac{3}{4}$in. in diameter, passing through both flanges. A pair of angle irons, *b b*, $3\frac{1}{2}$in. by $3\frac{1}{2}$in. by $\frac{1}{2}$in., shown at B B in Fig. 1, serve to connect the web of the cross girder throughout its whole depth to the lower part of the web of the main girder. These angle irons, *b b*, and the manner in which they are riveted to both girders, is also seen in detail in Fig. 3, which is a horizontal section through the line B B in Fig. 1. In order to keep these vertical angle irons flush, a filling piece is inserted between them and the web of the cross girders. As, however, already stated, they may be cranked over the longitudinal angle irons and the filling strip omitted. The manner in which the general riveting of the flanges and web of the cross girders is arranged is shown in the general cross section in Fig. 1, where the joints in the web occur every 4ft., and are covered by vertical strips, *d d*, 5in. by $\frac{3}{8}$in., Figs. 1 and 3. In these joints the diameter of the rivets is reduced to $\frac{5}{8}$in., instead of $\frac{3}{4}$in. Upon the upper flanges of the cross girders are riveted the rolled steel joists, 6in. by 4in. by $\frac{1}{2}$in., carrying the arched or buckled plates supporting the roadway and footpaths. The joists R J in Figs. 1 and 3 are sometimes bolted to the cross girders; but riveting them makes a better job of it. Two rivets, the pitch of which breaks joint in the breadth of the flange of the cross girders, are used and are sufficient for the purpose, although double that number are sometimes inserted. It will be observed that where the extra central flange plate is "dropped," a small packing strip is placed under the rolled joists, Fig. 1, so as to maintain the arched plates which are riveted to their upper flanges at the same level throughout.

It is not very often that the conditions of headway are so favourable as we have assumed, and admit of so simple and ready a manner of attaching the rolled joists to the cross girders. Very frequently they cannot be placed on the top flange of the cross girders, but must be fixed to the web, and it then becomes necessary to adopt another method, shown in Fig. 4. Instead of running along the tops of the cross girders, the rolled joists are in short lengths, and framed in between each pair of girders in the following manner:—Each of the rolled joists is riveted through its upper flange to the top flange of the cross girders, and through its lower to a piece of angle iron, as in Figs. 4 to 7. The angle iron is 6in. by 4in. by $\frac{1}{2}$in., and to assist its projecting flange, to which the rolled joist is riveted, a tee iron, $4\frac{1}{2}$in. by $2\frac{1}{2}$in. by $\frac{1}{2}$in. is riveted through it to another similar tee iron on the other side of the cross girder, Figs. 4 and 5. The tee irons on each side of the cross girders serve also to strengthen and stiffen the web which requires it, as in fact does the whole cross section of the cross girders at these points. Often the development of a weak line of fracture is unfortunately inseparable when junctions and connections of some of the principal component members of girders have to be effected. The only safeguard consists in a judicious arrangement of the connecting pieces, which should be all sections with ribs at right angles to one another, or, as they are sometimes termed, sections in two planes. Rivets should not be pitched too closely to one another, and the same rivets should go through and unite as many separate pieces in the connection as possible.

Part of the longitudinal section taken through the line F F in Fig 1 is represented in Fig. 8, in which M M is the main girder, R J the rolled joists resting on the cross girder shown in section in thick black lines, P the buckled or arched plates, over which is laid the concrete, upon which is spread a layer of asphalte, forming the surface of the roadway and footpaths. In Fig. 1 *c* is a part of the parapet screen, which is carried up to a certain height above the main girders. The particulars and manner of fixing it will be given in detail in another article. If the local authorities preferred no objection against the use of timber, the lower portion of the screen at *c*, which really acts as a ballast, or, as it is sometimes called, an "earthboard," might be economically and conveniently constructed of that material.

NOTES FROM PARIS.

THE season for building is now far advancing, and on all sides of Paris houses commenced early in the year are being covered in as fast as can be, and the interior plastering work completed, in order to profit as much as possible by the fine dry weather we are now having. Some of the more advanced of these houses are being pushed forward in order to be ready for letting for the October term, the most important term of the year. At Paris, as a rule, from six to nine months are estimated for the construction and complete finishing of an ordinary house for letting in flats; that is to say, a six-story house having five floors, each containing one or two complete apartments depending on the width of the façade; offices or shops on the ground floor, and single rooms in the attic story—these latter either for letting as extra rooms to the occupiers of the flats, or separately as bedrooms to outsiders. The number of these houses which have been built at Paris during the past two or three years, when the building trade has been in a slightly better condition than for some time, is surprising. In every quarter of the city numbers of these "maisons à loger" are being erected, the brilliant white stones of their façades contrasting strongly with the dirtier stone of the older and less-elegant houses. On the outer boulevards, these broad avenues containing two or three roadways and pavements, and one or two gravel-set avenues planted with trees between the opposite sides of the boulevards, the small houses of two or three stories only, and stucco façades are being pulled down, to give place to the six-story flats with more or less decorated stone fronts, for ground is rapidly increasing in value everywhere towards the faubourgs of the city; and these large houses, which often contain the population of a small provincial street, are much more profitable to the landlords. It is an advantage here to build in a solid and lasting manner, for the system of leasehold ground is unknown at Paris: all ground is freehold, and remains the lasting property of the person who buys it for building purposes, together with the building thereon. The Frenchman can scarcely understand the English system of leasehold property, and argues from this fact that buildings of the ordinary run in England must be of a rather light construction, built only to last a certain time with the certainty of the building at last, if it is still worth anything, falling into the hands of the owner of the ground, to the loss of the descendants of him who built it. The building and the ground are apart, and do not form, as here, one advantageous whole. To the west of Paris the new houses now erected are often most elegant and costly as regards façade, and large, commodious, and expensively decorated within. In these cases, when the surface of the ground for building is extensive, the house is built around a spacious courtyard, the ground floor of which is generally used for dependencies, stabling, &c. On the street front are the principal apartments, whilst others of lesser importance are grouped around the courtyard. One or two large staircases with convenient lifts lead to the apartments, and every new house is now fitted from top to bottom with water, gas, or electricity, and the latest sanitary improvements. The feature of these houses is the massive white stone front, decorated with artistic carving and architecture of one of the fashionable nineteenth century styles, with heavy projecting verandah windows, and bold stringcourses. The large entrance doorway forms an important feature, and often rises the height of the ground floor and entresol together, with massive doors or carriage way to the courtyard. The price of a moderate-size apartment in a good quarter, and containing drawing-room, dining-room, parlour, two or three bedrooms, and of course the kitchen and dependencies, is about £120; but prices vary from about £40 for a very small apartment, to several hundreds in the west end, for flats which are in themselves small palaces. The fronts of the Paris houses are in almost every case built out of solid stone; brick fronts are rarely seen. The interior walls are thick, the floors are always constructed of iron joists with plaster filling, the parquet being always of oak. The partitions are built of plaster slabs, and the roofs of iron and wood combined, with plaster filling between the rafters. The chimney flues are generally built up of earthenware pipes, either built into the walls or hung against them. All the walls are properly tied together at each story with iron bars running the length of the walls and securely anchored at each end. The whole building is thus essentially solid, and, as far as is possible, fire-proof. The method of estimating the cost of a building roughly at Paris is by so much the square mètre built upon—say from £28 to £50 per square mètre—and not as in England, at so much the cubic foot of walls and space.

Several of these most interesting and useful establishments, the Dispensary and Crèche, have lately been constructed here, generally in the populous quarters of the city, where they are destined to aid the poor inhabitants. At the dispensaries free consultations are given, medicine supplied, and cases of no especial seriousness treated. At the Crèche women who are obliged to leave their homes for work may leave their children, returning to fetch them when the day's work is over. The children are carefully looked after here, and benefit by the sanitary measures employed and the care which their parents are unable to give them. The last constructed of these buildings on the Boulevard de l'Italie, having a surface of about 2,000 yards, may serve as a model for this class of establishment. The building is kept somewhat back from the public roadway, and has behind it a large garden yard for the children to play in.

This building is composed of the offices and consulting-rooms of the doctors in charge, rooms for operations and special cases, with the necessary toilet rooms and dependencies. There is also a large consultation-room for children who are suspected to be suffering from some contagious disease. This portion of the building is separated from the rest by wide corridors, on the other side of which are the medicine dispensing-rooms and operation-rooms for minor non-contagious diseases. Behind these rooms is a small crematory furnace for burning all infected articles or clothing. The bathing portion of the establishment is very complete, and comprises a large bath-room for the daily bathing of dirty children, and divided into two portions for boys and girls. Each of these rooms has two dressing-rooms, where the children are dressed and undressed; the bath is given to one whilst the following is undressing, and so on, in order to obtain as rapid and discontinuous a service as possible. There are also rooms for medicinal baths for adults and children, and besides a large bathroom complete with all the apparatus necessary for the hydro-therapathic treatment of certain cases with contiguous dressing rooms. The Salles des Soupes, or refectory for the children, with kitchen and dependencies completes the building, with the exception of the cradle-room containing 40 cribs and couches, and the laundry. On its arrival each day each child is taken into the cloak-room, and undressed, and after bathing dressed with clothing provided by the Crèche, whilst the put-off clothing is cleaned and disinfected if necessary. The child is led to one of the places suited to its age, the crib-room, the baby-room, or the covered or uncovered garden. The building is heated by a new system of steam at low pressure; the sanitary arrangements of the establishment are of the latest improvements. The cost of the whole building was about £3,500, and it was built from the plans of Mr. Charles Adelgeist, architect.

In view of the new sanitary law for Paris, the Prefect of the Police has just issued new by-laws regulating the matter of sanitary arrangements in houses, and the proper methods of disposing of sewage and house refuse. These regulations are too long to give here, but it will be interesting in another letter to pick out portions for comparison with the regulations of the London County Council.

The magnificent buildings of the Louvre are now undergoing a thorough cleansing and restoration. The walls, columns, and capitals, as well as the ceilings, are being well washed and brushed with hard brushes, whilst all portions of ornament or sculpture in any way deteriorated are being replaced.

Masons and stone-cutters of Paris who have lately been grumbling at the lack of work attribute the cause to the manner in which building stone is taxed on its entry into Paris. The tax on the cubic mètre of dressed stone is the same as that for rough, unworked stone, and is 2s. 8d. the cubic yard. Now wages outside Paris being considerably lower than in the city, Parisian contractors, instead of having their building stone delivered in its rough state, order its delivery dressed ready for placing in position; the stone is, therefore, generally prepared at the quarries, where the wages given are about 2s. per day, instead of from 5s. to 7s., which the Parisian mason requires. Numerous meetings have been held in order to protest against this proceeding on the part of the contractors to the detriment of fair work at Paris.

The inauguration will shortly take place, at the Ecole des Beaux Arts, of the bust of Duban, the architect who restored the chateau of Blois, the Saint Chapelle, the chateau of Dampierre, the façade of the Louvre, and completed the construction of the Ecole des Beaux Arts. The bust of the master is of bronze on a marble pedestal, in which is carved the figure of a child and laurel branches. This little monument is the work of Mr. Guillaume.

A rather curious and unusual case of building rights is attracting considerable attention at Paris at this moment. No. 88 of the Rue des Martyrs, a well-known street leading up the hill of the church of the Sacré Cœur, comprises two large houses having the same staircase and entrance. One of these houses is the property of a Madame Vincent, the other has lately been bought by a Mr. Bonnard, who stipulated when buying that he would pay no ancient rights. The new proprietor, as soon as the sale was proved, forbid the inhabitants of the adjoining house the use of the staircase. The case was taken before the law-courts, where it was decided that Mr. Bonnard had a perfect right to erect a barrier between his house and that of his neighbour. After a short lapse of time the new landlord, acting on the decision given in his favour, ordered the passages acceding to the staircase from his neighbour's house, and those leading to the w.c.'s, to be walled up, thus imprisoning the tenants in their apartments. These latter are now obliged to leave their rooms by means of ladders in order to descend to the street, and haul up all their provisions by means of ropes from their windows, a position scarcely convenient for the tenants, but highly amusing to the passers-by and neighbours. This state of things, it is hoped, will not last, however, for several of the councillors of Montmartre are taking the matter in hand, in order either to arrange an amicable understanding between the joint proprietors of the staircase, or make an appeal to law.

The celebrated sculptor, Dalou, is actively working at the completion of the monument to Mr. Alphand, the late director and engineer of public work at Paris, and the chief engineer and organising spirit of the last Exposition of '89. This monument, which is being paid for by public subscription, will be entirely of stone, and will take the form of a hemicycle developing about 50ft., in the centre of which will rise the statue, about 11ft. high. Alphand is represented standing pointing out with his right hand four figures, representing Painting, Sculpture, Architecture, and Engineering Art. The artist, it is said, has the intention of giving to these figures the faces of well-known persons. Along the whole length of the hemicycle will be bas-reliefs figuring the public work done at Paris, paving, road-making, parks, &c. The monument will be, therefore, of no ordinary character, and will be essentially popular in style.

The decorative paintings executed for the staircase of the Prefet de la Seine, by Puvis de Chavannes, have just been installed at the town hall. The immense ceiling panel representing the Apotheosis of Victor Hugo forms, together with the allegorical paintings on the vaults and on the walls, an exceedingly harmonious *ensemble*.

From an official source we learn that the important work to be done for the enlargement of the Gare de Lyon is definitely decided upon, and that the proposed work must be furnished before the Exposition of 1900.

The town of La Rochelle has just made an acquisition of the celebrated house called Maison Henri II., which carries in its frieze the monogram of Diana of Poitiers. The house, which is a specimen of the purest and best proportioned building of the Renaissance, has since some time been inhabited by a shopkeeper. The house itself is situated in a garden, and surrounded by high walls. The town proposes to pull down the walls, and so place this perfect piece of architecture well in view; but, very wisely, it has been decided not in any way to tamper with the edifice by attempting to restore it.

At the Ecole des Beaux Arts the competitions and sketches for the month were for a cascade in a park, a dispensary for sick children, an athenæum, and a lecture-room for a school of art.

The list of the general classification of the various groups of exhibits for the Exposition of 1900 is now published, and gives the complete details of the method of classification for the groups of art, commerce, industry, agriculture, &c., with the many subdivisions. This list is too long to give here, but the principal divisions will be noted later on.

Arthur Vye Parminter.

COUNTY LUNATIC ASYLUMS.—IV.

By George H. Bibby, F.R.I.B.A.

THE ENGINEERING DEPARTMENT.

THE buildings containing the boilers and engines (*vide* E, Fig. 1) should be in proximity to the kitchens, laundry, bath-houses, and heating and ventilating plant, and at such a distance from the parts occupied by patients as not to cause them disturbance, noise, or annoyance.

The boiler-house should be arranged with space for a spare boiler or boilers to meet the requirements of possible future extensions or of any breaks-down that may occur. Ample space must be provided in front for the removal and repair of the boilers, and for cleansing, stoking, and general management.

In the engine-room space must also be provided about the engines and pumps for free access to all parts. In asylums where electric lighting is used, the dynamos may conveniently be placed in the engine-room, as thereby an economical arrangement may be obtained, and one man may easily manage engines and a limited number of dynamos; but the engine-rooms must be well lighted both by day and night, and there should be in connection therewith an office or room for the engineer, a fitter's shop, and store. If a steam fire-pump be provided, it may be placed either in the boiler or the engine-house, with a notice-board directing the officials generally (in the absence of firemen or engineer) as to the manner in which it may be brought into action.

For illustration, we will assume that the boiler and engine power are required for an asylum of 1,600 patients, and that it is necessary to provide power for driving the laundry machinery, the ventilating fans, the pumps for water supply, the hot-water mains for the baths and lavatories throughout the buildings—some of which would be at considerable distances; for a supply of steam for the coils and heating-pipes and ventilating extractor coils in the roof or elsewhere; also the power for an ample supply of steam and hot water for kitchen and scullery purposes. For such purposes it has been found necessary to provide ten high-class steel single-tube Cornish boilers, each about 25ft. by 6ft., and with all the usual fittings and double-action donkey-pumps, capable of feeding the boilers at the rate of about 5,500 gallons of water per hour. There would also be required engine-power to the extent of, say, about, 30-horse, and the fire-pumps before mentioned.

For an asylum of 1,600 patients the approximate cost for these works and materials would be not less than £8,000; but this item would be, of course, influenced by local considerations and the available means of transport. For a further sum of about £3,000 the whole of the buildings might be heated from the boilers by means of steam-supply. The waste from the steam-traps might be carried by means of wrought-iron pipes to an underground reservoir, and the water thus saved made available for feeding the boilers or for laundry purposes.

For an asylum of 1,600 patients, a tank to contain at least 150,000 gallons of water should be provided, either upon water-towers above one of the buildings, or in other suitable positions (a tank 50ft. by 60ft. by 8ft., or of equal capacity). This would (tank and contents) exceed 800 tons in weight.

In an asylum for 1,600 patients there would be required somewhat extensive provision in the event of fire. Say, two dozen 3in. gunmetal hydrants placed in suitable and conspicuous positions *within* the buildings, and there might probably be double that number fitted about the grounds; but in arranging for the positions of these, the architect would probably do well to consult a fire-brigade or other specialist. All the hydrants should be provided with lengths of good hose, and with provision for all other appliances for maintaining or bringing the apparatus into action. Near these should be means for filling the fire-buckets and nozzles for smaller hose.

These hydrants should be connected with the high-pressure constant supply main, if available, of the water company of the district where the asylum is situated; but as such a supply is frequently not attainable, it will be observed how necessary it is that a tank, or other means of supply, shall be well elevated, so as to obtain a sufficient force of water. If, therefore, the source of water is other than from the constant supply of a company (but brought to a suitable point on the site), a 4in. sluice valve and cover should be provided with a 4in. main to the tank, and be connected with the same by a rising-main fitted with a flange ball-valve, and the main of the same size should be connected with the steam fire-pump; but the fire mains to the various blocks may be reduced to 3in. or less provided an ample *force* of water is always obtainable in sufficient quantity.

All the fittings for the hydrants and all the appliances connected in any way with fire extinction, should be kept on boards or racks near to the hydrants, and spare materials and appliances should be kept in glazed cupboards (but protected from injury by the patients).

A suitable number of fire-buckets should be dispersed about the buildings, always three-parts filled with water and hung within reach. Approximately, the cost of the hydrants and fire-extinction appliances as above mentioned (for an asylum for 1,600 patients) would not be less than £2,000; while the cost for the hot and cold water-supply, with all necessary cisterns, tanks, water-waste-preventing apparatus, water-closets, lavatories, baths, slop-sinks, scullery sinks, urinals, pail-services, &c., would be in an asylum of this capacity not less than £7,000.

The various blocks of buildings should be supplied with auxiliary water-storage, giving a separate temporary supply in cisterns containing, say, 1,000gal. each. The contents of each of the hot-water cisterns may be about 200gal., and these might, if convenient, be heated with steam coils.

In connection with the foregoing items, it may be remarked that 1,600 patients would require, say, 600 lavatory basins, 130 baths, 320 water-closets, a large number of slop-sinks, &c., and a urinal for each ten patients.

An asylum for 1,600 patients would probably cost (under present methods) for electric lighting about £12,000, including wiring and supplying fittings for about 3,000 lights, engines, shafting, about eight dynamos and accumulators to give currents for 2,000 lamps for five or six hours, &c. (The boiler power would be included with the boilers first named.)

(The heating and ventilating engineering specially adapted for asylums will be mentioned at the close of these papers, and after the description of the wards for the patients.)

THE PATIENTS' WORKSHOPS, ETC.

In mental diseases suitably regulated degrees of activity and rest are amongst the most important means of treatment. So long as a patient is employed upon matters unconnected with his malady, he may be said to be in a great measure free from it, and by abstracting his attention from the insane ideas, these are more readily dispersed or weakened. A steady employment of the patient, especially when voluntary, is considered to be a decided indication of improvement, and is frequently the commencement of recovery. Those employments are best which keep the patient engaged in the open air, as in garden and field labour. These prove of great advantage, not only to the lower ranks who have been accustomed to daily toils, but also to the educated classes. Where the condition of the patient renders this impossible, household or mechanical modes of employment, chiefly of a light kind, are usually substituted. In chronic cases the learning of a new and agreeable trade will sometimes be most beneficial in interesting the attention. "Indigent patients should receive a small remuneration for their work during recovery. This might often prove a seasonable protection against want, and while the patients are to be restrained from unsettled trials of a variety of employments, every appearance of a manufactory, or regard merely to the pecuniary advantage of the institution is still more to be avoided—recovery of the patient should be the chief object of work."

In the five asylums for the county of London the patients in 1893 were thus divided :—

MALES.

Total employed	2,270
Unemployed	864
Sick, old, or infirm	916
Absent on trial	9
Total in Asylums	4,059

FEMALES.

Total employed	3,113
Unemployed	1,889
Sick, old, or infirm	1,107
Absent on trial	12
Total in Asylums	6,121

The above figures would probably give the minimum proportion of employed patients, as one of the asylums having only recently been opened, the workrooms and means of employment were not fully organised.

The architect may, however, take the following figures as indicating the nature of the employments and numbers of the patients engaged therein, and this may be a guide in arranging the buildings for workshops, &c.; in country and other districts, of course, other and varied occupations would prevail.

Where there are special and chronic asylums much larger workrooms must be provided for by the architect.

Males.	Total.			
	1893.			1894.
	June 30.	Sept. 30.	Dec. 31.	Mar. 31.
In grounds, garden, farm, &c.	752	725	767	768
,, kitchen	46	56	69	67
,, bakehouse	33	41	45	47
,, painters' shop	33	33	30	30
,, tailors' shop	58	65	62	64
,, upholsterers' shop	190	170	182	205
,, shoemakers' shop	39	41	37	50
,, carpenters' shop	20	18	16	23
As coal carriers and wood choppers	45	44	53	59
In gas-house, engine, and boiler houses	19	20	20	20
As helpers in wards	454	552	687	692
In store-room and other offices	28	30	33	33
,, hall	45	45	44	48
,, corridors	75	77	76	84
,, mess-room	18	19	17	18
Assistant bricklayer	5	5	5	5
Assistant plumber	—	1	1	—
In laundry	20	19	23	28
,, tinshop	6	6	6	6
As basket makers	1	1	1	1
,, painters in wards	12	12	12	12
,, fireman	2	3	2	2
,, bookbinders	2	2	2	2
,, flower makers	5	6	6	6
Total employed	1,908	1,991	2,196	2,270
Unemployed	721	906	929	864
Sick, infirm, and old age	773	805	907	916
Absent on trial	6	5	11	9
Total in Asylum	3,408	3,707	4,043	4,059

Females.	Total.			
	1893.			1894.
	June 30	Sept. 30.	Dec. 31.	Mar. 31.
At needlework in wards and workroom	1,147	1,119	1,116	1,132
In kitchen and vegetable-room	52	52	55	51
In laundry	359	373	372	411
At officers' apartments	19	17	21	23
As helpers in wards	1,255	1,323	1,449	1,460
In mattress-room	9	9	7	12
In mess-room	22	22	25	24
Total employed	2,863	2,915	3,045	3,113
Unemployed	1,269	1,418	1,833	1,889
Sick, infirm, and old age	929	1,025	1,123	1,107
Absent on trial	8	10	8	12
Total in Asylum	5,069	5,368	6,009	6,121

For male patients, therefore, the upholsterers' shop must usually be of the greatest area; but rooms of ample size should be provided for the tailors, bootmakers, painters, tin-workers, wood-choppers, &c., and all these must have sufficient lavatory and w.c. accommodation, and store-rooms for raw and manufactured materials, tools, and implements.

For the female patients the work is simply sewing and mattress labour, and the domestic duties in the laundry, kitchen, and wards (*vide* S. R., Fig. 1).

The workrooms (*vide* W. R., Fig. 1) should be well lighted, and with, if possible, good prospects from the windows; there should, usually, be at least two doors to each workroom. The farm buildings also should provide means for a considerable amount of labour.

In an asylum (for about 2,000 patients) near London, the farm buildings provided accommodation for 8 horses, 40 cows, 1 donkey, 2 bulls, 11 heifers, 3 calves, 214 pigs, 224 fowls, 10 ducks, and milk, eggs, vegetables, and fruit are provided for the use of officials and patients in considerable quantities. The arable and pasture lands attached to the asylum in this case are less than 100 acres in extent, and the *buildings* would seldom have to be more than sufficient for such purposes as above indicated, although a large number of patients are employed upon the lands, orchards, gardens, grounds, roads, &c., generally.

THE POST-MORTEM AND PATHOLOGICAL ROOMS.

The mortuary should be placed at some distance from the view of the asylum inmates, and in connection with it the post-mortem room and pathological laboratory may be arranged. The junior medical officer of the asylum often makes the post-mortem examinations, but a special pathologist for a *number* of asylums has in one district been appointed, and an expenditure authorised of £4,000 for the erection of a pathological laboratory and museum for his use.

To a great extent, the clinical and other work of the medical officers, the absence of suitable laboratory accommodation, and other causes, have prevented exhaustive research; but it appears to be generally requisite that full means for the purpose should be provided in all large asylums.

It might in special cases be convenient to add a jury and waiting-room, with lavatory and w.c. accommodation, &c., a room for a bier, and other exceptional provision.

The pathological specimens are sometimes sent to the medical schools, but some authorities consider it desirable that these should be retained in the asylum museum.

CHURCH, LIBRARY, BILLIARD-ROOM, ETC.

In the great asylums for London, the obvious difficulties of providing for the various kinds of religious ministrations are less than in the provinces, and are, as regards one sect, met by forwarding Jewish patients to the Colney Hatch Asylum, where they are now in sufficient numbers to warrant the appointment of a special minister.

Catholic patients are also attended in various asylums by specially-appointed priests, with or without special chapels, in this country. In Ireland, however, in the large asylums, two chapels are often provided. Religious instruction is not usually withheld from any patient who desires and requires it; it would, however, be against the first principles of mental treatment to enforce such instruction. All efforts in this direction should direct attention from morbid representations, restoring healthful modes of thought. How far such ends should be attempted by these means is a question for the medical superintendent.

A well-appointed chapel must be provided near to, or adjoining, all asylums for the use of attendants and patients (*vide* S, Fig. 1). The arrangement should correspond generally with ordinary buildings of the class, but there should be added two rooms for those males and females who may be taken with fits during service, to which they can be instantly removed from the chapel.

The Commissioners in Lunacy suggest that the chapel shall be sufficiently capacious to meet the prospective wants of the asylum in case of an increase in the number of patients. It should generally be a detached building, easy of access, and capable of comfortably accommodating at least three-fourths of the patients, with separate entrances for the sexes.

There should be one or more libraries (vide U, Fig. 1), over which the chaplain would probably have some control, and a business room for this official might be placed *en suite*.

Billiard and club-rooms are often provided for the patients and officials, the higher officials having sometimes one of the former for their exclusive use. A music and a band practising room are also sometimes arranged for. The position and size of these depend upon the general arrangement of the asylum; but they should not be situated so as to cause disturbance to sick patients or those requiring quiet and rest.

The foregoing comprise the chief portions of the administrative departments. With regard to these and the buildings for patients, to be next described, the following extract is equally applicable:—

"A leading principle in the erection and whole internal arrangements, which has certainly been too often overlooked, is that all the household arrangements of an asylum should, so far as is consistent with its peculiar design, resemble those of a large private dwelling-house—that they should differ as little as possible from the houses and furnishings of the sane. On this principle all plans are objectionable which, by attractive peculiarities of architecture, such as steeples, turrets, &c., insinuate, even by their external appearance, that they are intended for some peculiar purpose. All prison-like cells on the one hand, and on the other undue magnificence in lofty halls, colonnades, &c., must, on the same principle, be avoided. It should throughout have the appearance of a medical institution, whose express aim is the restoration of health; it should convey the idea of ease, comfort, stability; it should also be cheerful and pleasant, with a scrupulous regard to cleanliness, which in such institutions should always be assiduously and perseveringly insisted upon."

SPECIFICATION WRITING.—III.*

(*Continued from p.* 482.)

ROOFER.—[REFER TO GENERAL CLAUSES.]

Tin-roof, under "Tinner."

Slate: — Quality, quarry, sizes, colour, grade, weathering. Tinned-nails, two to each slate, double at eaves, blind hips and ridges, cemented? snow-guards?—wire, at each joint, or other form of guard?

Tiles:—Kind, quality, bedded in hair-mortar? copper-nails? copper-wire? pattern, shapes, colour. Any conical roofs? special tiles. Tile-crestings, hip-rolls.

Tin-shingles:—Make. See "Tinner."

IRON-WORKER.—[REFER TO GENERAL CLAUSES.]

Stirrups, joist-sockets, bolts, rods, washers, shoes for trusses, upset ends, anchor rods and plates, straining-rods, bearing bars for openings. Iron carpet-strips, iron-bricks for screwing onto. Manhole rims and caps, cellar-gratings, window-bars, grilles, painted; patent process?

Store-gratings, galvanised? with hasps? padlocks?

Pavement hoist doors, cellarway doors, with glass? brass-hinges? Archimedian-lifts for cellar-doors?

Iron-stairs: Rails, posts, iron-treads, risers, rubber-tops? marble or slate treads and risers? in cut stone?

Steel-beams: — Lengths, widths, weight, angle-plates, connections, bolts, rivets, for floors, to have bearing-plates, painted before setting.

Columns, cast:—Thickness, bore for test, planed tops, bottoms, caps, bases—loose? drilled for bolts.

Columns, wrought:—Kind, make, length, required strength.

Brackets, struts, wrought? cast? for bolts? cornice-rods.

Clean-out doors. Ash-pit doors.

Fireproof-doors, vault-doors, no burglar-proof,—give all dimensions, thicknesses, fastening.

Iron-shutters:—Lugs for hinges? built-in? open from inside? open from outside?

Wrought window-frames? sash? sills outside? heads outside?

Iron-trusses refer to details, separate specifications. For trusses, contractor submit drawings.

Chimney-stack cap — cast-iron? wrought-iron? bolted? Expansion-bolts? Fire-escapes? Iron-gates, railings. Harness-hooks.

Feed-boxes, steel-wrought? cast-iron?

Iron-mangers: cast? wrought?

Water-troughs: This specified elsewhere.

Stall-guards: wire galvanised? cast-iron? wrought-iron?

Heavy-wrought strap hinges, special?

PAINTER, GLAZIER.—[REFER TO GENERAL CLAUSES.]

Old work:—Burn off? wash off? sandpaper? Putty-stopping nail holes, cracks. Shellac-stopping knots, sap.

Painting:—To sandpaper woodwork. Priming. Three coats paint. How many colours tints?

What kind of paint: Mixed or ground? what lead? any zinc? what colours? any make? all paint to have white-lead body? any ready-mixed paints? what make?

Ironwork painted? how many coats?

China gloss-painting? how many coats?

Enamel-paints: on tub? on walls?

Paint to be gloss finish? paint to be dull finish? painter to protect floors, stonework, etc., while painting.

Natural-wood:—Varnish: Any particular make? how many coats? Rub each coat.

Finish: Full gloss? dull polish? egg-shell finish? floors varnished? or wax finished?

Stained: What colour? Putty-stopping, coloured to match wood.

Shingles stained: What make of stain? what colour and number?

Porch floors painted? Porch ceilings painted or varnished? Walls or ceilings painted? sized? how many coats? colours?

Glazing:—Any floor-lights? rough-plate? how thick? Any skylight glass? rough-plate? how thick? In galvanised iron specification?

Plate-glass, specify windows, American? French?

American cylinder-glass, double strength, what grade? single strength. Chance's crystal sheet? French crystal? Ground-glass? Obscured glass? Glazed-doors—specify. Inside-windows.

Stained-glass? leaded? specify price per foot? omit? lump sum?

HEATER.—[REFER TO GENERAL CLAUSES.]

Hot-air:—Name make of heater; bricked in? who does it? Portable?

Specify size or make contractor guarantee and leave size to him.

Cold-air duct: brick? wood? terracotta pipe? from separate opening? if so, see that it shows on plan: from cellar-window? see that carpenter boxes in and sets sash. Does carpenter make box?

Bright tin-pipes to flues: Size, or leave to contractor if he guarantees. Dampers.

Registers: if not, where, tin-flues; if not, who.

If contractor guarantees, have flue sizes approved by him.

Heater should have shaking-grate, Mershon or approved, automatic-damper, water-tank.

All wrought-steel? All cast-iron? no combination. Galvanised-iron smoke-pipe, give thickness in trade term.

Hot-air and steam combined:—Name make. All other specification like hot-air, for hot-air, and steam, for steam. Galvanised smoke-pipe, give thickness trade term.

Steam:—Name heater, or contractor guarantee. Cast-iron sectional? wrought-iron? bricked in or not? Automatic-damper, shaking-grate, safety-valve, steam-gauge, water-gauges. Blow-off cock, into cellar? into well? not permitted in sewer.

Direct? what make of radiator? automatic air-valves nickel? wood-handle nickel-plated valves? Jenkins Bros.? nickel-bushings in floors. Radiators bronzed? painted? pipes bronzed? painted?

Direct-indirect? same specification as direct, but specify, radiator to be box-radiator, or "direct-indirect"—and specify galvanised-casings to outside air, through walls, provide gratings, or from cellar on first floor. If from cellar, provide cold-air ducts from cellar window, galvanised-iron, say twenty-two gauge.

Indirect: Name radiator; air-valves automatic, brass-seat valves? Jenkins Bros.? radiators hung from joists? on proper irons?

Cold-air supply: Galvanised-iron, name thickness, flat ducts, curved angles, duct to open through wall; if so, see that opening is shown on plan. Radiator-boxes, same galvanised-iron, put together with bolts, or pins, to come down, roofs of boxes, pine, tin-covered.

Does contractor provide flues? registers? or are they in other trades? if so, what trades?

Guaranty invariable. Written, sealed, to seventy degrees in zero weather,—also against water-hammer in pipes, not over ten pounds of steam to be necessary to heat.

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* A lecture delivered before the Architectural Department of the University of Pennsylvania, by Mr. T. Roney Williamson, Architect.

Or does the contractor provide specifications with bid under the same guaranty? Any hot-water heaters? coil?

Large plants, with extended work, fans, pressure or exhaust, special expert specifications.

Steam-heat from power-boilers, reducing-valves, to heat system, return-pipes to tank and pumps.

Power-boilers: horizontal? tubular? upright? steel? Harrison safety? Babcock and Wilcox, safety? All to be tested to carry one hundred pounds, special work more. Boiler Insurance Company's certificate to be delivered to owner.

Engines: Take specifications and guaranty from bidders. Refer to experts.

ELECTRICAL WORK.—[REFER TO GENERAL CLAUSES.]

Special specifications:—Refer to Underwriters' Association. Make contracts subject to inspection approval of Association and observance of all rules of Insurance Company.

Dynamos:—Special specification.

Call-bells, annunciators, buttons, pulls, batteries, wire insulated, run in tin tubes. Kind of buttons, as to finish. Pull at front door to match furniture. Annunciator to have names of rooms, &c.

Hotel annunciator: Take maker's specification.

Lifts:—Hydraulic? electric? direct steam? city water pressure hydraulic? name maker; Ellithorpe safety-cushion? other safety-brakes? Does contractor furnish car? Own design? Your design? Gas to car? electricity to car? annunciator and buttons. Does contractor furnish?

Electric stop and start, safety? method of control, rope? winch? lever? guides, wood? iron? machinery, take maker's specification. Refer to expert. Guaranty to cover speed, and durability. Require insurance and inspection from insurance company.

Hand-hoists:—Require specifications from makers. Guides at back? at all corners? at two corners? friction and ratchet safety-brakes, hatchway-doors? automatic-bars? brake and rope through stories.

Carriage-hoists:—Same. Friction automatic safety-brakes, brake and rope on band wheel.

Pavement-hoists:—Take maker's specifications, generally winch-hoists, chain-cables.

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NOTES FROM THE ANTWERP EXHIBITION.

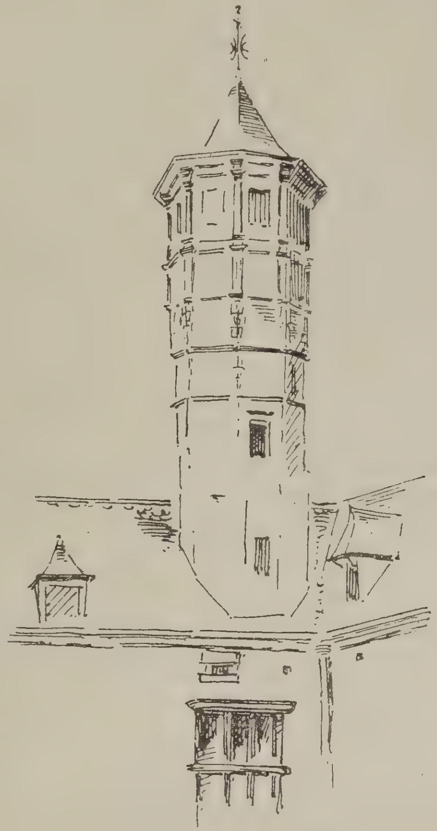
PART III.—THE ARTS.

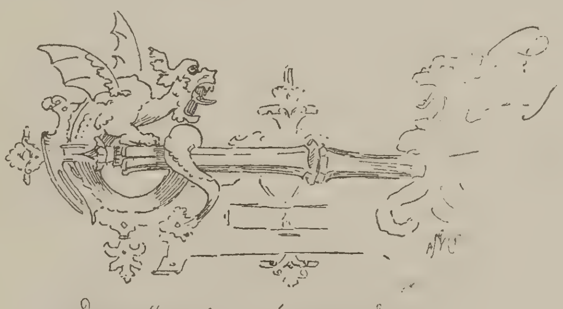
In taking notes upon the artistic side of the Antwerp Exhibition, difficulties at once arose. The desire was natural that these Notes should mainly take the form of sketches; but, unfortunately, it is prohibited to sketch the buildings, one firm having purchased the sole right of selling illustrations of them, and it is also prohibited to sketch the exhibits, for fear that designs might be reproduced. Real ignorance of these prohibitions, however, allowed of one sketch of old Antwerp being obtained and just completed before the courteous intimation came that it was not allowed; and feigned ignorance, both of the rules and the language, secured two others of metalwork, it being deemed inadvisable to waste a portion of exceedingly limited time in seeking a special permission which might have been withheld.

Architecturally speaking, the best thing in the exhibition is undoubtedly the representation of Old Antwerp. It is far and away the best representation of an old town which has yet been erected in this way—in all respects national—with every characteristic of the Flemish work of the immediate neighbourhood of Antwerp and Malines, and, strange to say, with no admixture of that of Bruges or Ypres. The small sketch, obtained as stated above, is no fair criterion by which to judge, having been intended but as a prelude to a greater effort; but it will in some way show the class of work, and Old Antwerp should yet be visited, before the Exhibition closes, by architects in search of inspiration, particularly if they have it in them to both refine and embolden the wiry Flemish work, and to carry away in their minds what they are not allowed to sketch.

Of the Exhibition buildings themselves, it can only be said that the entrance is better than such erections usually are. It is American, and not European at all in taste—more like a copy of the Chicago buildings than anything else with which it could be compared.

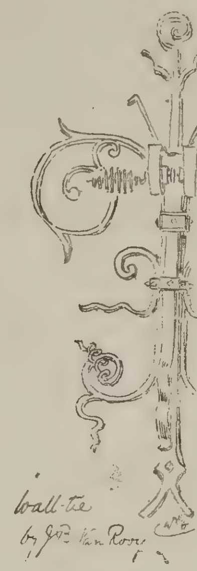
Within the Exhibition it is natural to turn first to what are considered to be the two national arts of Belgium—wood-carving and hammered metal-work; and it is a considerable disappointment to find but little of either. Of the woodwork, what there is is really good, but it is almost entirely confined to furniture. Here there is a buffet, there a table, and there, again, a few chairs, showing what the carvers are capable of doing to a small extent; but the beautiful figure-carving of which so much is to be found in the churches of the country, of both past and present, is conspicuously absent.


A BIT OF "OLD ANTWERP."


Door Handle in Wrought Iron.
by G Chouanard of Brussels

Of metal-work there is a better display; but unfortunately the smith seems generally to have thought that for exhibition purposes it was desirable to try his skill in reproducing vines and oak branches—in fact, to put iron to wrong rather than to right uses. Notable exceptions are the exhibits of door furniture and of hanging lamps, some in wrought iron and others in hammered and pierced brass. Of these there are a great number, many of them exceedingly crisp in design and execution, as is the door-handle of which a sketch was obtained. The wall-tie is in reality a somewhat stiff piece of work, but it is characteristic—an essentially Flemish feature, the use of which, even in its more simple forms, adds considerably to the picturesqueness of a building.

The best exhibit of hammered work, however, is not in the Belgian, but in the Austrian, Court, where Herr Ludwig Wilhelm, of Vienna, makes a splendid show of hammered iron and steel, well-designed and sturdy work; a steel fire-screen, and an electrolier and a gas-lamp of wrought iron particularly claiming admiration. Sketching here, however, was stopped at once upon the usual pretext. Query—Are these people as afraid to publish illustrated catalogues as they are to let others sketch their designs?



Of course, stove fronts are in considerable evidence, generally in brass, and of all degrees of excellence. All are not equally good, unfortunately, and it may generally be said that the cast work in all metals is wanting in finish and none too well modelled. It is the smith who excels, and not the founder.

In the Dutch Court there is a beautiful small exhibit of ecclesiastical embroidery by Messrs. Janssen, of Tilburg, comparing very favourably with more pretentious efforts in the same direction in other courts; and the Dutch are easily first again in the exhibit from their schools of design, in spite of competition with those o other European countries. The clean wood carving, and the beautiful studies of form and colour, are worthy of much careful attention by our own students, both for crispness and exactitude.

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The City Commissioners of Sewers adopted, on Tuesday, a report directing that steps should be taken with a view to the introduction of a Bill in Parliament to obtain powers to provide baths and washhouses within the City, and that in the mean time a draft Bill should be prepared. The acquisition of the necessary powers—of which the City Commission are now deficient—is the only object of the Bill, and not necessarily the erection of the buildings, which, a member said, would cost £100,000. At the same meeting it was decided to carry out a street improvement in Dean's-court and St. Paul's-churchyard, at an estimated cost of £1,995.

"BUILDING NEWS" DESIGNING CLUB.

AWARD OF PRIZES, SESSION 1893-94.

THE seventeenth year of our Designing Club was marked by good work, and the results obtained by the leading members show how, in the competitions month by month, they ran neck and neck with each other. The following is the actual record :—

A.—A Village Library and Technical Institute.—"Nitor," 1; "Birmingham," 2; "Esperez Toujours," 3; "Scottana," 4; "Kenilworth," 5.

B.—A Small Theatre.—"Kelso," 1; "Ant," 2; "Nitor," 3; "Zenith," 4; "Robe," 5.

C.—A Country House in Half-Timber.—"Ant," 1; "Pecksniff," 2; "Scottana," 3; "How's This?" 4; "Boomerang," 5.

D.—Block of Seamen's Almshouses.—"Nitor," 1; "Boomerang," 2; "Ant," 3; "Kelso," 4; "Scottana," 5.

E.—A Small Town House.—"Nitor," 1; "Kelso," 2; "How's This?" 3; "Boomerang," 4; "Idea," 5.

F.—A Village Market Hall.—"Ant," 1; "Nitor," 2; "Kelso," 3; "Boomerang," 4; "Unconscionable Scot," 5.

G.—A Cocoa Tavern.—"Boomerang," 1; "Ant," 2; "Nitor," 3; "How's This?" 4; "Kelso," 5.

H.—A Pair of Labourers' Cottages.—"Nitor," 1; "Boomerang," 2; "Scottana," 3; "Kelso," 4; "Ant," 5.

From this list it will be seen that the winner must without doubt be "Nitor," as he takes the first place four times, is once second, and third twice. "Ant" was twice first, twice second, once third, and once fourth. "Boomerang" wins over "Kelso" by one point only. Thus he was first once, twice second, twice fourth, and once fifth, whereas "Kelso" was once first, once second, once third, twice fourth, and once fifth. "Scottana" ranked twice third and once took fourth and fifth places. "How's This?" was once third and twice fourth. Both these last-named competitors did good even work, and although they never took first or second positions, their productions were serious and workmanlike. "Kelso" made a continued and well-sustained endeavour to beat his previous record; but his plans sometimes handicapped his chances, which is a pity, because occasionally the designs contributed by him were worthy of more care in this respect.

We award the prizes in accordance with the results of the competitions as follows. "Nitor," 1st prize of £10 10s., Mr. R. Shekleton Balfour, 76, Inverness-terrace, W.; "Ant," 2nd prize of £5 5s., Mr. Charles A. Battie, 462, Hornsey-road, Hornsey Rise, N.; "Boomerang," 3rd prize of £3 3s., Mr. Henry A. Crouch, 2, Great Coram-street, Russell-square, W.C. Hon. mention is obtained by "Kelso," Mr. W. A. Forsyth, Belsize-road, N.W., "Scottana," Mr. T. Ballantine, 16, Hornton-street, Kensington, W., and "How's This?" Mr. A. W. Newman, Bloomsbury-square, W.C.

RULES OF COMPETITION FOR SESSION 1894-5.

1. Drawings to be sent in within 28 days after the publication of the particulars of subjects.

2. One or more subjects will be given every month, from which a competitor may choose.

3. The drawing to be executed in firm black lines on white drawing-paper, in sheets of the absolute size of 22in. by 14in., with no washes or tinting in colour whatever. Outline to be the first consideration; but drawings may be slightly shaded with shadows executed wholly in line. Sectional parts to be shown in ruled "hatching," or blocked in. The scale to be used will be given with each subject.

4. Drawings to be forwarded unmounted, by post, care being taken to roll the short way of the drawing, as packages over 18in. long are not transmissible through the book post.

5. On entering the class (which may be done at any time) each competitor is required to furnish his name and address, which must be written legibly on the back of each drawing, as a guarantee of good faith, the *nom de plume* the author intends to adopt boldly marked on the front of each separate drawing.

6. Prizes of £10 10s., £5 5s., and £3 3s, will be awarded to the best series of designs. Our decision to be final.

7. Before awarding the prizes any contributor will be expected to furnish proof, if necessary, as to his age, and the time during which he has been engaged in professional pursuits, though no candidate need be strictly an architectural student.

8. We reserve the right of arranging the drawings for publication in any manner we deem necessary.

9. A critical notice of the designs sent in of each series will be given in an early issue following the receipt of the drawings.

FIRST LIST OF SUBJECTS.

A.—*A Moorland Church*, with a Sunday schoolroom attached, and a shelter adjoining for carriages. The church to seat 200 persons, including two priests' desks and choir-stalls for six men and eight boys in chancel. Provide a commodious vestry, with a fireplace in it, and provision must be made to protect the entrances, as the site is an exposed one. The land on the mountain side falls from west to east 1 in 14, and from north to south rather more than 1 in 8 in irregular contours. The chancel is to be furnished with an organ, and be arranged properly, with altar pace seven steps above level of nave, two steps being at entrance to choir, where there is to be placed a simple rood screen in oak on a stone base. No aisles to nave, but a small tower with spire. A covered way is to connect the Sunday schoolroom with the church. This room to be available for parish meetings, and to measure 45ft. by 22ft. inside, or be of that area. The shelter is to be suitable for carts and carriages standing during service for the use of those driving to the church. The difference of level in the site may permit of the shelter being continued under the school, if desired. Stone and slate to be the material used, and the design is to be simple in detail, with solid and sturdy proportions. Scale 8ft. to the inch. Plans, two elevations, and view. The plans may be drawn to 16ft. to the inch if necessary; but they must show the seating arrangements intended.

BOOKS RECEIVED.

Thermo-Dynamics, by J. PARKER, M.A. (London: Sampson Low, Marston, and Company, Ltd.), is a treatise on a subject of increasing value and interest in physical science. The author has treated the subject in a clear and concise manner, with the aid of elementary mathematics of simple algebra and the trigonometry of sine and cosine. The author discusses the conservation of energy in a clear and instructive manner; the old "caloric" theory and the earlier investigations of the founders of a more rational theory of heat, including Count Rumford, Davy, Carnot, Mayer, Joule, are described. Mr. Parker next discusses "Perfect Gases"; "Carnot's Principle," and its application to an unelectrified body at rest. Chapters on "Tidal Friction," "Applications to Electricity," &c., are interesting. Mr. Parker's work is a little too advanced for the beginner in this branch of physics; but for the student who knows something of algebra and the principle of energy as given in most rudimentary books, this treatise will be found valuable, especially as it contains applications to animal and vegetable life, tidal friction, and electricity.——*Building Construction*, by CHARLES F. MITCHELL, Lecturer on Building Construction to the Regent-street Polytechnic, London, M.S.A., &c., assisted by GEORGE A. MITCHELL; Advanced and Honours Courses (London: B. T. Batsford).—Mr. Mitchell's treatise is a valuable addition to the textbooks suited for architectural students, and is compiled to assist them in preparing for the May examinations of the Science and Art Department, the R.I.B.A., Surveyors' Institution, &c. The author has kept in view the requirements of his own students, and has in this advanced course touched on many matters which are only dealt with in a very elementary manner in his earlier work, which we reviewed some time ago. In its compilation the author has consulted many of the acknowledged authors and compilers of handbooks. The "Notes on Building Construction" and Col. H. Seddon's "Builders' Work" have been laid under contribution, as well as articles in the BUILDING NEWS. Taking at random a few of the chapters, we find them up to date and concisely arranged under paragraphs. Brickwork is fairly treated, and some plans of bond given. The stability of walls is explained by suitable diagrams and simple formula or equations, and Rankine's investigations and tables are given. Tall chimneys and sewer construction receive attention. The author devotes one chapter to graphic statics, which is simply and clearly explained by diagrams. Girders, fire-resisting construction, sanitation, hot-water apparatus, &c., are also treated. As a compendium of the trades connected with building in their constructive aspect, Mr. Mitchell's book will be found of much service as a preparatory handbook to more special treatises. The illustrations are well drawn and numerous.——*Practical Stair Building and Handrailing*, by W. H. WOOD (London: E. and F. N. Spon, Strand), is a practical method based on the square section and falling line system. The letterpress and plates of diagrams are clear and drawn to a good scale. The method adopted by Mr. Wood is somewhat on new lines, but will be intelligible to any student who carefully studies the work. The author lays down the centre line of rails first, and the tangents and face of risers are drawn. Next the centre line is unfolded or developed on a board, with positions of risers thereon. The falling line of rail is then drawn. The advantages claimed are several: the tangents are made to conform with the falling line of rail instead of the reverse; the wreath being sawn out to the section lines, instead of vertical, saves time in squaring; it is easier to moulds than is the case with cylindrical wreaths, and the system has all the advantages of the falling moulds without the trouble of getting them out. Other advantages are stated. The elementary problems are well selected, and the plates are larger and fuller of details than those generally met with in books on staircases and handrailing.

CHIPS.

Lord Kelvin unveiled a statue of the late Sir William Pearce on Saturday, in the borough of Govan. The statue is in bronze, of heroic size, by Mr. E. Onslow Ford, A.R.A., and has been subscribed for by the shipbuilding and engineering operatives of the district. The deceased is represented as examining the plan of a ship inscribed on an open scroll.

Before deciding upon the details of the proposed new Naval Barracks at Chatham, which will be on a somewhat extensive scale, the Lords of the Admiralty will consider a report upon the subject, which is being specially prepared at their request by Rear Admiral Ernest Rice and Mr. William Crisp, from the Director of Works Department at the Admiralty. Admiral Rice and Mr. Crisp visited Chatham on Saturday, and inspected the proposed site. The conversion of the old prison buildings will form a small part of the scheme.

The new English Church of St. George and St. Boniface, in Freiburg, Baden, was dedicated on Wednesday week. The town presented the site, which is valued at £1,200.

The town council of Crewe have remitted to a committee the preparation of a scheme to build a school of art and technical institute at a suggested cost of from £2,000 to £3,000.

The stained-glass windows and the memorial brass erected at St. Augustine's, Highbury New Park, as a memorial of the late Prebendary Calthrop, were designed and executed by Messrs. Alexander Gibbs and Co., 21, Bloomsbury-street.

A service was held at the church of St. Mary the Virgin, Burghill, Herefordshire on Saturday, the occasion being the dedication of the restored and new bells. The old peal of five bells were cast in 1704; of these two were cracked, and the old framework was so decayed that it was unsafe to ring the remaining three bells. The restoration consists of new oak framework and flooring. The three uncracked bells have been quarter-turned, the two cracked bells have been re-cast, and three new bells added, thereby completing the octave. The peal has been hung by Mr. W. Greenleaf, of Hereford. The second and tenor bells were re-cast by Messrs. Mears and Stainbank, of London, who also provided the new ones.

The pressure-reducing and regulating tank for the North Pentland water has just been completed at Firhill, Craiglockhart. The tank is 112ft. square with a depth of 20ft., and a capacity of a million and a half gallons, and it is built entirely of brick. It has cost about £10,000.

An inquiry was held at Mevagissy, Cornwall, on Friday by Mr. Arnold Taylor, Local Government Board inspector, into the application of St. Austell rural sanitary authority for sanction to borrow £2,000 for works of sewerage in Mevagissy. Mr. J. Thomas, M.I.C.E., produced and explained the proposals.

The ancient gold ring or amulet, which was recently discovered in a building estate in Daubeney-road, Hackney Wick, and which is believed to be one of 16 amulets made in accordance with the directions of the will of Sir Edward Shaw, goldsmith and alderman of the City of London in 1487 as charms against diseases, has been deposited in the British Museum.

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ILLUSTRATIONS.

MATER INFIRMORUM HOSPITAL, BELFAST.—FLEMISH HOUSES OF THE SEVENTEENTH CENTURY.—SEMI-DETACHED VILLAS, NEWPORT, MON.—KINGSTON-UPON-HULL BRANCH LIBRARY—TONG CHURCH, SALOP.—WAREHOUSE AT HOVE.—SCHOOL AND MISSION-ROOM AT HOVE EDGE, BRIGHOUSE.—OAK PULPIT, IRON ACTON CHURCH, GLOUCESTERSHIRE.

Our Illustrations.

THE MATER INFIRMORUM HOSPITAL, BELFAST: SELECTED DESIGN.

This week we publish the plan and perspective view of the design for this work placed first in an open competition. Mr. Thomas Drew, F.R.I.B.A., acting as assessor, says in his report to the Most Rev. Dr. McAlister that: "Fourteen designs were duly delivered to me. Anonymity has been successfully preserved. I am pleased to say that, until after the order of merit of the designs was definitely fixed, and the sealed envelopes were opened, the assessor was without hint or surmise as to the authorship of any design." Mr. William Fennell, M.R.I.A.I., whose design was placed first by the assessor, has received instructions to call tenders for the work. It is proposed to expend £20,000 on the work.

FLEMISH HOUSES OF THE SEVENTEENTH CENTURY AT ANTWERP, MALINES, AND YPRES.

The occupation of Belgium by the Spaniards in the 16th century produced marked differences in the character of the buildings. Many of the street frontages are of great interest. Those shown, though far apart, have similar characteristics, and are good examples of the treatment of large window-spaces. The measured sketches, which form the subject of our illustration, are from a pencil-and-brush drawing by Mr. John B. Gass, F.R.I.B.A., of Bolton.

SEMI-DETACHED VILLAS, NEWPORT, MON.

The illustration shows a pair of semi-detached houses, designed by Mr. W. L. Griffiths, architect, 27, High-street, Newport, Mon., and proposed to be erected in the suburbs of Newport, Mon.

SELECTED DESIGN FOR PUBLIC LIBRARY, KINGSTON-UPON-HULL.

We illustrate herewith the chosen design for this branch library, for which Mr. H. A. Cheers is the architect, and the builders executing the work are Messrs. Bowman and Sons, of Stamford. The site is on the Beverley-road, and the cost is about £2,000. The plans show the accommodation, including the lending library and reading room, the committee-room and book-repairing room being on the first floor. No provision was required for a librarian's residence. The materials used are red brick and stone dressings.

TONG CHURCH, SHROPSHIRE.

This sheet comprises three views and a plan of Tong Church, one of the most interesting of the entire Salopian series, and we are indebted to Messrs. Hobson and Co., of Wellington, for the photographs thus reproduced. They are selected from "An Architectural Account of the Churches of Shropshire," by Mr. D. H. S. Cranage, M.A., of King's College, Cambridge, the first part of whose work has just lately been published, with collotype permanent plates from photographs specially taken for the book by Mr. Martin J. Harding, the plans in each case being drawn by Mr. W. Arthur Webb, A.R.I.B.A. The choice of subjects with which the undertaking is thus inaugurated includes the churches in the Hundred of Brimstree, the gem of the collection being unquestionably St. Bartholomew's Church, at Tong, which can be seen from the line shortly before reaching Shrewsbury from London. About two years since Mr. Ewan Christian had the church in hand for restoration; but not having seen it since, we cannot give an opinion upon what was then done. The old work was in a very good state of preservation, and the tombs, which form the glory of the church, have escaped mutilation, and so furnish a wonderful record of armour and costume from the beginning of the 15th to the early years of the 17th century. The plan shows their position in the building, which was mainly erected in the first part of the 15th century. The choir stalls and the Vernon Chapel seem to be somewhat later, the latter dating, in fact, from 1515. The woodwork in the church is particularly good, and it is of interest to note the flavour of Decorated work still lingering in the details of the Perpendicular windows and other architectural features in the chancel, which still preserves its original roof. The Mediæval embroidery hung in the vestry is said to have been worked by the nuns of the neighbouring convent of White Ladies some 350 years ago. The tombs are thus numbered chronologically on Mr. Webb's plan. No. 1. Sir Fulke de Pembruge and his wife; he was lord of Tong in 1371, and died about 1409. No. 2 commemorates Sir Richard Vernon and his wife Benedicta; he was Speaker of the Parliament held at Leicester in 1426, and died in 1451. The upper right-hand photograph on our plate shows the elaborate canopy work on the flanks of the monument, with angels and saints bearing shields in the niches. The carving is excellent, and the whole tomb is in alabaster. No. 3 is the tomb of Sir Wm. Vernon and his lady. No. 4, shown by the lower interior view, records the memory of Sir Henry Vernon and Lady Anne, the founders of the Vernon Chapel. He was guardian and treasurer to Arthur Prince of Wales, the elder brother of Henry VIII. This monument is situated under a Burgundian arch opening into the chapel, and there are some denuded canopies above on the wall, from which the images have gone. The work is somewhat Debased in style as compared with the earlier work. No. 5 is the tomb of Richard and Margaret Vernon. No. 6 probably commemorates Humphrey and Alice Vernon, whose figures are incised on a slab. No. 7 is a lately re-discovered brass to Sir Arthur Vernon, Rector of Whitchurch, and over the figure of this priest, which is well preserved, is a chalice and paten. Nos. 8 and 9 form a very elaborate Elizabethan monument, with circular arches in the lower part and Doric shafts at the sides supporting an entablature and cornice. Four obelisks emphasise the corners of the tomb. The upper figures are those of the Hon. Sir Thos. Stanley, second son of the third Earl of Derby and his wife Margaret. She was the co-heiress of Sir George Vernon with Dorothy Vernon, of Haddon Hall fame. Sir Thomas Stanley died in 1576, and was succeeded by his son, Sir Edward, who is represented below; he died in 1632. Mr. Cranage has carefully described all the costume and other details of these monuments, and his remarks evidently are thoroughly careful and much to the point, showing a critical knowledge which is architecturally reliable, and not encumbered with too much of the husk of archæology. Shiffnal Church has a character about it, and Worfield Church, with a curiously-placed tower, has the advantage of a very good spire; while Claverley Church has an earlier tower, incorporated in a very uncommon way, in the south aisle. The other churches of this district lack interest; but in all cases justice is done by the work under notice. We shall look to the other parts as they are issued to include some of the more noticeable ecclesiastical buildings of the county, as this first contribution augurs well for the permanent value of Messrs. Hobson's publication. The domestic buildings of Shropshire would make a very valuable sequel to such an admirable topographical and architectural book as that before us, particularly if accurate plans could be given.

WAREHOUSE AND STABLING, HOLLAND ROAD, HOVE, BRIGHTON.

This building is now in course of erection for the Brighton and Hove Co-Operative Supply Association, Limited, and is about one hundred yards north of their present building at Hove. It comprises, in the basement, large cellars and safe-deposit rooms under the whole area of the building and yard; on the ground floor, stabling for thirty horses, harness-room, van-houses, warehouses, and yards; on the first, second, and third floors, furniture warehouse and forage stores. There is a hydraulic lift from the basement to the top floor. The building is being erected of stock bricks faced with red bricks from the Cranleigh Brick Company, and relieved with buff-coloured terracotta. The roof is covered with green slates. The building is fireproof. The contract price for the building was £9,121. Messrs. Lainson and Son are the architects, and Mr. James Barnes, of Brighton, is the builder. The design of the building is a simple rendering of the French Renaissance.

SCHOOL AND MISSION-ROOM AT HOVE EDGE, BRIGHOUSE.

The accompanying illustration shows the Church of England elementary school and mission-room, now erecting at Hove Edge in the borough of Brighouse. The plans, which have received the approval of the Education Department, have been prepared by Mr. George Hepworth, architect, of Brighouse, under whose supervision the works are now being carried out. The building is two stories in height on the north and west sides, advantage having been taken in the fall of the ground to secure a fine set of rooms under the main school. The upper floor will be on a level with the road, access being gained by porches on the east and south sides. The large room on the ground floor is intended to be used as a mission-room as well as for school purposes. The building is erected of pitch-faced wallstones from the adjoing quarries, and the roof is covered with green Westmoreland slates and red terracotta tile ridges.

PULPIT, IRON ACTON CHURCH, GLOUCESTERSHIRE.

This is an interesting example of Early 17th-century work, 1624 being the date of its erection, which date is shown on the panel at the back of pulpit, together with the names of the vicar and churchwardens of that time. It is constructed entirely of oak, and is in a good state of preservation, having been carefully restored some years ago. It is highly probable that it was originally entirely decorated, as is usual with work of this period; but now no traces of colour remain, except in the panel containing the inscription. The staircase is almost entirely a modern restoration. The church is a good example of Early 15th-century work, and in the churchyard is an extremely elegant covered preaching-cross, now much mutilated.

R. Gammell.

CHIPS.

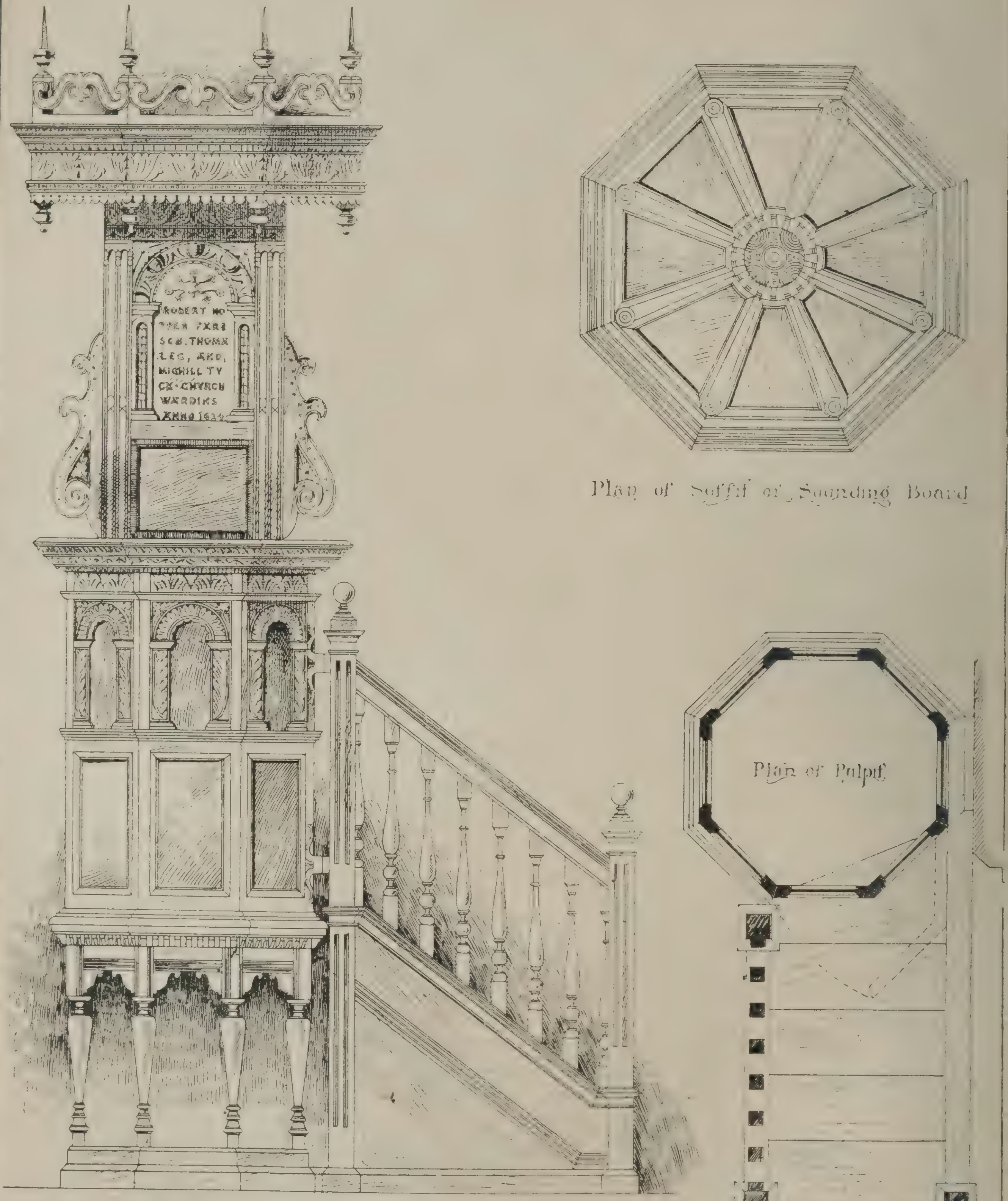
A water supply is being provided for the village of Coleford by the Frome rural sanitary authority. Mr. Purnell is the engineer, and Messrs. J. and U. Wilcox are the contractors.

The Conservative club on Star Hill, Rochester was reopened last week, after enlargement of the meeting hall, at a cost of £500. Mr. W. F. Boucher, of Rochester, was the architect, and Messrs. Callund and Sons, of Rochester, the builders.

Col. Luard, R.E., an inspector from the Local Government Board, held an inquiry at the Guildhall, Ludlow, last week, with reference to an application by the town council for sanction to borrow £6,500 for purposes of sewerage and sewage disposal, and £300 for works of water supply. Mr. Pollard, of the firm of Pollard and Tingle, architects, explained the proposals.

The fourth general meeting of the Royal Society of Antiquaries of Ireland for the year was held at Dublin on Tuesday afternoon. On Wednesday places of interest in the Old City of Dublin were visited, under the guidance of Mr. J. L. Robinson, R.H.A.

A cross has recenly been erected in the cemetery at Bishop's Stortford over the graves of Dr. and Mrs. J. F. Waller. The memorial consists of a replica of a Celtic cross. The cross itself is a fine monolith in blue Pennant stone, resting on a triple base of the same material. Around and about it 142 superficial feet of ground is inclosed by a curbing, also of Pennant stone. The work has been carried out by Messrs. Harry Hems and Sons, of Exeter.



Plan of Soffit of Sounding Board

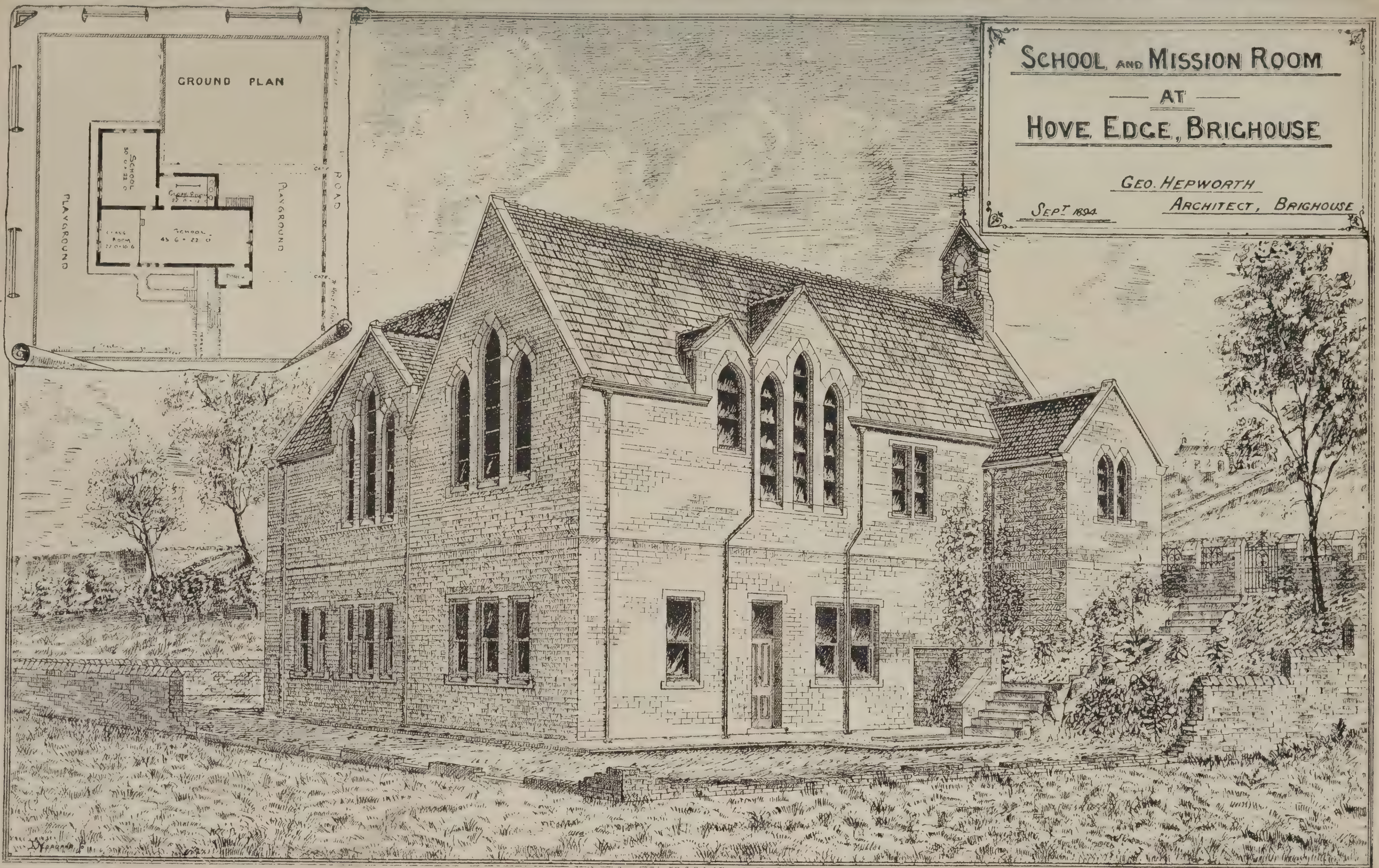
Plan of Pulpit

Front Elevation

Oak Pulpit Iron Acton Church, Gloucestershire

from Measured drawings by K Gammell

A. E. Chancellor del.


SCHOOL AND MISSION ROOM
AT
HOVE EDGE, BRIGHOUSE
GEO. HEPWORTH
ARCHITECT, BRIGHOUSE
SEPT 1894
GROUND PLAN
SCHOOL 30 0 × 22 0
CLOAK ROOM 22 0 × 12 0
CLASS ROOM 22 0 × 16 6
SCHOOL 45 6 × 22 0
PORCH
PLAYGROUND
PLAYGROUND
ROAD
GATE
GATE
TERRACE

WAYSIDE NOTES.

Further excavations recently made on the site of the Anglo-Saxon Cemetery on the top of High Down Hill, near Worthing, have yielded some interesting results. The ground has been trenched under the direction of Mr. C. H. Reed, of the British Museum, who regards it as the largest and most important Saxon cemetery yet found in Sussex. Many interments have been traced. The most notable discovery has been that of a collection of glass vessels, which vie with those of the same period now preserved in the British Museum. One of these is described as shaped like a tall wineglass without a stem, and ornamented with loops of thick white glass. Another is a vase of slender shape, with raised figures and some Greek characters upon it. In one grave some fifty or sixty small beads were found. In another grave, in which part of a child's skull was recovered, were found several glass beads and some thin discs of bronze, decorated with a pattern composed of dots and perforated, as well as a thick ring of bone or ivory, which, it is conjectured, might have been a plaything, or possibly a teething ring. Most of the bodies, but not all, are buried from west to east.

The Jules Dupré Monument was last Sunday unveiled at L'Isle Adam. It stands facing the street in which that great landscape painter lived for 50 years. The monument takes the form of a small semicircle in the centre of which is a dwarf building, like the portico of a Greek house. A bust is placed on a pedestal between two Doric pillars. Above, between two curved palm branches, are the arms of L'Isle Adam. In front of the bust, and in the basement of the portico, water falls from a lion's mouth into a marble basin. M. Scellier, an architect at Givors, and son-in-law of Dupré, designed the monument. M. Roujon represented the Minister of Fine Arts. He and M. Français, the eminent landscape painter, were the principal speakers.

Two curious and ancient specimens of ecclesiastical architecture were reopened to the public last Saturday and Sunday. The first is the old crypt of St. John's, Clerkenwell (formerly the Priory Church of the Knights of St. John of Jerusalem), chiefly famous as the place where the Cock-lane Ghost was discovered to be an imposture. Now the crypt has been relieved of all nauseous contents, and reveals a notable and striking example of old and strong masonry. The second is the historic Church of St. Michael's Paternoster Royal, College-hill, Cannon-street, which was reopened after extensive restorations. The edifice was "new-built" by Sir Richard Whitington, several times Lord Mayor of London. Sir Richard himself was buried three times in it —first by his executors, "under a fair monument"; then in the reign of Edward VI., when "the parson of this church, thinking some great riches (as he said) to be buried with him, caused his monument to be broken, his body to be spoiled of his leaden sheet, and again, the second time, to be buried; and in the reign of Queen Mary the parishioners were forced to take him up to lay him in lead as afore, to bury him the third time, and to place his monument, or the like, over him again, and so he rested."

English sculptors are not half up to date—perhaps because our fewer political changes have not sharpened their wits. The Parisians just now are laughing at the vicissitudes of a bust of Louis XIV. over the colonnade on the east side of the Louvre. When Perrault erected the colonnade the bust was an exact likeness of the "Roi Soleil," but under the First Empire the official sculptor chipped off the flowing wig, and pared the nose down to the Napoleonic proportions. When the Bourbons came back, the wig was replaced, and the necessary hump put on the nose, but both were removed during the Hundred Days. But after Waterloo the perruque and the aquiline nose were restored, and the troubled bust had rest, though now that the subject has been raised, possibly M. Casimir-Perier may wish to add his moustache to the long-suffering work of art.

The Boundary-street building scheme of the London County Council is about to enter on its second stage. The architect has got out the foundation plans for the second of the five sections into which the work is divided, and these having been approved by the Committee for the Housing of the Working Classes, the work will be immediately proceeded with. This second section is much larger than the first. It extends right across the extensive space cleared, and some of the new houses upon it will come quite out to the Shoreditch front. This portion of the work will be designed to accommodate somewhere about fifteen hundred people, and the total expenditure upon it will be from sixty to seventy thousand pounds. Excavations will be commenced at once, and it is estimated that about a thousand pounds will be saved by throwing the earth into the central garden space and piling it up in terraces, instead of having it carted away to a distance. There will be two or three broad walks rising one above the other, and connected by steps, the slopes between them being turfed and embellished by flower beds and shrubs, and the whole will be surmounted by a band-stand.

I often wonder, as I roam through the wildernesses of exhibits at the Bloomsbury and South Kensington Museums, what percentage of the articles in the showcases are correctly labelled? A suggestive statement is going the rounds of the provincial press with reference to the collection of "Roman antiquities" recently formed by the city corporation of Carlisle at the Queen Anne mansion, known as Tullie House. It seems that Professor Boyd Dawkins recently visited Tullie House, and examined the extensive collection of "Roman" remains, some of which turned out to be Celtic. As they had been dug up in various parts of the city, they furnish conclusive evidence that Carlisle was a Celtic settlement prior to the time of the Roman occupation. One of the specimens, which had been broken when dug up, enabled Professor Dawkins to discover the process by which the Celts did their enamelling—namely, by fusion, and not inlaying—a fact not previously known.

CHIPS.

A new altar, the work of Messrs. Harry Hems and Sons, of Exeter, has been erected in Christ Church, Frome.

On Tuesday week the foundation-stone of new Church schools for Wetherby was laid by Colonel Gunter, M.P. The schools, designed by Mr. A. A. Gibson, architect, Harrogate, will cost £1,300, exclusive of land, and will accommodate 412 children. The work is being executed by Mr. G. B. Thain, contractor, Wetherby.

The cottage almshouses which have just been erected at Burnhead, near Liberton, N.B., under the will of the late Mr. Thomas Lockerby, Addiscombe, Surrey, were opened on Friday. The cottages are twelve in number, and disposed in pairs, having the appearance of double villas, with plots of ground in front and in rear. Consisting of three rooms and kitchen, with baths, hot and cold water, and every modern convenience, each cottage has cost about £450, giving a total outlay of from £5,000 to £6,000. They have been built to the designs of Messrs. M'Whannel and Rogerson, architects, Glasgow.

The work of drainage in the town of Wetherby has been completed this week. The undertaking has been carried out from plans by, and under the supervision of, Mr. A. E. Preston, C.E., of Bradford.

The town council of Bury, Lancs, have adopted a resolution giving preference to those firms in its contracts who pay the standard rate of wages obtaining in the town or district.

The parish church at Empingham, near Stamford, is undergoing restoration. The entire roofing of oak and lead has been renewed. During the process of cleaning the walls some interesting pieces of ancient mural painting have been disclosed, and these are being preserved. Amongst other things, the tower and spire have been restored. The work is being carried out by Messrs. E. Roberts and Son, of Weedon, and Mr. Traylen, of Stamford, is the architect. Over £2,500 will be expended on the work.

The foundation-stone of a mission church was laid at Pant, near Dowlais, by the Bishop of Llandaff on the 4th inst. The architect of the church is Mr. E. M. Bruce Vaughan, of Cardiff, and Mr. E. Lumley, of Merthyr Tydfil, is the builder.

After undergoing restoration, the church of St. Michael Paternoster Royal, College-hill, Cannon-street, was reopened on Sunday. The church has been enriched by a good deal of the carved work which formerly adorned the now dismantled church of Allhallows the Great, Thames-street. The stone figures of Moses and Aaron, from the latter church, have been placed in the entrance lobby of St. Michael's; and the new organ is inclosed in the fine organ case from Allhallows.

OBITUARY.

We regret to announce the death, in his 71st year, of Mr. Robert Jewell Withers, architect, late of 11, Adam-street, Adelphi, W.C., and formerly of Doughty-street. Mr. Withers, who died at his residence in Schubert-road, Putney, after a short but painful illness from cancer on Sunday last, was a pupil of the late T. Hellyer, of Ryde, and enjoyed at one time a large ecclesiastical practice, his work being excellent of its class. He must have built and restored nearly a hundred churches in the United Kingdom, a notable one being St. James's, Great Grimsby (illustrated by us by four full-page drawings on March 25, 1875), besides the English churches at Brussels and Wildbad. A large proportion of his church restoration practice was in South Wales, where he imparted to many a barn-like structure some semblance of artistic life and feeling. He also carried out numerous parsonages and schools, and many warehouses and business premises. Although he had relinquished his office in Adam-street for some time, he continued in work at his residence in Putney until June last. He was for a long period a Fellow of the Institute of British Architects, but retired from that body several years since. Mr. Withers was a widower, and leaves two daughters and several sons, one of whom is in practice at Shrewsbury.

We also have to record the death of Mr. Charles Herbert Cooper, A.R.I.B.A., of 7, Great College-street, Westminster, at the early age of 32 years. He was the second son of Mr. W. G. Cooper, of Avonmore-road, West Kensington, and died on Sunday last. He became an Associate of the Institute of Architects, after passing the compulsory examination, in 1889.

Mr. Thomas Seir Cummings, who died at Hackensack, State of New Jersey, U.S.A., on Sept. 24, had been, for a period of nearly 70 years, indentified with the practice and the teaching of painting in America; and to whom is due much of the credit for the high standard of work now produced in the schools connected with the National Academy in New York. Born in England in 1804, he was taken to America in the following year. Developing marked ability in drawing, he was placed in the school of the American Academy of Fine Arts. At the age of 21, becoming convinced that students did not receive proper attention, he called a meeting of students, and as a result of that meeting, on Nov. 8, 1825, the present National Academy of the Art of Design was founded. He served for five years as treasurer of the Academy, later became vice-president, and, as chairman of the building committee, had charge of the construction of the new building, which cost £50,000; he also acted as instructor in the Academy schools, and was one of the founders of both the Sketch and Century Art Clubs. He made a speciality of miniature portrait painting; but the advent of photography led to his abandonment of portrait work, and he devoted all his time thenceforward to teaching, succeeding Prof. Morse as Professor of the Art of Design in the University of the City of New York.

The death is announced, at his residence, Summerseat, near Philadelphia, of Mr. John Humfrey Osborne, who has been a prominent civil engineer in the United States for over half a century. He was born in Dublin in 1818, and went to the United States in 1839, and became confidential secretary to Mr. Wirt Robinson, chief engineer of the Philadelphia and Reading Railroad. He rose to be chief assistant in 1843, and in 1846 he was appointed chief engineer of the Philadelphia and Reading Railroad, but resigned that position later on, to join, with his brother, Mr. R. B. Osborne, in the construction of the Waterford and Limerick Railway. Returning to the United States in 1850, he was appointed to the Ogdensburg and Lake Champlain Railway, and the next year took charge of a portion of the construction of the Southside Railway in Virginia. From that time until 1873 he was engaged upon many important railway enterprises in the States. For the past twenty years he practically lived in retirement at his country place, Summerseat.

The Duke of Westminster will lay the corner stone of the great schoolroom of St. Oswald's College, Ellesmere, on Thursday in next week, the 18th inst. The college is one of the group of church public schools founded by the late Canon Woodard, and carried out in sections as funds permit, from plans by the late Mr. R. Herbert Carpenter and Mr. B. Ingelow.

Building Intelligence.

Bournemouth.—Work has been commenced by the contractors, Messrs. George and Harding, of Bournemouth, on the site of the new head post-office, between the Albert and Beckford-roads, the contract being for about £8,500. The office will have a frontage to the Beckford-road of about 70ft., and a depth of 107ft. back to within a few yards of Albert-road. The breadth at the widest part will be 74ft., and the height from basement to roof 62ft. The building will be of brick and stone, with Bath stone dressings, and a slate roof. The public office, to be entered from the Beckford-road, will be 30ft. by 43ft., and the sorting office 40ft. by 67ft. The building is to be completed by the end of February, 1896. Mr. Edward George Rivers is the architect, and Mr. Elliott will be clerk of the works.

Dewsbury.—The board of guardians are at present building a new workhouse infirmary, which, when completed, will cost £20,000. The building is to the south of the present workhouse of Heald-road. The plans, which have been prepared by Messrs. Holtom and Fox, of Dewsbury, show a building of Delph stone, the walls having a thickness of 21in. In the centre is the administrative block, which provides on the ground floor the resident doctor's private sitting-room, the dispensary, and nurses' sitting-room. Beyond these, on each side corridors lead to male and female waiting-rooms. The building will be warmed with stoves provided with down-draughts, also by hot-water pipes on the low-pressure system. Messrs. Shorland Brothers, of Manchester, supply the flues.—The Dewsbury guardians are providing a series of cottage homes on a site outside the workhouse grounds at Staincliffe, and separated from them by Healds-road. The first four cottages now being erected will accommodate 48 boys and girls. Each home will cost about £650. They will be built of Delph stone, with cavity walls, and the whole of the ground flooring will be laid with wood blocks.

Dowlais.—St. John's parish church, Dowlais, has been pulled down, rebuilt, and enlarged, and the new building, which has accommodation for 800 worshippers, was consecrated on Thursday in last week by the Bishop of Llandaff. The new church was built by Mr. W. Dowland, contractor, Abergavenny, from plans by Mr. E. A. Johnson, M.S.A., Abergavenny. Externally, the work has been designed in character with the existing church, which is of Early English type, and the walls are of Llancaiach stone, relieved by Forest and Bath stone dressings. Internally, the new portion of the nave and aisle are lined with buff pressed bricks, pointed in red cement, and the joinery, including the roof, which is of open-timbered construction, together with the seating, is of selected pitch-pine. The old nave, now replaced, had a flat plaster ceiling, overhanging back gallery, and remarkable traceried windows of heavy cast-iron, the expansion and contraction of which had much distorted the arches and walls within which they were built. The tile flooring is by Messrs. Godwin and Sons, of Hereford.

Edinburgh.—Some important decoration has just been executed at the Catholic Apostolic Church, London-street, Edinburgh, by Mrs. Traquair, who painted the interior of the Cathedral Song School of St. Mary's Cathedral in the same city. The great bare wall spaces in the Catholic Apostolic Church were left purposely to be painted when the church was built, nearly 20 years ago, by Dr. Rowand Anderson. The church is Early Norman in style, and between the nave and chancel there is a deeply-moulded arch, rising to a height of 66ft. On each side of it and over it—the roof being 77ft. in height—is a wall area, which represents in extent a canvas equal to about 120ft. by 9ft., and it is this space that Mrs. Traquair has decorated. The design is illustrative of the Worship of Heaven, as that is revealed in type and symbol in the Book of the Revelation, and the style of treatment is Early Florentine. The colours are oil, but worked in the water-colour method. Mrs. Traquair is now preparing to continue the work of decorating the church by illuminating the walls of the chapel and north transept. After these are finished she means to treat the large oblong panels of the nave. In connection with the mural paintings on the great arch, the roof of the chancel has been decorated by Mr. Andrew Hutton, Dundas-street, Edinburgh.

Gateshead.—The Bishop Lightfoot Memorial Church of St. Aidan, at the corner of Askew-road and Bach-street, near Redheugh Bridge, Gateshead, was consecrated by the Bishop of Durham on Saturday. It is constructed of stone, is carried out in a simple phase of Early English, and is seated for 500 persons. Owing to the rapid fall of the site, Sunday-school accommodation for 400 children is provided under the church. The special gifts include an east window, executed by Messrs. Heaton, Butler, and Bayne, of London; a carved oak pulpit, the work of Mr. Hedley, of Newcastle; credence table, litany desk, oak screens for the side chapel, and a marble font. Mr. Stephen Piper, M.S.A., of Westgate-road, Newcastle-on-Tyne, was the architect, and Messrs. Haswell and Waugh, of Gateshead, were the contractors. The outlay has been about £5,000.

Hatcham, S.E.—The Church of St. Catherine, Hatcham, was consecrated on Wednesday by the Bishop of Rochester. It is cruciform in plan and design, to seat between 800 and 900 worshippers. A tower and spire, not yet completed, will stand at the north-east angle of the structure. A vicarage house, erected with the church, stands on its southern side in Pepys-road. The buildings were designed and carried out by Mr. Henry Stock, the architect of the Haberdashers' Company, by whom they have been erected, the contractors being Messrs. Higgs and Hill, of South Lambeth. The total cost of the whole, including fittings and boundary-walls, has been nearly £16,000.

Leeds.—The Duke and Duchess of York visited Leeds on Thursday last week to open the new School of Medicine, erected at a cost of £40,000, in connection with the Yorkshire College, and also to inaugurate the new central hall and library, which have been added to the college at a cost of £20,000. The School of Medicine has been built from plans by Mr. William H. Thorp, F.R.I.B.A., of Leeds, who adopted a Tudor treatment of collegiate work. The building adjoins the General Infirmary on Mount Pleasant, and gives accommodation for 408 students. One of the principal departments is the library, which is 72ft. 6in. by 35ft. 4in., and is fitted in oak. The walls are of brickwork, Morley Moor stone being used for the dressings. All the carved work, both in wood and stone, was executed by the late Mr. J. W. Appleyard, of Leeds. The contract for the general structural work has been carried out by Messrs. W. Wilson and Sons, of Headingley, Leeds, who have also carried out the contracts for drainage.—The Yorkshire College Hall has been carried out from the designs of Messrs. Alfred Waterhouse and Sons, under the supervision of Mr. William Bruce, clerk of works. The chief contracts have been executed as follows:—Mason and brickwork, Messrs. John Wood and Son; carpenter and joiner work, Messrs. John Hall Thorp and Son; plumbing, Mr. George Thompson; structural steel work, Messrs. A. Handyside and Co., of Derby; faïence work, the Burmantofts Company; and mosaic paving, Mr. Ebner.

Lewisham.—A new workhouse infirmary in High-street, Lewisham, was opened on Wednesday. The buildings are designed to accommodate 372 patients, and are divided into four groups, a corridor connecting the wards and administrative section. They include a medical superintendent's residence and a porter's lodge. The patients' blocks are of three stories, each containing two wards for 28 beds and smaller wards for six beds. Each ward has its own bath-room and sanitary appointments, and each pavilion has a central staircase and hydraulic lift, and at the end of each large ward is an external recessed iron staircase for use as a means of escape in case of fire. The wards are warmed with air-chambered stoves, with which are combined batteries of hot-water pipes. The land consisting of 5½ acres, cost, after law expenses and compensation, £5,400, the building cost £57,000, and engineering and other matters, £9,600, or a total cost of £72,000. Messrs. A. and C. Harston, of Leadenhall-street, were the architects, and Messrs. W. Johnson and Co., of Wandsworth, erected the main building.

Lincoln.—During the last week the two lancet windows in the Chapter House, facing the door of entrance, have been filled with stained glass by Messrs. Clayton and Bell, as a memorial to the late Bishop Trollope, to whom the inception of the plan for thus decorating the Chapter House is due, and by whom the scheme of subjects representing the chief events in the history of the cathedral was drawn up. A third window, the gift of an old choir-boy, is also in preparation. A clock is being constructed for the interior of the building, and the 14th-century clock-case is being reconstructed. This case was erected by Treasurer Welbourne, who died in 1380, to whom the cathedral was also indebted for the exquisite stalls of the choir, the vaulting of the three towers, and the dull, uniform row of statues of kings over the west doorway. Welbourne's clock and canopy were in existence about 1730, when the brothers Buck were engaged on their topographical drawings. A sketch of it is contained in the Gough collections at the Bodleian, showing three quarter jacks or figures of men, one at the top to strike the hours, and two at the sides the quarters. One of these wooden figures is still preserved in the chapter library. The canopy was lost to the cathedral when the late Archdeacon Bayley was sub-dean, 1805-1828. He had a fancy for decorating his church at Messingham with objects filched from other churches. The clock-case was carried off by him to form a canopy over the pulpit. This inappropriate place it occupied until a recent restoration of that church, when the late Bishop Trollope made it a stipulation on sending a donation that the canopy should be restored to the minster. To this the vicar assented, and it now takes its old place over the dean's door in the north transept.

Maidstone.—The new technical science and art schools at Maidstone will be opened by the Duke of Cambridge on Tuesday next. The buildings, which adjoin the Museum, have been erected at a cost of £11,000, from plans by Mr. Albert W. Smith, F.R.I.B.A., Maidstone, whose design was illustrated by a double-page perspective elevation, plan, and details in the Building News for Nov. 3, 1893. Messrs. Wallis and Sons, also of Maidstone, have been the contractors. Only the first portion of the whole scheme has been carried out. On Feb. 23, 1877, and Jan. 11, 1878, we published illustrations of additions made to the Museum from plans by Mr. Hubert Bensted, of Maidstone, and on Aug. 13, 1886, we gave two views from photographs of the buildings as then enlarged.

Merthyr.—The new Roman Catholic church at Merthyr at the south-west corner of Pennydarren Park, was opened on Thursday week by the Right Rev. J. C. Hedley, Bishop of Newport and Menevia. The church has been built from the plans of Mr. Joseph L. Hansom, F.R.I.B.A., London, by Mr. Thomas Rees, contractor, Merthyr Vale. The walling is of Pwllypant stone relieved by Box Ground Bath stone dressings. The interior facings are of Corsham Down Bath stone, as also are the pillars and all the inside stonework and arches. The interior consists of a nave, north and south aisles, and north and south transepts. The extensions, to be made later on, will include two side chapels, two sacristies, an organ loft, and side chapels and confessionals off the south aisle. The style is Early English. The roof, which is of pine, is open-timbered, formed of pointed principals, with collar beams. To provide for the future arrangements three arches have been erected at the eastern end for the sanctuary and side chapels. The total length of the nave is 84ft., which will eventually be extended to 120ft. The height from floor to ridge of roof is 56ft.

Newcastle-on-Tyne.—The south-east and south-west wings of the Durham College of Science were inaugurated on Tuesday. The College of Science, which was incorporated in 1871, represents in Newcastle the faculties of science and engineering in the University of Durham, and its students obtain the science degrees and engineering diplomas of the parent University. A new site was secured at Barns Bridge in 1886, and here the buildings were being erected in sections, from designs by the late Mr. Robert J. Johnson, F.S.A., of Newcastle, the style being a rich phase of English Jacobean. The plans, which have since been carried out by Mr. Frank W. Rich, of Newcastle-on-Tyne, show a quadrilateral range of buildings, the four wings inclosing a courtyard. The north-east wing was begun first, the foundation-stone being laid in 1887, and the buildings, which cost £23,000, were inaugurated on November 5, 1888. This wing includes the chemical and physical lecture-rooms and laboratories, museums, and preparation rooms, and in it the whole work of the college has since been carried on. The council then proceeded to the erection of the wings at the south-west and south-east. These include the whole of the apartments to be devoted to the study of engineering and the fine arts, a gateway forming the entrance to the quadrangle; this tower is of brick, with groined stone vault, and has four angle turrets, each rising to a height of 96ft. The chief room is the George Stephenson Engineering Laboratory, 123ft. by 35ft., supplemented by an annexe 9ft. wide for the greater part of its length. Above, is a drawing office and mechanical museum, and over that a studio, both being also 123ft. by 35ft. 6in. The portion of the college yet to be built is the main wing, which is to include the administrative, literature, and agriculture departments. A sum of about £90,000 is needed to complete the buildings, which were illustrated in their entirety in our issue of Aug. 12, 1892.

Old Swan, Liverpool.—A hospital for infectious diseases that has been built at Mill-lane, Old Swan, at the instance of the members of the West Derby and Wavertree Joint Hospital Committee, was formally opened on Saturday. There are six blocks of buildings, consisting of a porter's lodge, an administration block, bath, and dressing block, laundry, one pavilion for eight beds, and two pavilions for 12 beds each, or 32 beds in all. The buildings leave room for the erection of three more pavilions, two for 12 beds, and one for 10 beds, making the accommodation of the complete hospital 66 beds. The site is inclosed by a wall 7ft. high, the only entrance being through a gate in Mill-lane, controlled by the porter's lodge. The administration block has on the ground floor a matron's sitting-room, visitors' waiting-room, a doctors' room, a dispensary, a committee room, and kitchen. Bedrooms, linen stores, bathroom, &c., occupy the first floor. The pavilion next the entrance is for doubtful cases, and contains on either side two single-bed wards and one two-bed ward, duty-room and bath-room between. The remaining two pavilions are alike, each containing two wards of six beds, with duty-room and bathroom between. Both these pavilions are carried upon open arches, the ground underneath the wards being excavated and covered with cement concrete. The laundry block consists of a general washhouse, and separate washhouse for the staff, and also a general laundry and drying stove, fitted up by Messrs. Bradford and Co. There is also a mortuary. The buildings are of common bricks, relieved with Ruabon red bricks. All the interior woodwork is in pitch-pine. The sole contract was taken by Mr. Samuel Webster, of Bootle, and the architects were Messrs. C. O. Ellison and Son, Sir Thomas-street, Liverpool.

Plymouth.—The muniment-room in the Guildhall, on the north side of the Municipal Offices, has recently been fitted, furnished, and decorated under the direction of Messrs. Hine and Odgers, the architects of the group of buildings. It is a vaulted chamber, the vault springing from a central granite pillar. Wainscot cases have been placed around the walls on three sides, and the north wall has been lined with wainscot panelling. Around the column a reading-table of granite, octagonal in form and of quaint design, has been constructed. The wall and roof decoration, by Messrs. Fouracre and Son, of Plymouth, is in harmony with the municipal buildings. That of the roof is composed of diapered ornament of heraldic character, in which the old Plymouth castles with the town motto, interspersed with beacon lights and Royal crowns, are conspicuous, on a ground of maize. Below the springing of the vaulting, and just above the cornice of the oak cases, there runs a frieze, in which occur foliated work, lions, the St. Andrew's cross, the names of the town wards, and the old arms of Sutton, showing a ship in full sail with the beacons at the masthead. Several Shakespearian quotations have been painted in black letter upon the cove of the cornice around the cases, and over the door is an extract, also in black letter, from the poetry of Drayton (1644). The room has a mantelpiece of Plymouth marble, made by Messrs. J. and E. Goad, of Plymouth, and will have Glastonbury chairs at the table and Indian matting and rugs on the floor. The windows have been filled by Messrs. Fouracre with glass of Early English character, having lions rampant in the lancet heads. Messrs. R. A. Lethbridge and Son, contractors, Plymouth, executed all the wainscot work.

Poplar.—The new public library in the High-street was formally opened on Wednesday in last week. The public entrance is through a vaulted hall 11ft. 6in. wide, and the office is reached from this outer hall. The inner hall gives access to the lending-library, which was placed nearest of all the public rooms to the street. Behind the counter are the book stores, which will afford, when completed, space sufficient for 35,000 to 40,000 volumes. The news-room, for 120 readers, is entered from the south end of the inner hall. The height of the central portion of the room being 21ft. 6in., and that of the sides 11ft., there is equally-distributed lighting throughout from windows in clerestories, and there are also windows at a low level. Top-lighting has been intentionally avoided throughout the buildings. The reference-room, entered through the news-room, will seat 120. The books will be given out, and counsel given, at a flap in the inclosure forming the sub-librarian's office. From this office also complete command is had of the rooms. Messrs. Cormick and Sons, of Canonbury, were the contractors; the heating, by hot water at low pressure, was done by Messrs. Strode and Co.; the gas-lighting is by Wenham ventilating lamps, the vitiated air being carried up in iron tubes to vents placed in the tops of the roofs. Mr. H. G. Rogers was the clerk of works. The upper book store and the large hall in the next side have not yet been carried out. This hall was planned to seat about 220 persons for lectures, being capable of subdivision, when required, into two smaller rooms, suitable for educational classes. Messrs. Clarkson, of Great Ormond-street, were the architects to the Commissioners. We illustrated their design in our issue of Oct. 14, 1892.

Stamford.—Progress is being made with the erection of the school for technical education at Stamford. The total cost will be about £1,150 exclusive of fittings, and the work is being carried out by Mr. John Woolston, builder, of Stamford, the architect being Mr. Traylen, of Broad-street, Stamford. The site is a part of the shambles in Broad-street, and it extends back a distance of 70ft. from the street, affording space not only for the present buildings, but also for carpenters' and other workshops which may be erected subsequently. The new building is approached by an entrance hall 6ft. wide, leading into two class-rooms, each 21ft. by 20ft., on the ground floor. Upstairs the whole frontage is occupied by one room, 50ft. by 20ft., divided by a movable partition. This room is lighted by seven large windows to the front, securing a north light. At the half-landing is a store-room for books and drawings. The heating will be by warm air. The ventilation has been intrusted to Messrs. Robert Boyle and Sons, of London. Outhouses are provided for coals, stores, &c. The front elevation, facing Broad-street, is, both in design and in material, in keeping with the architecture of Stamford in the Georgian period. The school throughout is being built of selected Stamford stone, with Collyweston slating.

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After a long and warm discussion, the town council of Sutton Coldfield decided to increase the salary of the borough surveyor to £325 for the year ending March, 1896, with an increase of £25 next year, being in all £150 more than his present salary; the surveyor not to be allowed any commission, or to take any private work in the future, but to devote the whole of his time to the business of the corporation.

The Bishop of Peterborough has accepted an invitation from Mr. Woolrych Perowne to lecture to the members of his educational tours to Rome and Palestine next spring. The subject of the lectures will be "Rome of the Renaissance" and "The Influence of the Popes on Roman Architecture." Lectures will also be given by Mr. Oscar Browning, Canon Evans, and Professor Lanciani in Rome, and Mr. Bliss and other archæologists in Palestine.

An international exhibition, illustrating hotel arrangements and accommodation for travellers, as well as means of transport by sea and land, will be opened in Amsterdam in the summer of next year. The buildings are to be erected on the land situated at the back of the State Museum on the site occupied by the Universal Exhibition of 1883, and will cover a superficial area of 175,000sq.yd. The funds, both for carrying out and guaranteeing the undertaking, have already been provided, the plans of the various exhibition buildings are being prepared, and their construction will be shortly taken in hand.

It is interesting to recall that the commencement of the late Sir Rupert Kettle's services as an honorary arbitrator in trade disputes was the settlement of a disastrous strike in the building trade at Wolverhampton in 1864. Mr. Kettle's success in this dispute led to the establishment of a legally-organised system of arbitration.

COMPETITIONS.

Liverpool.—The Liverpool school board held a special meeting on Tuesday to select an architect for the proposed school board offices. Four plans had been received, submitted under the mottoes "Balbus," "As You Like It," "Classic," and "Doonie." A committee had, by five votes to three, recommended the adoption of those under motto "Balbus." This recommendation was, after a discussion, adopted, and on opening the envelope it was found that the successful competitor was Mr. C. E. Deacon, of Central Buildings, North John-street, Liverpool, who has been appointed architect for the building. The other selected competitors were Messrs. George Bradbury, Edmund Kirby, and T. Mellard Reade, all of the same city.

CHIPS.

The partnership hitherto subsisting between H. Bushell and C. Crosier, architects and surveyors, Great James-street, Bedford-row, W.C., has been dissolved.

The town council of Bury, Lancs, have decided, after a long discussion, to empower a committee to obtain plans for the erection of a municipal lodging-house capable of accommodating 300 persons.

Mr. Nowall Parr, assistant borough surveyor of Walsall, has been chosen out of 163 candidates for the post of surveyor to the Brentford local board, at a salary of £250 a year and liberty to act as consulting engineer.

The valuable collection of clocks and watches presented by the Rev. H. L. Nelthropp, M.A., the master, to the Clockmakers' Company is now on view at the Guildhall. The collection traces the history of horology from the Middle Ages.

A stained-glass window, illustrating Christ blessing little children, was unveiled last week in Landkey parish church, North Devon. Mr. F. Drake, of Exeter, designed and carried out the work.

The Manchester, Sheffield, and Lincolnshire Company have completed their connection with the Welsh railways *viâ* the Hawarden Bridge over the river Dee, and are now rapidly pushing on the Wirral line, which will, *viâ* the Mersey Tunnel, give the railways of the Principality direct communication with Liverpool. Only a short section of line from Wrexham to Ellesmere—now in course of construction—is required to complete this combination.

After a long discussion and several divisions, the town council of Rochdale have adopted a fair-wages clause in their agreements with contractors, with the following addition to it:—"That a clause be inserted in all contracts that the contractor shall forward with the original tenders a list of the names of the sub-contractors."

Mrs. Lyne Stephens, of Roehampton, Lynford Hall, and Paris, who died recently, has bequeathed three pictures to the National Gallery, and some old furniture and china to South Kensington Museum.

A water-colour drawing of Tintern Abbey, by Mr. T. Hunn, has been presented to the Guildhall Art Gallery by Mr. Edward Lee, C.C. Another recent presentation to this collection is a small oil painting, entitled "The Rivals," by Robert Smirke, R.A., the gift of Colonel J. L. Rutley.

Mr. Thos. Codrington, M.Inst.C.E., held an inquiry at the town-hall, Whitchurch, Salop, on Wednesday week, the Whitchurch and Dodington Local Board having applied to the Local Government Board for sanction to borrow £1,150 for sewerage works; £400 for the purchase of a steam roller; £300 for works of water supply, and £150 for market purposes.

At the last meeting of the Glasgow town council a memorial was read from the Glasgow Architectural Association with reference to the proposed removal of the Tron steeple. The association considered that the destruction of the steeple would be an irretrievable loss, both from an architectural and a historical point of view, and that the setting of it back to the frontage of the adjoining buildings would hopelessly ruin its effect. The memorial was sent to the committee having charge of the question.

The members of the Engineers' and Architects' Association of South Africa, at their last meeting, held at Johannesberg on the 12th ult., discussed the nature and strength of timbers in general use for building and engineering purposes. Mr. C. Alburrow, the president, occupied the chair, and the discussion was opened by Mr. A. H. Reid, who referred to the increasing commercial demand for Cape boxwood in Europe for engineers' purposes, and for stinkwood for pianos. Messrs. Tarlton, J. S. Curtis, A. N. Francis, and others took part in the discussion.

ARCHÆOLOGICAL.

Archæological Congress at Seraievo.—Mr. Robert Munro, of Edinburgh, the only British representative present at an international congress of archæologists held at Seraievo, the capital of Bosnia, from the 15th to the 21st of August last, has communicated to the daily press a report of the proceedings. The proceedings commenced with an inspection of the Museum, founded only six years ago, and which contains the prehistoric remains from Glasinao and Sobunar, many Roman antiquities, monuments of the Early Christians and the Middle Ages, a collection of costumes and anthropological specimens. Special attention was directed to a group of antiquities of the Stone Age, consisting of an immense quantity and variety of fragments of pottery, flint, and other stone implements and weapons, &c., arranged by Herr Radimsky in one of the ground floors of the museum, and afterwards the locality was visited where these remarkable objects had been found. The excavations are being still conducted by Radimsky, in a raised area known as Butmir, in the vicinity of the plain of Ilidze. All this raised area is composed of the débris of early human occupancy. Part of this prehistoric settlement is presently occupied by a large dairy and other buildings, but the rest is simply arable land and can be readily excavated. The relics have been found scattered throughout the débris, at all depths from 6ft. or 10ft. or so. On the opposite bank of the Bosna, at the still fashionable spa at Ilidze, numerous foundations of houses, mosaic pavements, baths, water conduits, and the usual industrial remains of Roman civilisation, have recently been found. Some of the mosaic pavements are preserved *in situ*, but many of the smaller objects have been removed to the museum at Seraievo. Another excursion was made to the prehistoric huts at Sobunar, where much pottery and many bronze and bone implements and ornaments have been found. A two days' visit was made to Podomanja, where some tumuli and hill forts were examined, and to the prehistoric cemetery at Rusanovic, where Herr Fiala is carrying out excavations. Mr. Munro adds that since the museum was established by the Austro-Hungarian Government in 1888 there has been accumulated throughout Bosnia and Herzegovina a mass of scientific materials unsurpassed, in a corresponding period of time, by any other country in Europe.

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At the last meeting of the Southampton town council, Mr. James Lemon, F.R.I.B.A., brought up the report of the boundaries committee, in which they recommend that the boundaries of the Parliamentary and municipal borough should be made conterminous. This would involve the inclusion in the area under the corporation of Shirley and Freemantle, Woolston, Bitterne, Hound, and Milbrook, adding a total acreage of 6,032, and a population of 28,446. Consideration of the report was adjourned for a week.

Ospringe Church, Kent, has received an addition to its interior decoration at the east end of the sanctuary by the insertion of mosaic panels high up the east wall, as a memorial to the late vicar, Canon Griffin. A handsome pulpit and clergy stall have been provided, the latter in carved oak. The pulpit is in Caen stone, octagonal in shape, with richly-carved panels and tracery, and clustered and single shaftings of carefully selected and rare marble and alabaster. The work has been carried out by Messrs. Jones and Willis, of London, under the direction of the architect to the church, Mr. Philip Day, of John-street, Adelphi.

The new room just added to the art gallery at Oldham was inaugurated on Monday with an exhibition of 19th-century pictures. The gallery measures 97ft. by 32ft., and is fitted up with the electric light. The loan pictures include fourteen examples of the works of Sir J. Millais, S. F. Watts's "Love and Death," "Diana and Endymion," and half a dozen portraits; while Sir E. Burne Jones, Sir F. Leighton, Holman Hunt, P. Calderon, Sir J. D. Linton, Sidney Cooper, J. Macwhirter, the late Albert Moore, Vicat Cole, and F. Madox Brown are well represented.

The town council of Salford have just built a model lodging-house for men in Bloom-street, on a site containing an area of 1,410sq.yd. The scheme is based on the plans recently adopted by the London County Council, and the buildings consist of two blocks, each five stories in height, carried out in brick with terracotta dressings. The central hall is 30ft. by 36ft., the dining-room 71ft. by 31ft. and 14ft. high, and the dining-room 48ft. by 31ft. Sleeping accommodation has been provided for 285 lodgers at a total cost for land, building, and furniture, of £15,000.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Liverpool Architectural Society.—The first meeting for the present session of this society was held on Monday in the Law Library, Union-court. Mr. Henry Hartley, F.R.I.B.A. (president), occupied the chair, and in his opening address referred with regret to the death of Mr. Josep Boult, one of the oldest members of the society, and afterwards congratulated the gathering upon the establishment of a new school of architecture in connection with the University College. In conclusion he introduced Professor F. M. Simpson, who has recently been appointed to the chair of architecture at the university. Professor Simpson gave an idea of the syllabus of the meetings, lectures, &c., he intended arranging during the coming session. The matter was discussed by the members, and at the close a vote of thanks was passed to the president, on the motion of Mr. G. E. Grayson, seconded by Mr. Edmund Kirby.

CHIPS.

The local board of Stone, Staffs, are about to carry out works of sewerage. Mr. Whitfield has taken the contract at £1,648, and Mr. F. Bradshaw, of Salford, is the clerk of works.

The local board of Wallasey have accepted the gift of fifty acres of the sandhills near the mouth of the Mersey as a public park and recreation ground for the district.

The local board of Skipton are about to purchase the town-hall in that district, the price being £4,500.

On Saturday the Bishop of Durham consecrated the extension of the Gateshead Cemetery. The cemetery was opened in August, 1862, and has now been enlarged from 28 to 41 acres.

At the last meeting of the committee of the Aberdeen Art Gallery, gifts to the institution of busts of Scott and Burns were intimated from Mr. D. W. Stevenson, of Dean Studio; and of the civic badge and chain of office belonging to the Provosts of Old Aberdeen, from ex-Provost Sinclair.

The east window of Northallerton parish church is about to be fitted with stained glass as a memorial of the late vicar, through whose exertions the chancel was rebuilt, the body of the church restored, and a new organ provided. The subject of the window, which has been designed by Mr. C. Hodgson Fowler, F.S.A., of Durham, the architect for the restoration, is our Lord in glory surrounded by adoring saints, the dedication of the church being to All Saints.

On Saturday, the memorial stones of a new Miners' Hall were laid at Ashington Colliery, Northumberland. The new hall—the first of the kind in the county—is being built from designs by Messrs. Boolds and Hardy, of Morpeth, by Mr. Spence, of Amble. It will have sitting accommodation for 1,660 persons.

The Corporation of Rochdale have accepted the gift of a fossil tree, found in the coal measures at Sparth Bottoms; the trunk is 7ft. in length, and has long stigmarian roots attached.

The Mayor and Corporation of Aberystwyth have inaugurated the installation of the electric lighting of the marine front and main portion of the town by a banquet. The marine esplanade is lighted by arc lights of 2,000c.p., placed 45 yards apart, and similar lamps are placed in the main thoroughfares.

The erection of the intermediate school for Newport, Mon., has just been commenced. Mr. E. Lingen Barber, of Hereford, is the architect, and Messrs. Thomas and Co., of Swansea, have taken the contract for erection at about £5,200.

It was lately contemplated to lower the lofty spire of Square Congregational Church, Halifax, there being some suspicion of instability. A thorough professional examination was made, however, by Mr. Williams, architect, of the firm of Messrs. Horsfall and Williams, and Mr. George Charnock, with the result that it has been found sufficient to build up on the inside one of the spaces, 9ft. across, left for the clock on the eastern face of the tower. This has been done, some 12 or 14 tons of stone being used. The pinnacles are being dowelled with copper, and the completion of this work will make the spire safe, and thus preserve a conspicuous landmark to Halifax.

In addition to the awards already published, Messrs. Harry Hems and Sons, ecclesiastical art works, Exeter, were among the British exhibitors who received a gold medal at the Antwerp Exhibition. The same firm was also awarded a silver medal.

The members of the Society of Engineers, headed by Mr. George A. Goodwin, their president, visited, on Tuesday, Messrs. Siemens Brothers and Co.'s works at Charlton.

Correspondence.

ARCHITECTURAL PHOTOGRAPHS.

To the Editor of the Building News.

Sir,—A society for the exchange of photographic prints has long been a dream of mine; but the difficulty has always been to get amateurs to make the prints themselves, as it involves a considerable expenditure of time.

The suggestion, however, you make in this week's issue of the Building News is a happy one, and if a sufficient number join, should prove a success.

I, myself, have some hundreds of negatives of out-of-the-way ecclesiastical and domestic work, and should be glad to exchange prints with amateurs, architects or otherwise, similarly circumstanced.

It is a project that might well commend itself to the A.A. Camera Club, but in the mean time (in default of any amateur, more centrally situated, offering his services) I shall be glad to receive the names of any willing to join such a society, and should take steps to call a preliminary meeting in London at an early date.—I am, &c.

A. Whitford Anderson, A.R.I.B.A.

28, High-street, Watford, Herts, and 2, Broad-street Buildings, E.C. Oct. 8.

Sir,—Your admirable leader in this week's Building News, dealing with architectural photography, has greatly interested me, and doubtless others also.

As an amateur photographer and enthusiastic lay student of Gothic architecture, I for one should welcome the establishment of such a society for the exchange of architectural prints as you suggest in the close of your article, and should be pleased to be placed in communication with anyone interested in such a movement.

The importance of the historical study of building and building design has, as an educational agency and quite outside of its value to the professional student, been much underestimated, and in no way can this study be more effectively assisted than by the aid of photography.

I would suggest that an article on the photographic study of architecture would be much appreciated by the readers of your paper.—I am, &c., Gothic.

Intercommunication.

QUESTIONS.

[11224.]—**F.S.I.**—Can any of our numerous readers inform me if there are any classes in or near Manchester preparing for the F.S.I. exam., and where I could get particulars?—B. S. A.

[11225.]—**Clock Tower.**—The writer is desirous of knowing the locality of a drinking fountain with clock-tower above, in good Gothic style. If any correspondent will be kind enough to give information as to where any such may be seen, it would greatly oblige.—W. M.

[11226.]—**Iron and Steel Girders.**—What is the best method to detect whether girders are built of wrought iron or steel, without cutting same?—W. D. G.

◆

The annual general meeting of the Junior Engineering Society was held on Friday evening at the Westminster Palace Hotel, Mr. P. J. Waldram in the chair. The report of the council showed that during the past session 64 new members had been elected, and that the total number of members was 379. It was resolved, on the motion of Mr. S. Boulding, that in future the name of the Society should be "The Institution of Junior Engineers."

The *Western Daily Press* states that the quarries adjacent to Kingswood, Mangotsfield, Fishponds, Stapleton and neighbourhood are likely ere long to be worked by one board of management. Two schemes have been under consideration. One where a moderate capital only is necessary, and another with a capital of £60,000. So far, the smaller scheme has only been proceeded with. Several quarry masters are stated to be favourable to the scheme.

The North British Railway Company having now carried their tunnel beyond the site of St. Martin's chapel, Castle-terrace, Edinburgh, that building was reopened on Sunday. The chapel, which stands over two tunnels, received a considerable shake from the railway operations, but it has been restored after having been closed for a year. When the first tunnel was constructed the chapel was closed for three years, from September 1845 till October 1848, and even then there was some hesitation as to the safety of reoccupying it.

Legal.

LOCAL BUILDING REGULATIONS.

UNDER this heading a letter signed "Surveyor" appeared in our issue for Sept. 7, 1894 (p. 342), in which undoubtedly the writer drew attention to an important and interesting question. His case was that of a builder who had deposited plans with the local authorities, and was building a house of the value of £2,000 within the rateable area of the local authority. Owing, however, to the fact that the public sewer was about 500 yards away from the house he had had to erect a large cement-lined cesspool, which will have to be emptied by the occupier at an annual expense of some £8. The point pressed by the writer is that, as the occupier will have to pay sewers rate, he will, in fact, be paying this rate for nothing, having himself to bear the sole charge of the removal of the sewage from his premises. It appears that the local authority promises that at some future time the main sewer will be carried past the building in question; but until then matters must remain as they are.

It is difficult to see what can be done at law to alter this state of things. The local authority can, and doubtless do, answer that, if a man chooses to build himself a house so far from the public sewer, he must take the consequences, and either run a drain at his own expense into that sewer, or build a proper cesspool and empty it regularly at his own cost. If there were a row or a street of houses, the matter would be somewhat different, and the local authorities might probably be called upon to extend their scheme of drainage, so as to comply with the needs of these new occupiers and ratepayers; but the erection of one house, however large and costly, does not seem to raise the same issue. The point is one of principle, for if this builder is right, so would other builders be who put up big houses in out-of-the-way places, and then called upon the local authorities to meet them in the drainage at the expense of the ratepayers generally. The argument from the payment of sewers rates is fallacious, for such rates are charged upon all property to maintain the common drainage and sanitation of the whole locality, and they are not paid by each for his own special drainage; but, of course, the builder can submit his case to the Local Government Board, and take the opinion of that department.

FRED. WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

LEGAL INTELLIGENCE.

ARBITRATION AWARD AT SOUTHAMPTON WEST.—The arbitration between the executors of the late James Whitchurch and the London and South-Western Railway Company, upon which there was a claim for a piece of land by the executors of the late James Whitchurch for £1,457 10s., and for which the Railway Company officially offered through their valuers the sum of £660, has been settled by the umpire (Mr. Squarey) at £838.

The London County Council on Tuesday considered a recommendation of the Parliamentary Committee that the question of the reintroduction of the Tower Bridge Southern Approach Bill be referred to them and to the Improvement Committee. This led to a long discussion on the betterment question, but an amendment was eventually rejected by 63 to 26 votes, and the recommendation agreed to.

At Darwen, the ceremony of opening a new technical school and free library building, erected at Darwen at a cost of £15,000, was performed on Saturday. The building has been erected from designs by Mr. J. Lane Fox, of Bond-street, Dewsbury, selected in competition, and was illustrated in the BUILDING NEWS for Jan. 10, 1893. It is of stone, and is three stories in height.

The first main line train was run by the directors of the Rhondda and Swansea Bay Railway on Tuesday over the new line from Neath into Swansea. The party included Mr. Yockney, the engineer, and his entire staff; Mr. Lawton, contractor for the Swansea section; and Mr. Palmer, contractor for the Neath Swing Bridge and Briton Ferry sections. With the exception of a short section at Briton Ferry, the whole line from the Rhondda Valley into Swansea is now complete.

WATER SUPPLY AND SANITARY MATTERS.

AMBLE.—The Amble local board of health have finally adopted the Newton and Hazon scheme to supply the town with water at an estimated cost of £6,000. The project consists of conveying the water from a drift near Newton Colliery, and a number of springs at Hazon, into a collecting and subsiding reservoir, and laying nearly seven miles of 6in. and 8in. cast-iron pipes, and constructing an impounding reservoir to hold one million gallons. Mr. M. Temple Wilson, architect and surveyor, Alnwick, has been commissioned to prepare the plans, sections, and details to be transmitted to the Local Government Board.

THE NEW SHEFFIELD AND LONDON RAILWAY.—Mr. E. P. Burd held inquiries at Nottingham and Leicester on Tuesday and Wednesday, on behalf of the Local Government Board, as to the demolition of houses by the Manchester, Sheffield, and Lincolnshire Railway Company in the construction of their line to London. At Nottingham, Sir S. G. Johnson stated that some eight or 10 years ago there arose an exceedingly wild building speculation in that town. Land went up in price, houses were placed upon it, and the town became so overbuilt that there were at one time fully 6,000 empty houses. The line of railway, so far as it passed through the central parts of the town, would involve the destruction of a lot of insanitary property which had been condemned long ago. They had had schemes for dealing with that property; but their past experience in regard to unhealthy areas did not invite them to attack them again. The last scheme they had lost £80,000 over, and until Parliament found some way of dealing with such matters with more despatch, and at less cost to the town, he did not think the Corporation of Nottingham were likely to take further action, excepting when they got the chance of getting a house here and there. Evidence was given at both inquiries to the effect that artisans were going further away to occupy a better class of houses; but a strong feeling was expressed that the company should build dwellings at a rental of 3s. or 4s. per week. A large number of insanitary houses will also be demolished at Leicester.

CHIPS.

The parish church of Otterden was consecrated last week by the Bishop of Dover, after the erection of new chancel, provision of open benches for nave, furniture, fittings, and organ, at a cost of £800.

Several stained-glass windows have recently been placed in Emmanual Church, Mannamead, Plymouth. The east window is from cartoons by Sir Edward Burne Jones, and is the handicraft of Mr. William Morris. A window has just been placed in the north transept, and is from the studio of Fouracre and Son, of the West of England Stained Glass Studio. The figures selected for representation are Hope and Patience.

The contract for the erection of the superstructure of the new Post-office in Victoria-street, Liverpool, has been given to Messrs. Thornton and Son, contractors, Northumberland-street, in that city. It is said that, owing to the stringent nature of the conditions laid down by Government, the number of competing tenders for the work was comparatively few. The amount of Messrs. Thornton and Son's contract is about £112,000. Work will be commenced without delay. We illustrated the Post-office, which is being built from Mr. Henry Tanner's designs in the BUILDING NEWS for Oct. 27, Nov. 24, and Dec. 1, 1893.

The London and India Joint Docks committee have decided to erect on the north side of the West India Dock storage accommodation for 100,000 sheep, together with sidings which will place the stores in direct connection with the general railway system of the country. The railway communication will also be used for grain coming to the dock, and the stores will be constructed on the same principle as those at the Victoria and Albert Docks.

The police commissioners of Motherwell have adopted a report by Mr. Henry A. Mavor, electrical engineer, Glasgow, showing the estimated cost of lighting the streets at £12,500, and calculating that, with the saving effected and the income from private lighting, there will be no increase on the rates.

The ceremony of laying the chief corner stones of the Neath intermediate schools took place on Thursday, the 4th inst. The building will accommodate 120 scholars; Mr. D. M. Jenkins, borough engineer, is the architect, and Messrs. Henry David and Sons are the contractors. The cost is estimated at £3,500.

The promoters of the Manchester, Glasgow, and Newcastle Railway scheme, having received a favourable report from the five engineers who recently traversed the proposed route, and having also obtained a considerable measure of local sympathy and support, have decided to bring forward a Bill in the Parliamentary session of 1896.

Our Office Table.

A SERIES of seven lectures on building and sanitary construction is being delivered on successive Wednesday evenings under the auspices of the Carpenters' Company at their fine hall in London-wall. The lectures are only open to intending candidates for the examinations established by the Company, and are illustrated by take-to-pieces models, large diagrams, photographs, and specimens of materials. The first of the course was given on Wednesday last, when Professor T. Roger Smith dealt with the properties and qualities of bricks, stones, limes, and cements, and also described the methods of making and using mortar, cement, and concrete. Next Wednesday evening Mr. Percival Gordon Smith, the architect to the Local Government Board, will speak on "Building Acts and Bylaws for Controlling the Construction of Buildings adapted to various Localities"—a sufficiently large order for a full evening's discourse. On Oct. 24, Professor Henry Robinson will treat upon "The Drainage of Buildings and the Construction of Sewers"; on the 31st Professor Banister Fletcher, F.R.I.B.A., takes up the topic of "Sanitary Building Construction"; on Nov. 7th Professor A. Wynter Blyth follows with a discourse on "Sanitary Appliances"; on Nov. 14th the "Principles of Calculating Areas and Cubic Space" will be explained by Mr. Henry Law, M.Inst.C.E.; and the course will be closed on Nov. 21st by an address by Mr. J. Wright Clarke on the "Details of Plumbers' Work." The examinations of candidates will take place on Friday and Saturday, December 14th and 15th, when certificates, bearing the seal of the Carpenters' Company, will be granted to all successful candidates, and the three placed highest will receive respectively a gold, silver, and bronze medal.

THE eighteenth voluntary pass examination of candidates for the offices of municipal engineers and surveyors to local boards, carried out by the Incorporated Association of Municipal and County Engineers, was held at the Council-house, Birmingham, on Friday and Saturday, the 5th and 6th October. Eighteen candidates presented themselves for examination, the written portion of which was taken on the first day. The greater portion of the second day was occupied with the *viva voce* portion of the examination. The examiners were: (1) For engineering as applied to municipal work, Edward Pritchard, M.Inst.C.E., of Birmingham and London (past president). (2) Building construction, W. Geo. Laws, M.I.C.E., city engineer, Newcastle-on-Tyne (past president). (3) Sanitary science, Alfred M. Fowler, M.Inst.C.E., of Manchester (president). (4) Public health law, Joseph Lobley, M.Inst.C.E., borough engineer, Hanley (past president). The next examination will be held in London in April, 1895.

THE first of a series of six lectures on "The Empire in Egyptian History" was delivered at University College on Saturday afternoon by Professor Flinders Petrie. The lecturer outlined the whole period of the seventeenth to the twentieth dynasty, about 1600 to 1050 B.C., which is better known than other parts of Egyptian history. It is possible, he said, to trace the exact relationships of the Royal family, and to form a life-history of many of the persons. The inscriptions also are far more extensive than in other times, and show the character and individuality of the various actors. Though the arts were not so splendid in execution as in the rarer examples of earlier times, there was a more diffused skill and science; and the rise of an extensive middle class created a great demand for luxury. The wide foreign conquests of the eighteenth dynasty and the plundering of the Asiatic civilisations brought in new tastes and new ideas, together with a flow of wealth and of labour for executing great works. The greatest power and activity of Egypt was in the glorious reigns of the middle of the eighteenth dynasty. After that decadence began, and the downfall of Egypt came in the twentieth dynasty.

THE excavations being carried on at Epidaurus by the Athenian Archæological Society have brought to light the ancient Stadium or racecourse. The whole space has not yet been cleared away, but in the trenches sunk into its area, at a depth of 4-5 mètres, the rows of marble chairs, each with its inscription, which ran along the whole circuit of the Stadium, have been found *in situ*. This is the first Greek Stadium yet discovered in its original state. Professor Dörpfeld will resume shortly his excavations between Mars Hill and the Pnyx, where last spring he discovered a great aqueduct. The Greek Government has declared the whole of the northern slope of the Acropolis, from the Theseion to the Monument of Lysikrates, "archæological ground," thereby forcing the proprietors to sell at prices to be settled by a mixed commission of sworn experts. The American and German schools and the Archæological Society of Athens will meet jointly the cost of expropriating this district, now covered with small one-story houses.

Mr. Terrell, the United States Minister at Constantinople, has reported to Washington announcing the results of American explorations now being conducted at the ruins of Niffer, near ancient Babylon. The work began in 1886, and, except at occasional intervals, has been actively conducted. Dr. Peters and Prof. Heilpricht, of the University of Pennsylvania, began the work, and it is still continued by Dr. Peters. From 150 to 250 Arabs have been constantly employed. In the number of tablets, bricks, inscribed vases, and in the value of cuneiform texts found, this American enterprise rivals, if it does not excel, in the opinion of Mr. Terrell, the explorations of the late Sir A. H. Layard at Nineveh, and Rassam's excavations at Abu-Hatba. Prof. Heilpricht remains at the museum in Constantinople, at the request of the Turkish Government, translating inscriptions and arranging tablets, bowls, and vases used from 1,000 to 4,000 years before Christ. Many tons of tablets, &c., have already been procured, and the enterprise has, he considers, revealed an antiquity for the human race nearly ten centuries older than had before been acknowledged by Biblical students.

An interesting statement with reference to building operations in Glasgow was made on Friday at the Dean of Guild Court of that city by Sir James King, the retiring Lord Dean. It was, he said, eighteen years since he last passed in review the work of the Dean of Guild Court for the year. That was in the years 1874-75, in which many fortunes were made and lost in building speculations, and there followed a period of depression from which the city even now was just recovering. The total value of the work passed in the years 1874-75 was £1,826,150, while in 1875-76 it rose to £2,125,249. That was followed by a period of severe depression. The greatest increase since then had been during the last two years. In the year ending 31st August, 1893, the total value of the work authorised by the Court was £1,330,680, while in the year ending 31st August, 1894, it was £1,275,445. During the past year the houses erected were:—One room, 470; two rooms, 1,519; three rooms, 874; four rooms, 369; five rooms, 89; six rooms and upwards, 145—total number of houses, 3,466. The number of shops erected was 123, and the total estimated cost of the houses and shops was £785,950; alterations and additions, £241,310; and public buildings and warehouses, £248,185. In addition, 21 new streets had been made. The total number of linings passed was 623—an average of 26 at each Court. The number of new houses erected in 1894 was in excess of any year since 1876.

The Local Government Board have informed the Taunton Town Council that they must not lower the height of the new steel bridge which is in course of erection over the Tone, and that if there is any deviation from the plans, they will not sanction the borrowing of any further loans. It will be remembered that, against the advice of their engineer, Mr. Brereton, the council decided to reduce the gradients of the bridge after a contract had been entered into. Owing to the fact that the work of cutting off the piers in order to lower the bridge has been proceeded with, the council are in a difficulty, as it will be costly to alter the bridge back to the lèvel laid down in the plans.

The Twenty-eighth Annual Convention of the American Institute of Architects will be held in New York on Monday, Tuesday, and Wednesday in next week at the rooms of the Architectural League, in the Fine Arts Society's Building, 215 West 57th-street, New York, closing with a "smoker," an informal reception in the rooms of the Building Trades Club, 117, East 23rd-street. The Convention is regarded as very important in the history of the American Institute, as vital changes in the relations of the chapters to the institute are proposed.

CHIPS.

We regret to see that among the persons injured by the disastrous explosion of powder in the gunsmith's shop at Darlington, on Tuesday, was Mr. G. Gordon Hoskins, J.P., F.R.I.B.A., a member of the town council, who, while standing in an adjoining shop, was badly cut about the head.

A meeting of shareholders of John Noble, Limited, was held at the Warehouse, Manchester, last week, at which dividends of 6 per cent. per annum on the preference, and 8 per cent. on the ordinary, shares were declared, and a balance of £2,272 carried forward.

Additions are being made to Meers Schools, Longton, from the designs of Mr. T. P. Hulse, architect, of that town. Special consideration has been given to the ventilation, which will be carried out on the Boyle system, the latest patented improved form of self-acting air-pump ventilators being adopted for the extraction of vitiated air.

A piece of freehold land 17 acres in extent has been presented to the corporation, West Bromwich, to be laid out as a public park and recreation ground.

The local board of Mumbles have appointed Mr. Bennett as surveyor, at a salary of £130 a-year.

The town council of Bolton have raised the salary of Mr. Smith, the gas engineer, from £600 to £650 a year.

The foundation-stone of new Roman Catholic schools was laid last week in Bugle-street, Southampton. The main building will be 69ft. by 22ft., and 16ft. high to plate. Mr. Leonard Stokes, of Westminster, is the architect.

The ancient cross of Newton-on-Ayr having been unearthed, a committee of the town council are endeavouring to find a suitable site for its re-erection.

Mr. Arnold Mitchell commenced on Tuesday afternoon a course of ten University Extension Lectures on "English Architecture" at Chelsea Town-hall.

MEETINGS FOR THE ENSUING WEEK.

Saturday (To-morrow). — London and Provincial Builders' Foremen's Association. Quarterly Meeting at the Memorial Hall, Farringdon-road. 7.30 p.m.

Wednesday.—Carpenters' Hall. Lecture to Students in Sanitation, by P. Gordon Smith, F.R.I.B.A. 8 p.m.

◆

Mr. Robt. H. Bicknell, C.E., of Lincoln, has issued a supplementary report as to the best means of draining the town of Stamford. He estimates that the cost of putting in the connections with the public streets up to the property or building line will be £4,000, in addition to the estimate already furnished for laying down the drains, &c.

Mrs. Long, widow of Mr. Edwin Long, R.A., has stated her intention of presenting to the City of Bath, her husband's native place, his picture, "The Raising of Jairus's Daughter," which is valued at £5,000. The offer has been accepted by the city, who have expressed their thanks for the gift.

At their last meeting the City Court of Common Council agreed to contribute £500 a year for the next four years towards completing the internal decoration of St. Paul's Cathedral.

The new Infectious Diseases Hospital, Whitehaven, is being warmed by means of Shorland's patent Manchester grates and patent Manchester stoves with descending smoke flues, and ventilated by means of Shorland's patent exhaust roof ventilators and inlet panels, the goods being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

ABINGDON.—For the erection of 24 artisans' dwellings, for the master and governors of Christ's Hospital. Mr. Jno. Geo. T. West, M.S.A., architect. Quantities by the architect:—

Bartlett Bros., Witney	£5,700	0	0
Bell and Son, Saffron Walden	5,692	0	0
Bottrill and Son, Reading	5,597	0	0
Silver and Son, Maidenhead	5,497	0	0
Goodchild, Reading	5,425	0	0
Parnell and Son, Rugby	5,113	0	0
Simonds, Reading	5,000	0	0
Macandrews, London	4,940	0	0
Thatcher, Abingdon	4,753	0	0
Wiltshire, Swindon	4,719	0	0
Polley, Oxford	4,705	10	0
Martin, Maidenhead	4,678	0	0
Wernham, Reading	4,660	0	0
Hunt, High Wycombe	4,593	0	0
Colborne, Swindon	4,500	0	0
Grant, Banbury	4,297	0	0
Wheeler, Abingdon	4,247	0	0
Buckle, Abingdon	4,100	0	0
Robinson, Wolvercote	3,875	0	0

BATTERSEA, S.W.—For the erection of a school in Ethelburga-street, Bridge-road, Battersea, to provide accommodation for 1,474 children, and a house for the schoolkeeper, with a laundry and a cookery centre, for the London School Board:—

		A.
King, W., and Son	£21,394	£368
Downs, W.	20,590	385
Collinson, J. F.	20,494	305
Hart Bros.	20,462	554
Nightingale, B. E.	20,260	433
Holliday and Greenwood	20,146	433
Foster and Dicksee	19,999	330
Lathey Bros.	19,970	390
Wallis, G. E., and Sons	19,897	348
Lovatt, H.	19,823	347
Holloway Bros.	19,780	347
Lawrance, E., and Sons	19,209	391
Patrick, J. and M.	19,207	370
Stimpson & Co., Brompton	19,100	445

A.—If brickwork be built in cement, add.

[(*a*) Cost of school-buildings and closets, £15,450; (*b*) tar-pavement and playgrounds, £680; (*c*) boundary walls and gates, £710; (*d*) three teachers' rooms, £300; (*e*) cookery and laundry centres, including schoolkeeper's house, £1,600; (*f*) extra depth of foundations, £360; (*g*) brickwork built in cement, £445; total, £19,545. Cost per head of (*a*) only, £13 3s. 2d.; total cost per head, £16 12s. 11d.]

BERMONDSEY.—For work to be done in putting new corrugated iron roof, &c., to the south-west wing of the Bermondsey Workhouse, for the guardians of the St. Olave's Union. Messrs. Newman and Newman, 31, Tooley-street, London Bridge, architects:—

Harbrow	£179	0	0
Wells	150	0	0
Barrett	85	0	0
Bullers (accepted)	83	0	0

BILSTON.—For supplying complete electric installation and fitting up the electric light in the public markets, Bilston. Mr. Wilson, C.L.N., borough engineer:—

Waring, S. J., and Sons (accepted)	£450	0	0

BRENTFORD.—For the erection of the potato warehouses at the Market, for the local board. Plans by Mr. J. H. Strachan, late surveyor to the board:—

Perry and Co., Bow	£1,500	0	0
Belham and Co., London	1,414	0	0
Barnes, J., Brentford	1,280	0	0
Bendon, T., Hammersmith	1,260	0	0
Foord and Sons, Brentford	1,241	0	0
Kellett, A., Willesden	1,210	0	0
Ball, J., Chiswick	1,198	0	0
Bloomer, J., Brentford (accepted)	1,150	0	0

[Surveyor's estimate, £1,250.]

BRISTOL.—For fences and gates at Eastville Park, for the town council:—

Parker, G. (accepted)	£335	0	10

[Lowest tender received.]

CARDIFF.—For new Baptist chapel, Splott-road. Messrs. Habershon and Fawckner, Pearl-street, Cardiff, also Newport, Mon., architects:—

Jones, D. C., and Co., Gloucester	£4,953	0	0
Stephens, Bastow, and Co., Bristol	4,749	0	0
Allan, J.	4,643	0	0
Knox and Wells	4,600	0	0
Dunn, C. C.	4,575	0	0
Best, W., and Co.	4,411	15	0
Turner and Sons	4,400	0	0
Morris, T.	4,378	0	0
Lattey and Co.	3,378	0	0
Hatherby and Carr, Bristol	4,295	0	0
Davies, H.	4,251	11	0
Robins, F. G.	4,112	0	0
Tagflo, Farnham, Surrey	4,100	0	0
Wood, T., and Son	3,997	0	0

(Rest of Cardiff.)

CARDIFF.—For additions to Broadway Schools, Roath. Messrs. Habershon and Fawckner, Pearl-street, Cardiff, and Newport, Mon., architects:—

Gough Bros.	£870	0	0
Howell, A. J., and Co.	840	0	0
Robbins, F. G.	830	0	0
Copp, W. R.	824	0	0
Davies, H.	795	0	0
Hallett, G.	780	0	0
Beer and Sons	752	0	0

(All of Cardiff.)

CARDIFF.—For new mission-hall, Grangetown. Messrs. Habershon and Fawckner, Pearl-street, Cardiff, and Newport, Mon., architects:—

Davies, D. J.	£3,200	0	0
Firbank, J. H., Newport	2,955	10	0
Dunn, C. C.	2,950	0	0
Griffiths, G.	2,950	0	0
Best and Co.	2,905	14	0
Lattey and Co.	2,865	0	0
Hatherby and Carr, Bristol	2,853	15	7
Trotman, E., Barry	2,837	0	0
Howell, A. J., and Co.	2,836	2	9
Evans, E. R.	2,834	0	0
Wood, T., and Sons	2,830	0	0
Shepton and Son	2,785	0	6
Davies, D.	2,778	0	0
Gibbon, H.	2,700	0	0
Rutter, G., Barry	2,647	0	0
Turner and Sons	2,638	0	0
Davies, H.	2,579	0	0
Knox and Wells, Bangor	2,368	0	0

(Rest of Cardiff.)

CHELMSFORD.—For the erection and completion of six working men's cottages, for the Chelmer and Blackwater Navigation Company, Chelmsford. Mr. F. Whitmore, Chelmsford, architect:—.

Rayner, East Manningfield	£806	0	0
West, E., Chelmsford	797	0	0
Kennell, H., Writtle	779	0	0
Tunbridge, W., Cressing (accepted)	737	0	0

Potter, H., Chelmsford, received too late.

[Architect's estimate, £780.]

COLEFORD.—For the provision of pumps and gearing in connection with a water-supply to Coleford, for the Frome Rural Sanitary Authority:—

Warner, R., and Co., London (accepted)	£170	10	0

CORSHAM.—For the erection of school buildings at Corsham, Wilts, for the Corsham school board. Mr. Harold Brakspear, A.R.I.B.A., Corsham, architect. Quantities by Messrs. Pinks and Watson, 45, Parliament-street, S.W.:—

Hyde, I., Keynsham	£3,915	11	0
Jones, D. C., and Co., Gloucester	3,789	0	0
Tight and Smith, Chippenham	3,617	0	0
Wilkins, G. H., Bristol	3,444	0	0
Beazley, W., Calne	3,410	0	0
Francis, W. H., Trowbridge	3,150	0	0
Downing & Rudman, Chippenham*	3,057	0	0

[* Accepted, subject to approval of the educational department.]

DORCHESTER.—For alterations and additions at the Swan Inn, Fordington. Mr. A. L. T. Tilley, 16, Cornhill, Dorchester, architect:—

Guy, J., and Son	£755	0	0
Davis, R., and Son	749	11	11
Slade, C. E.	743	0	0
Barrett, C. E. (accepted)	614	12	5

(All of Dorchester.)

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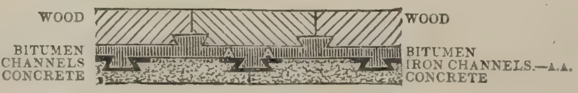

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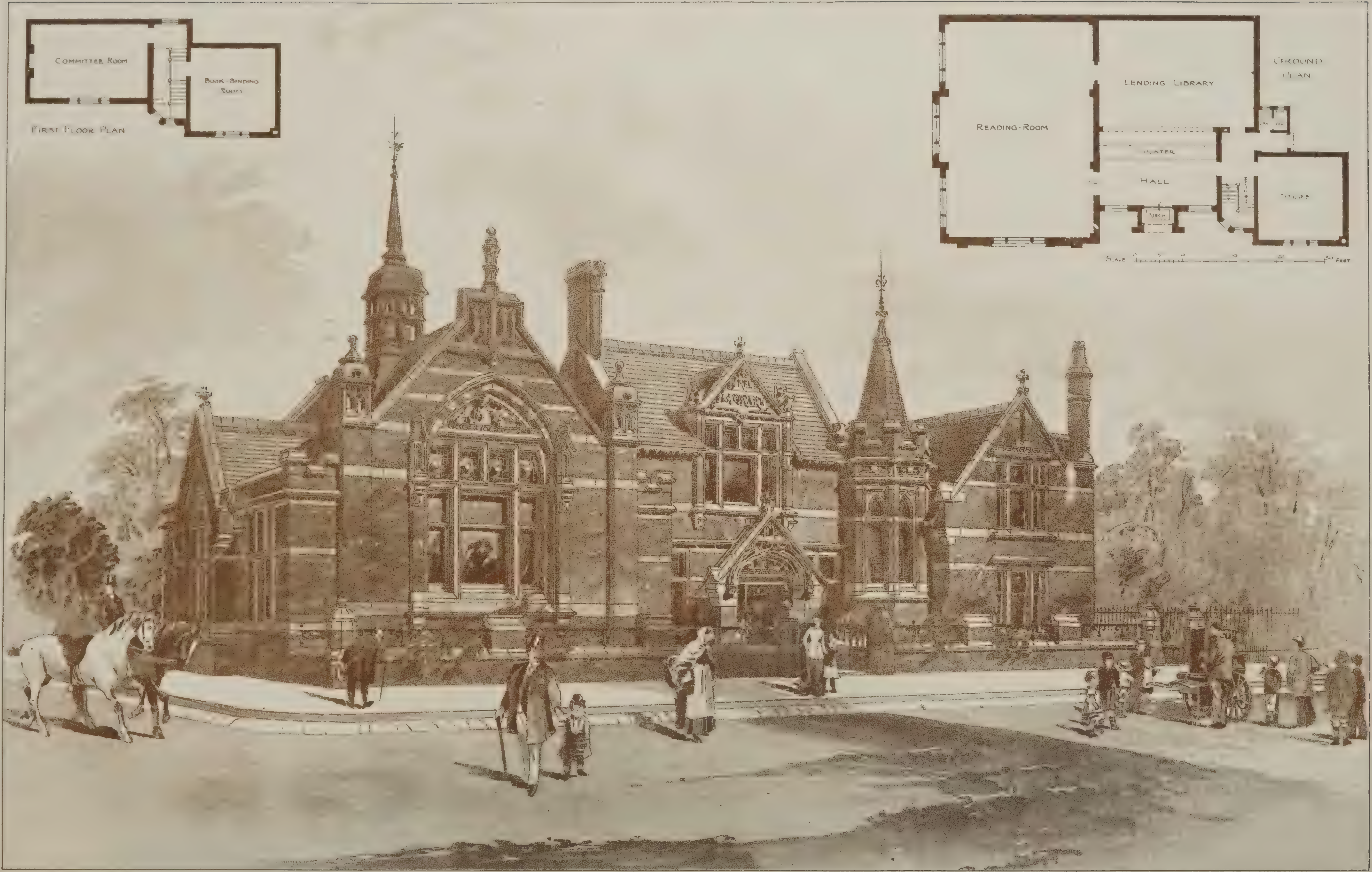

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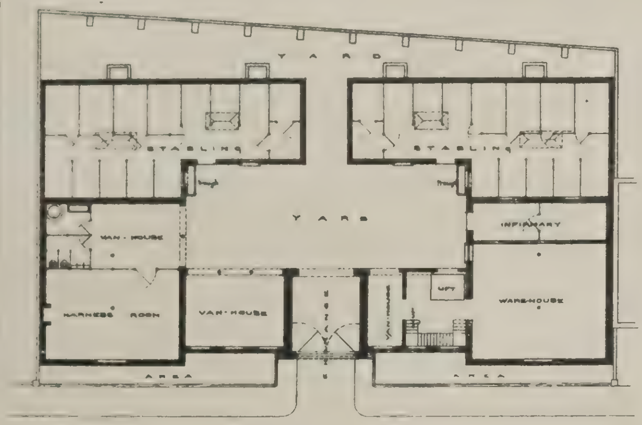
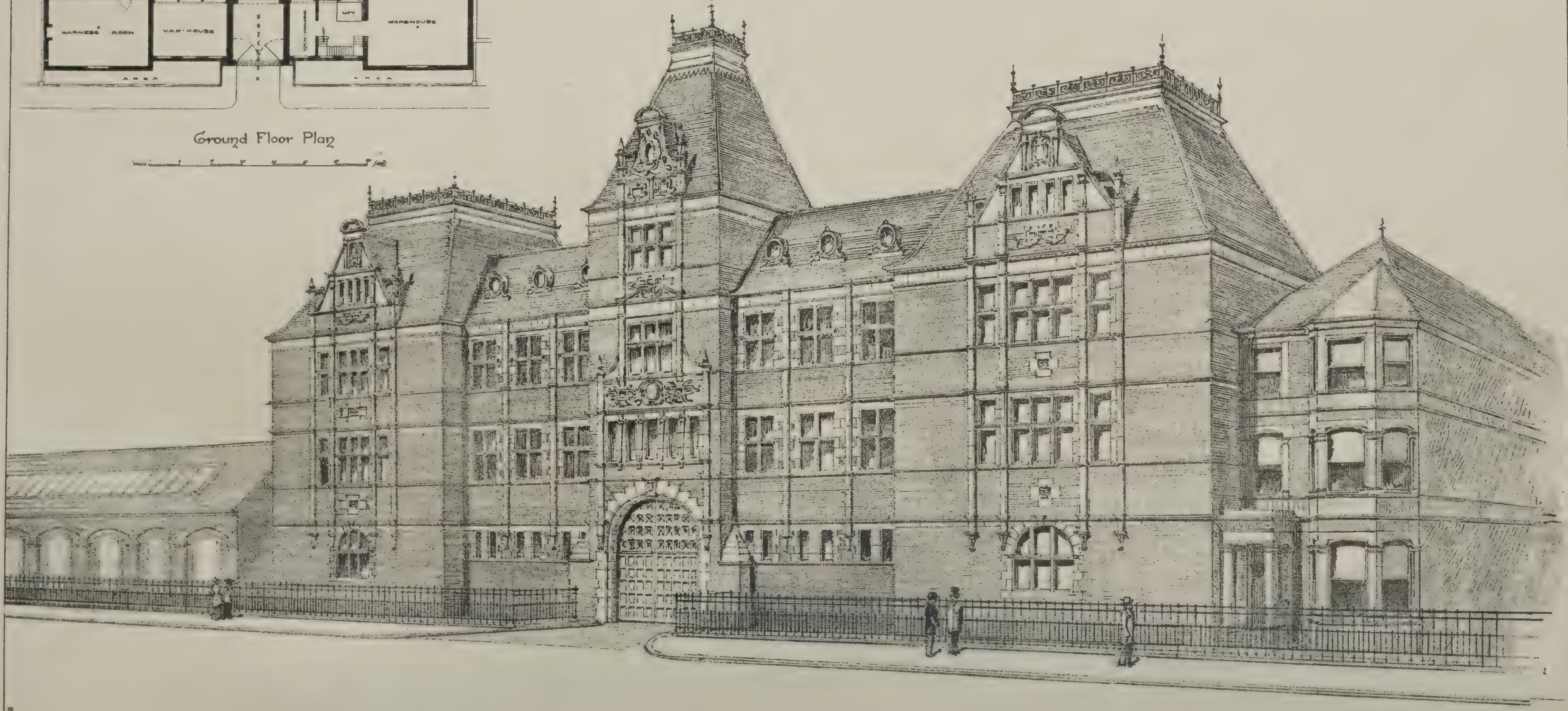


Ground Floor Plan

WAREHOUSE · AT · HOVE ·

MESSRS LAINSON & SON · ARCHTS



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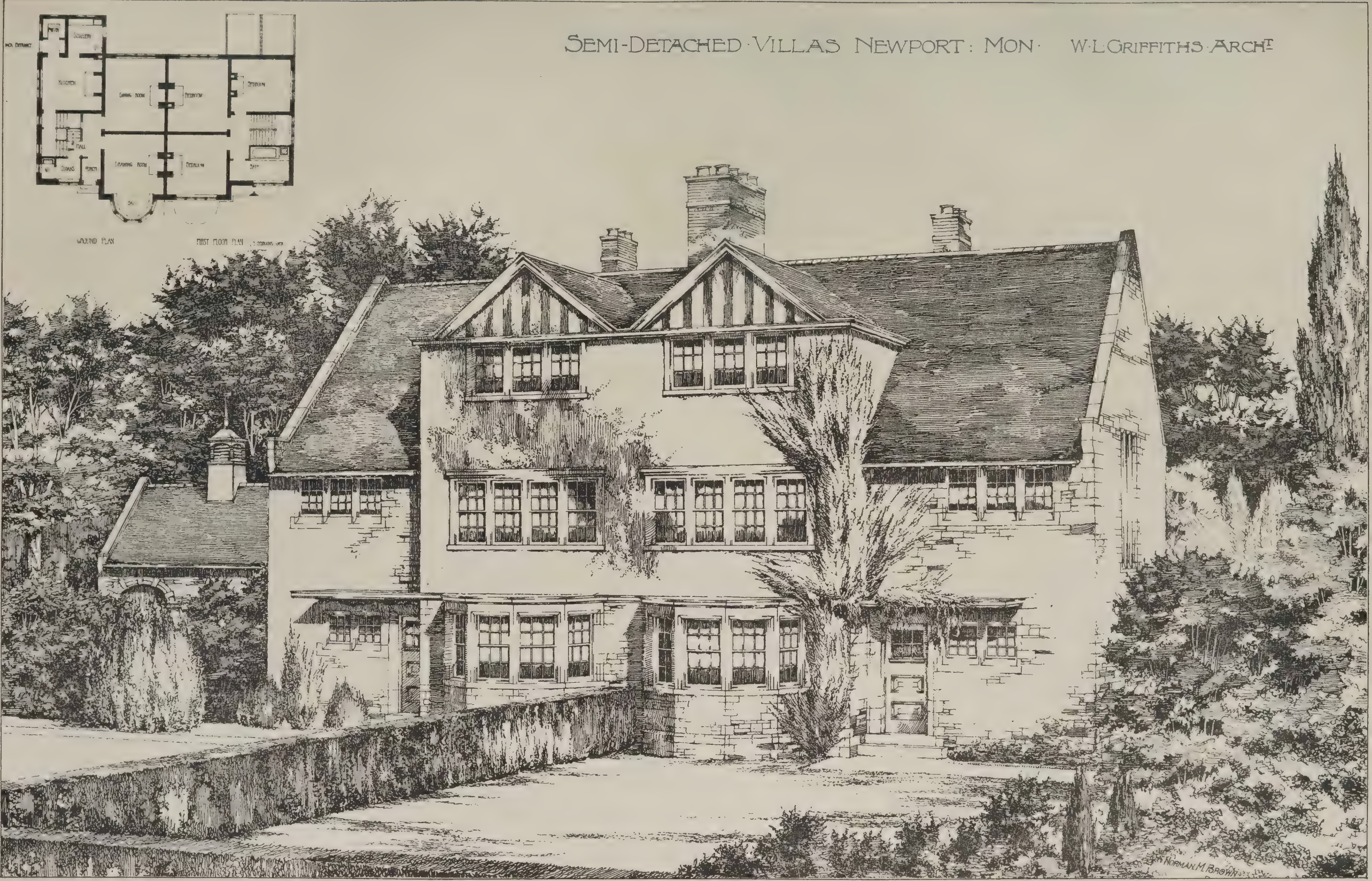

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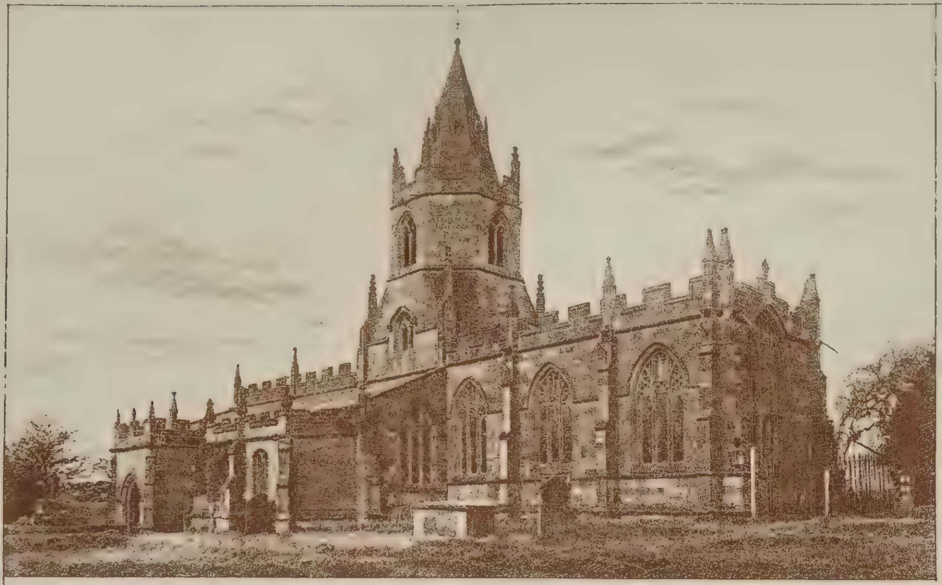

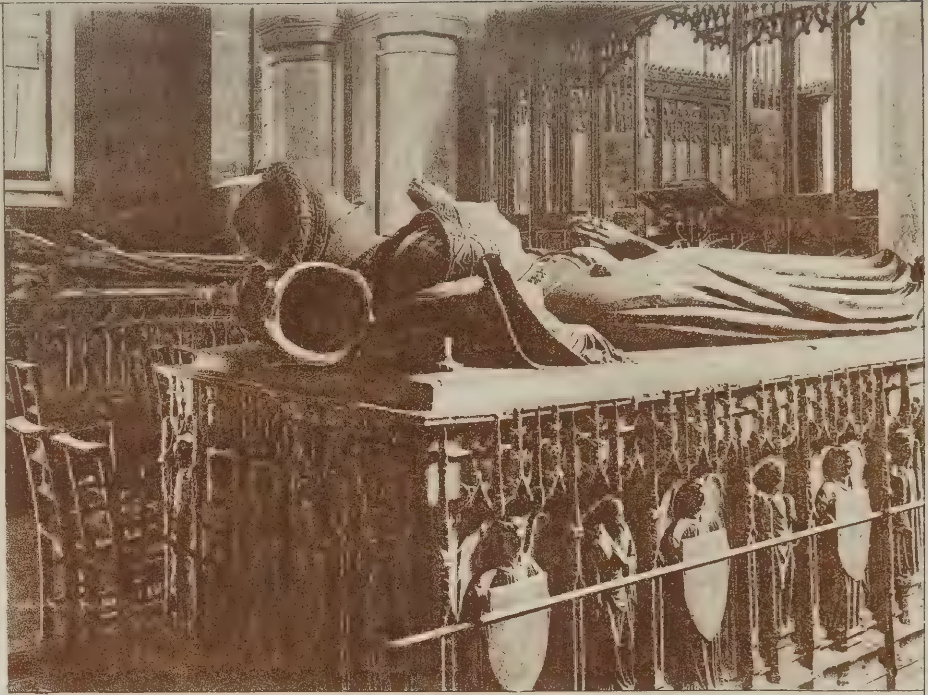

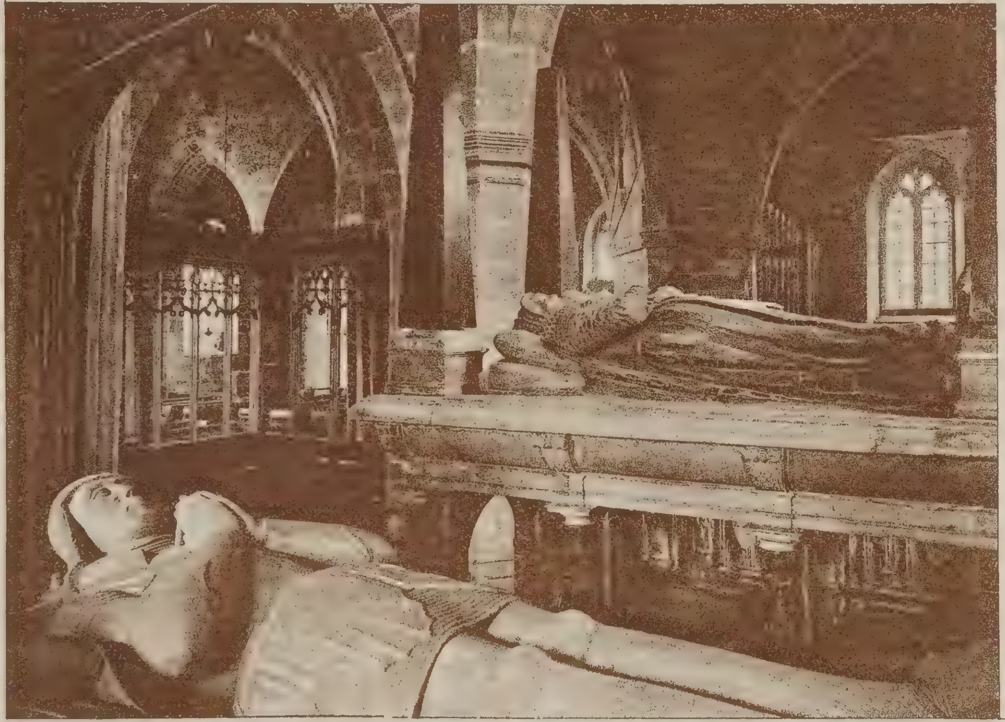

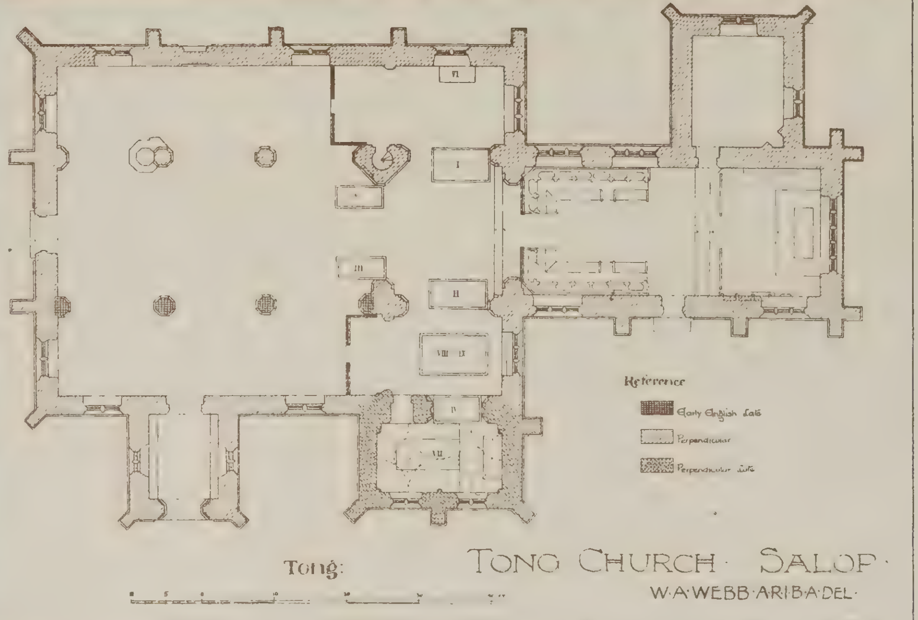

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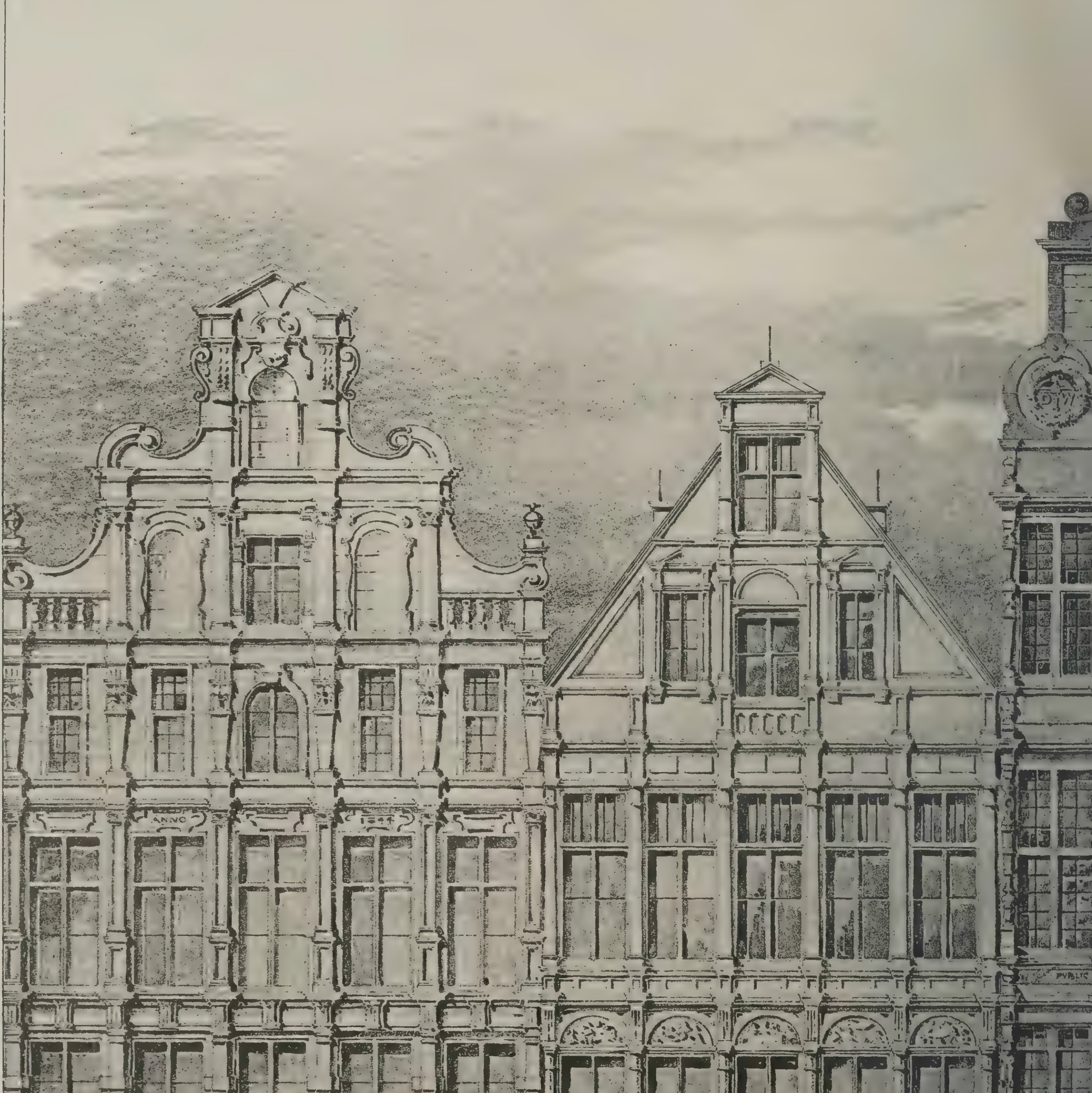

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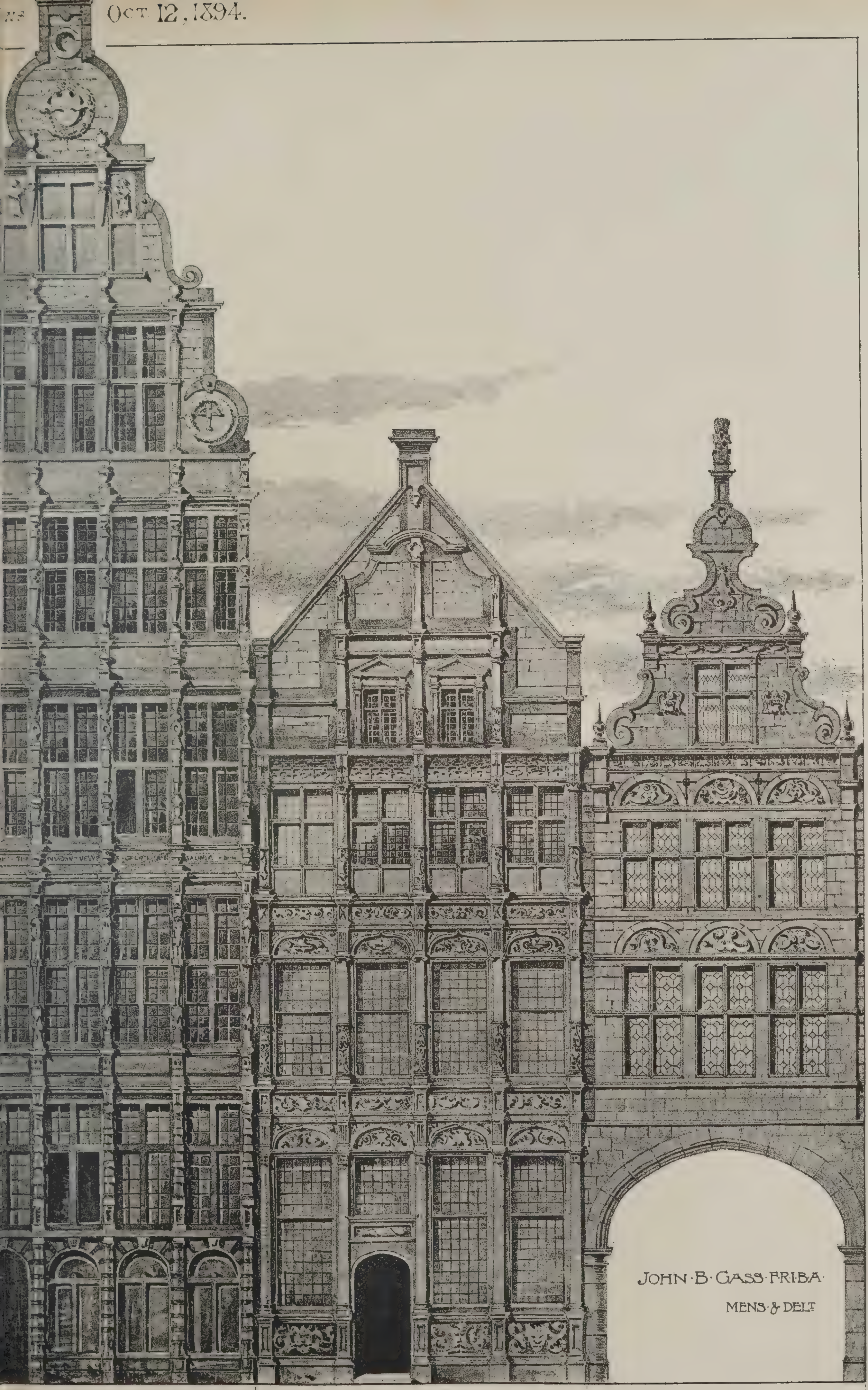
A·D·1644 · ANTWERP · MAI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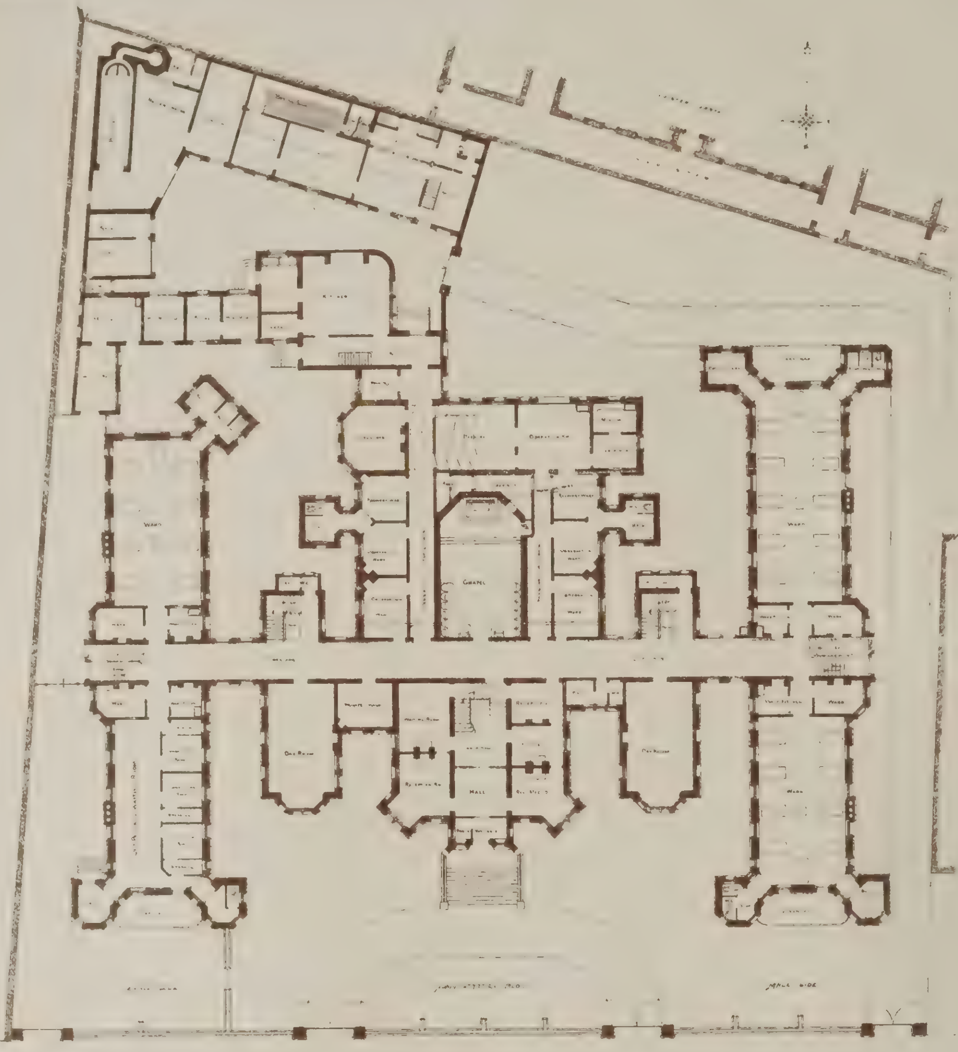
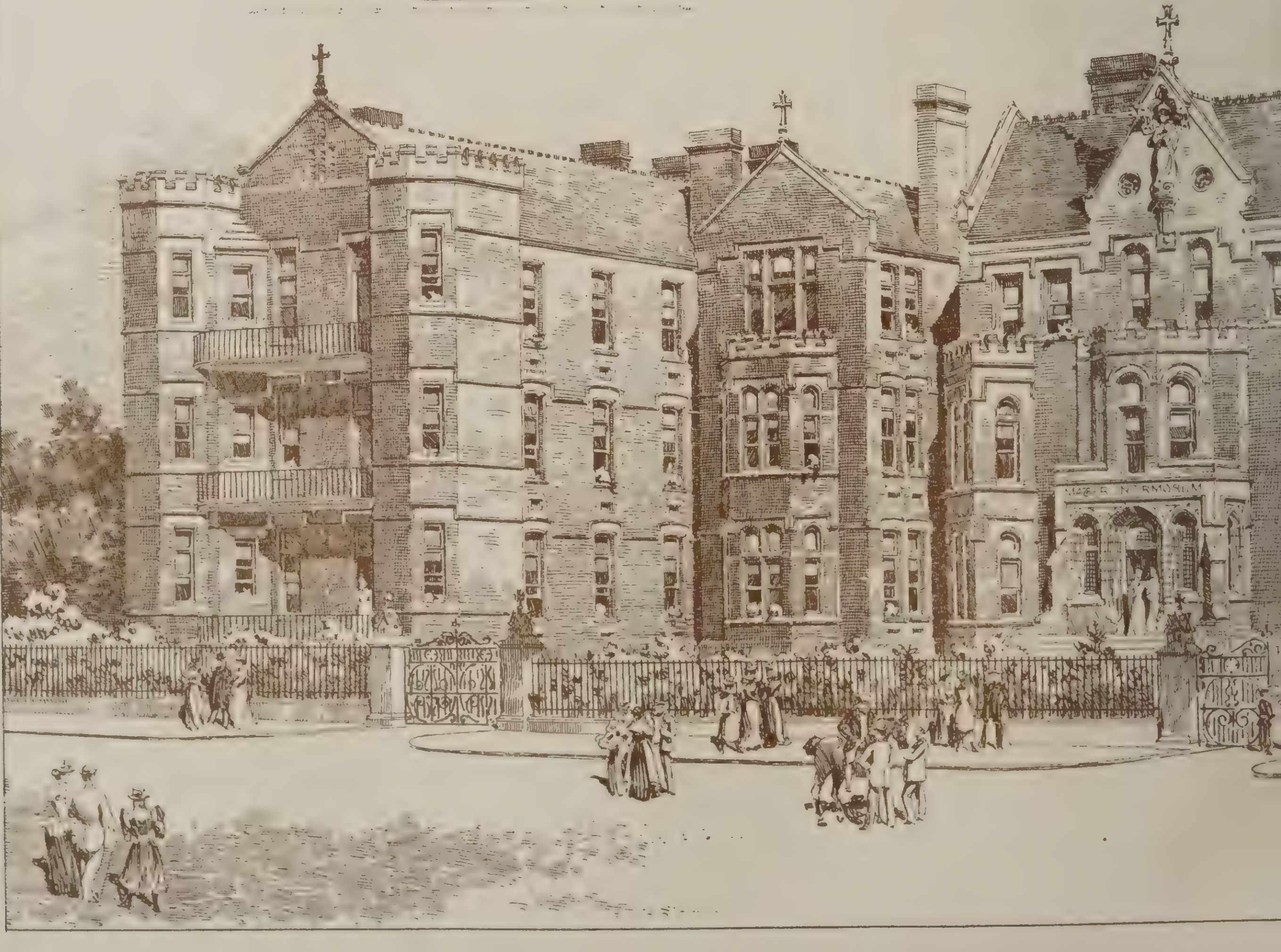
DE·CHARLES·QUINT· MALINES· YPRES · A·D·1622



GROUND PLAN

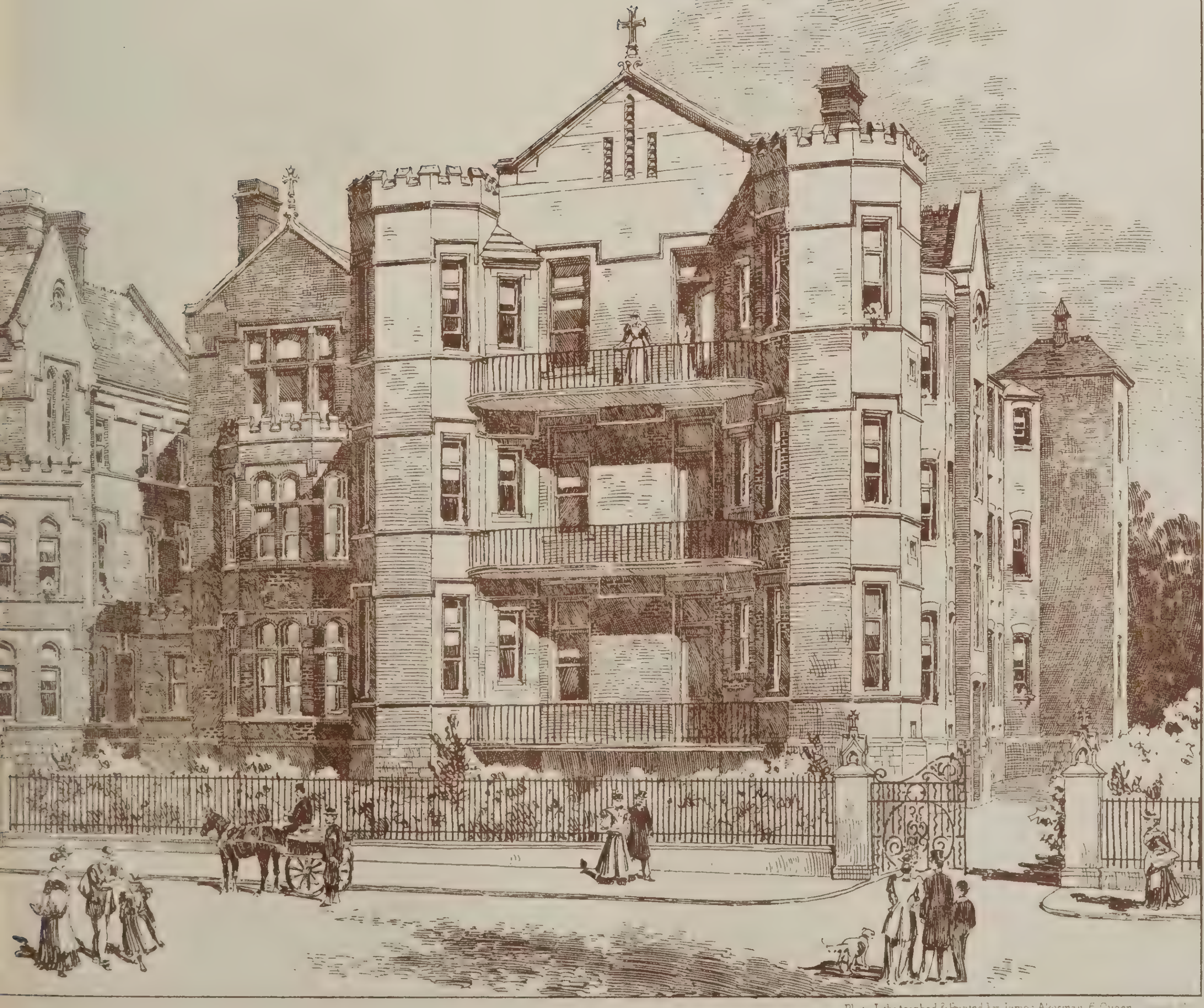


Oct 12, 1894.

THE MATER INFIRMORUM HOSPITAL BELFAST,

FOR THE MOST REVEREND DR. McALISTER.

WILLIAM J. FENNELL,
ARCHITECT.



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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2076.

FRIDAY, OCTOBER 19, 1894.

THE PROFESSION AND THE BUILDING TRADES.

IN the course of a few days the Architectural Session will have commenced its work, and many subjects of more or less interest to the profession will be discussed. First and foremost, the presidential addresses will review the questions of the year, and especially draw attention to the merits of the new London Building Act—a topic that alone will make the beginning of the session of 1895 a notable and crucial one—the progress made in educational matters, to great works achieved, and so on. No greater question than that of the relation of the profession to the contractor and the building trades, and the position of each, can occupy attention. Certain matters call for solution before the true position of the architect can be ascertained. First, what is to be done with the "unqualified genius," the intractable individual who will remain an architect, despite all the attempts to enrol him as a qualified member of the profession, or in defiance of all legislation to place him on the register? If not accepted as a member of a society, or registered as a qualified practitioner, he will still exercise his art amongst those who have confidence in his genius and skill, and will still be retained to prepare the designs for men who have "passed" but have no artistic ability. Like those who have no valid medical degrees, they will remain outside the pale, and form a class strong enough to become powerful rivals to their regular brethren. The unqualified genius will make himself a power, whether we like it or otherwise; he is not to ousted—he will appear as the "ghost," despite his ignorance of practical matters and construction, and therefore it is we must recognise his existence in the future as in the past. His qualifications as a designer cannot be gauged by any examination, for they elude any sort of analysis of styles or mouldings. His power of expressing any idea cannot be acquired by expertness in mechanical draughtsmanship. All these facts, and many more, have been ably put forth by essayists in a recent work entitled: "Is Architecture a Profession or an Art?" Beyond all these arguments, we have the unquestioned fact that the greatest periods of our historic architecture were without any means of testing the qualifications of its masters; our great buildings were designed and erected by men who had no professional training, before the age of learned societies and technical colleges appeared.

Next we have the question of the functions of the professional architect. We have here another subject which may well occupy the attention of architects at the present time. There are many who believe that the professional man should devote his time only to the general design of buildings, be a gentleman by education and training; others who assert that the architect ought to become a leader of workmanship, superintend the several tradesmen, and be practically a "master workman" in the old sense of the word. Whichever is it to be? One or the other. We can understand the first position as one in accord with the supercilious "professional" architect, who thinks he is too important a personage to meddle with bricks and mortar, and timber, or details of buildings, drains, and so on. Anything to do with quantity surveying is also repudiated by a certain clique, though not by all, for there is remuneration attached to it. On the other hand, the "master workman" ideal is not very popular amongst the profession, and, as far as we can see, still less popular among the builders and contractors. Perhaps the reason is not far to seek. If every architect was a "master workman" it would be much the worse for the contractor, who likes to have all his own way, and to have control over the workmen; it would be certainly harder for the scamping contractor, who acts the part of middleman. The builder is an important factor in the situation, as being between the architect and the workman, and the sooner the relations between the two first is fully recognised in its many bearings, the better it will be for everybody. Now, from what we know of a large class of builders, there is a natural desire on their part to regard the architect as a "stand-off" sort of gentleman, who will not trouble to interfere in building operations, who will not condescend to visit a building too often, who will refuse speaking to foremen or workmen except through them, the recognised channel of the clerk of works, and whose knowledge of construction is of a theoretical, superficial kind. Their desire is that the architect should be a kind of "figure-head," and should intrust his duties to a qualified surveyor who should take out the quantities, and be responsible to the builder as well as to the employer. The builder likes someone who is practical to deal with, who understands prices, but not one in supreme authority; he can do very well with a competent quantity surveyor, but scarcely so well with a vigilant clerk of works, who is always looking about, and is in touch with the architect. The commercial builder tries to widen the gulf between the designer and the workman by placing himself in the breach. Any bridging of the gulf is fatal to his success.

In connection with this vital question of the function of the architect, whether he should be merely a general supervising agent or artist, or a master workman, is that of the direct employment of labour as exemplified in the London County Council's determination to dispense with the contractor, and to engage their own staff of workmen under the supervision of their own officials. We are unprepared to say whether any advantages have been secured by this arrangement, although it has been alleged that it has resulted in a saving of 12·33 per cent. on the first 16 operations carried out by the Council, and the results of its adoption by the Birmingham Corporation have been, we are told, even more satisfactory. By giving an opportunity to competent craftsmen to work at reasonable rates, a new era of workmanship will be inaugurated; the workman is brought into direct contact with the designer, and all "sweating" will be avoided. Of recent experiments in this direction, the mosaic decoration of St. Paul's Cathedral by working artists without a middleman may be noticed with approval. Certain it is that the position of the workman in building will have to be dealt with before very long. Our technical schools and classes must necessarily lead to a condition of things very different to that which has prevailed. The education of the working artist will be raised, and the effect will be that he will be less disposed to sell his labour in the cheapest market or under the unfavourable conditions that now exist. By raising his skill as an artist, the workman will certainly endeavour to obtain a recognition of his power; he will be less content to become a mechanical producer or to copy line for line, following the instructions of those less competent than himself. Of course, we shall still get skilled experts in the several trades who will never do more than copy correctly, just as we have architects who can only follow a leader, but have no power to create in the true sense of putting things together. We have no doubt our technical schools will turn out hundreds of mere prigs, who will be no better than many who now crowd the market; but amongst them there will be men whom the improved methods of instruction will have lifted to a sense of their real capabilities. We have yet to see what the improved education of workmen will bring about. Will it not alter the relation between them and the builder or contractor?

And if the future working craftsman is to become a master of workmanship, he must have a director. The workmanship ideal of the architect is the only one that will satisfy the new conditions. And what is the consequence? Why, that the two must be brought into closer contact. We have indications now of a movement towards that end. The question of education for London workmen has been raised more than once of late, and the Building Trades' Federation movement and the recent Trade Conference under the auspices of the Technical Education Board of the L.C.C. are within the recollection of our readers. Upon the latter occasion one of the subjects discussed was the decline of apprenticeship, and a committee was proposed to consider the subject. We believe a committee has been appointed with this intention, and that representatives of the architects, master builders, workmen, educational bodies, and polytechnics, besides the City companies, have been invited to take part. The influence of the Science and Art Department, the Technical Boards, the School Board, and the City companies on the workmen will be one of the questions; another meetings for discussion between architects and the building trades. We have often spoken of the necessity of bringing the architect and workman together on their own grounds; to enable each class to see what it may learn of the other, for exchange of views on technical and artistic matters. There are many things in building which cannot be understood practically from offices and books. Take, for example, concrete mixing and plastering. The architect may know everything about limes and cements, and their qualities and properties, as laid down by competent authorities, and yet not be able to say whether a sack of cement is fit to use or not, or the proper way of making "coarse stuff" for plastering. Again, who but the expert mason can say whether a stone is laid on its "natural bed" or not? Or who but the experienced carpenter can tell the difference between yellow deal and some kinds of Swedish timber? In questions of workmanship even more, the workman can impart information of a kind that cannot be learned in any other way than by actual tactical experience. In what way has this or that to be done has often given rise to doubt in the mind of the architect, which a bricklayer or a joiner would have at once answered. The passer of an examination, however perfect, is generally one who makes the test the end instead of the means; he may have no particular wish to do anything more than pass and acquire a certificate of competence—that is all he looks for. As we lately pointed out, the man who takes this view of his profession is far behind one who takes a lifelong interest in his work, who completes his school discipline by self-continued study and reading, and his knowledge of building by making himself familiar with workshop and building operations. The direction of workmanship is no less an object to achieve than that of becoming an expert in drawing or a candidate for a diploma. Unfortunately it is lost sight of in our modern programmes. We turn out men who can design and draw elevations and make plans after a certain pattern, who can imitate leading architects' work, but who have done little to prove that their art has any penetrative influence on workmanship, or has in any direct way raised the standard in the trades.

BUILDING ON LOW SITES.

THE absolute necessity of prohibiting the erection of buildings, especially those intended for dwelling-houses, on ground or plots that are little better than swamps, is increasingly evident to everyone who knows to what dire straits the inhabitants of certain districts in the Metropolis are reduced when any heavy rainfall takes place. Portions of Hammersmith, Fulham, Putney, Wandsworth, Battersea, and other parts are subjected to periodical inundations, the basements of houses deluged, and many living-rooms rendered uninhabitable. But for the low intercepting sewers, some of these districts would be rendered uninhabitable during certain periods of the year. Much of the land has been reclaimed from the river, and is upon a level with, often lower than, the base-line of Trinity high water mark. A great deal of it is marsh land, subjected to periodical overflows of the tide. Yet whole colonies of tenements have been built on these areas without any protest from the authorities, and, what is worse, no provision has been made to keep back the underground water. Things have been a little better under the present rules. But large, densely populated areas have been covered by dwellings at a time when the sanitary legislation of the metropolis was in a very imperfect state, and when the Building Acts did not do anything to abate the evil, and no by-laws existed as to the foundations and sites of buildings. The ablest hygienic authorities assert that if the ground water is at a permanent level of 5ft. or less from the surface, the ground air is necessarily cold and damp. Our own experience proves that this limit is not far wrong. In the localities we have named the ground water-level is often higher, making it impossible to provide for basements. The new London Building Act, which comes into operation at the commencement of the new year, will reinforce the present section, 56 & 57 Vict. sec. 5, and make it more impossible to erect any building to be used wholly or in part as a dwelling-house, or to adapt any building for the same purpose on land of which the surface is below the level of Trinity high-water mark, and which does not admit of being drained by gravitation into an existing sewer of the Council, except with its permission, and subject to such regulations as they may from time to time prescribe. Certain defined areas of such land will be excluded from such dwellings or buildings. The Council will have power to, first, prohibit the erection, and second, to regulate their erection, and third, to "prescribe the level at which the under-side of the lowest floor of any permitted building shall be placed on such land or any defined area," &c. These regulations are, however, subject to appeal. The last-quoted clause is a new one, and will have the effect of practically preventing the construction of any basement or cellar to small houses on land of the kind we have supposed, for few builders will care to raise their ground-floor level 5ft. or more above the level of the street. Without this third clause of the 122nd section, it would not be difficult to find some means of getting over the difficulty, for merely to "regulate the erection of dwelling-houses" may be made amenable to several interpretations.

The prospect of this more perfect legislation will no doubt cause some dismay in the minds of a large class of builders of small properties. No doubt many will take advantage of the existing law as being less stringent. The present bylaws as to concrete foundations and sites (section 16), 41 and 42 Vict., have greatly benefited dwellings erected since these rules came into operation; but we are not so sure about the application for a license to erect dwellings on such land now in force, or whether the decision of the chief engineer of the Council has been in all cases obtained. From our own observations there appears to be some laxity in enforcing conditions. Houses have been built with basements much too low to insure dryness. This reminds us of the absolute importance of defining terms. The new Act speaks of the "lowest floor" in the clause we have quoted. What does this mean? The ground-floor or the floor of any basement or cellar? The point is one that should at least be made clear, for it will make all the difference if the "lowest floor" is intended to apply to the ground-floor. The term "story" is defined, and the word "floor" ought to be rendered quite explicit as to its meaning. The phrase "habitable room" is also explained, and we might suggest to the Council the words: "Prescribe the level at which the under side of the lowest floor of any *habitable room* shall be placed, &c.," as being more definite.

The absolute importance of securing the lower parts of buildings against moisture or floods, has been recognised by all sanitarians, medical authorities, hospital designers, &c. No one now thinks of building a ward block without taking care it shall have a free ventilation under the lowest floor, either by means of raising the building sufficiently to allow of openings all round the walls above the ground level outside, or by a sunk area or a sloped bank all round to promote the same object, namely, the cutting-off the building from the soil. Suggestions have been made for building our houses upon open arches or stilts; we think it was Sir W. B. Richardson's idea. Others have devised systems of "plating," so to speak, the outer walls and floors of sunken basements with asphalte, and of concreting and asphalting the site in soils subject to saturation, and we have many excellent materials, such as the "hygeian rock building composition," certain qualities of asphalte, and other damp-proof materials, which exclude moisture from walls and foundations. No doubt the London County Council will have to consider and weigh the merits of new methods and materials, for many of them will no doubt be brought into requisition by those who will not be slow to adopt methods to evade the Act. The Council will have an optional power, and may in some cases be disposed to favour certain plans for securing the object in another way. We shall hear of many schemes for avoiding the Act and obtaining a license to erect buildings, and invention will be stimulated no doubt in this direction. Every builder will have the opportunity of appealing to the Tribunal of Appeal, and no doubt will not be slow to avail himself of any alternative that may offer.

DISCOVERIES IN ARCHITECTURE.*

CAN there be such things as discoveries in architecture here, and now at the end of the nineteenth century? I fancy that I hear some persons under whose notice the announcement of the subject of this lecture may have come put this question, with a quiet idea that it ought to be answered in the negative. It is my intention, however, to show, in addition to some notice of past discoveries, that there are, and will be, discoveries in architecture at the present day; and, what is more, that some of these discoveries should await yourselves, if you are to succeed as students. Let us first, in order to clear the way, make sure as to what a discovery really is, and what it is not. Discoveries and inventions have been so mixed up in people's minds, and are so often intimately associated in actual fact, that perhaps the first thing to point out is that a discovery is not an invention. You discover something that exists; you invent something which has not existed before. Discovery is the proper reward of research; you dig in order to uncover what is hidden. Research is the digging process; discovery happens when you dig successfully. Experiment is the usual method by which invention is forwarded. You think of the best means of compassing a result, and then you make a trial. In architecture, the way of making that trial is by making a drawing, and one of our main difficulties is that from the best drawing to a finished building is such a long step. Very many inventions, especially scientific ones, have not only been based upon discoveries, but have followed close upon them, or have gone, so to speak, hand in hand with them, so that the distinction between discovery and invention has, in such cases, become obscured; but it is a very real one. Let us illustrate it by an example or two. One of the greatest discoveries of modern times was the discovery of America. One of the greatest inventions was that of printing. At any rate, these two great feats serve to illustrate extremely well the leading distinction between invention and discovery. America was there (and had been there for ages) when Columbus first reached its shores. He in no sense created or invented America; but he did discover that country. On the other hand, printing did not exist before the days of Gutenberg, if he was the inventor of printing. Writing existed, it is true, and the first printing was an imitation of writing; but the power of reproducing a number of copies of the same document by using movable types had never been obtained before. Printing did not exist—it was invented, and thenceforward it remained one of the arts of civilisation for all time. The word "discovery" signifies an uncovering of something covered up—a bringing to light something that is hid. It is (let me add) a personal thing, and though it is often enough followed by the making public of the discovery, that is (please to note) quite a separate matter, and may be postponed or omitted. Columbus discovered America on the day the hazy outlines of a distant coast began to rise over the dim margin of the ocean, not on the day when he returned to Europe the proud bearer of the tidings that there was a new world to conquer. The discoverer of the richest gold mine in Queensland kept the knowledge to himself for years till he could buy the land in which it is situated. Once more (and this is an important consideration) a discovery is so much a personal thing that it is not essential to its being a discovery that the object discovered should be unknown to everyone else. When Speke and Grant discovered the vast lake in the heart of Africa they found a geographical feature previously unknown to themselves and to Europeans generally, but familiar enough to the hundreds and thousands of African natives who lived on its banks. Nay, even if a man literally uncovers a buried relic, such as a Roman pavement found in the heart of London under 10ft. of accumulated soil, what he uncovers to-day is indeed to him a discovery; but it was familiar enough to the Roman artist and artisans who designed and made it, and to the Roman soldier or colonist whose house it adorned, and whose friends and family were constantly walking over it. Discoveries of things absolutely and always unknown are always rare; and in some branches of study—architecture among others—are in the nature of things impossible. But in the sense of finding out or uncovering something previously unknown to the discoverer discovery occurs frequently, and it is by far the most healthy, the most interesting, and the most successful form of study. I propose, then, in this lecture, to begin with the simple, but most valuable, discoveries which you as students must make for yourselves if you are really to master the art of Architecture; and then to proceed to notice some of the discoveries which have taken place in recent years which are more brilliant in their character and relate to architectural matters that have long lain hid. I propose to distinguish these, and call them respectively personal and public discoveries; for there is this distinction certainly between them, that the discoveries which a student makes are mostly of importance to him personally, but are not such as need be made public. Those which an explorer may make are perhaps quite as important to the general public as to the discoverer, and are usually published to the world.

PERSONAL DISCOVERIES.

The information you obtain in the offices where you work, or from attending classes like those about to begin in this college, is hardly discovery; it is instruction, and the worst of it is that, as it is not difficult to get, it is very apt not to stick in the memory. The information discovered by making researches on your own account is mostly obtained with difficulty and trouble, but it is seldom, if ever, forgotten. You may make discoveries in a library. For example, let us say that you are advised to read a handbook, say "Fergusson's History," and you do so, finding it perhaps a rather laborious task, as the reading of any condensed book always must be. You notice, however, that the numerous woodcuts all have references to the names of writers from whose publications they are copied, and having access to books, say to the Institute library, or that at South Kensington, or some other collection of books, you begin to consult some of the original authorities, and among them you discover some book of which the illustrations or the letter-press, or both, bear on what you have been reading about, and are full and clear and interesting. The book you have discovered only occupies a corner of the vast field that Fergusson travels over; but then the writer really has the leisure to take possession of that corner, and to throw a clear light upon it. The mere fact that you have to some extent unearthed the book for yourself helps to give a zest to the reading of it, or the examination of its illustrations. It is a discovery. Nor is it in a public library only that such discoveries can be made. In any collection of books or photographs or prints to which you have access, and on the shelves of second-hand booksellers and the tables of bookstalls, you can have the same good fortune. I, for example, myself possess not a few valuable books on subjects connected with architecture which first came to my knowledge through finding them on bookstalls. This reference to discovering books ought not to be made without alluding to the help to be got from one very valuable book of reference, which just now possesses a melancholy interest for some of us. I allude to the "Dictionary of Architecture," of the Architectural Publication Society, a work bristling with sign-posts—if I may use such a phrase—calculated to direct the student (in his search for knowledge) to the best sources of information. In almost all the articles the most copious lists of references occur, and it is of the greatest use to a real student to have sources of information so liberally spread before his view. This work (begun by a circle of architects, some of whom only have survived to see its completion) would have been left unfinished but for the indomitable energy and public spirit of Mr. Cates, and the learning and patience of the late Mr. Wyatt Papworth, and it is impossible just now to mention the "Dictionary" without alluding briefly to the great loss which architecture has within the last few weeks sustained in the recent death of the last-named architect (Mr. Papworth). He was full of accurate and well-digested information on every subject connected with our profession. He was an indefatigable, systematic, and accurate worker, singularly quiet and simple in his manner and bearing, and was universally esteemed. In many ways his vast store of technical information has been made useful to the members of his profession. To you, gentlemen, his work, as editing Gwilt's "Dictionary," the value of which he practically doubled by the additions he made to it, is pretty sure to be familiar; but there are many others, and many important memorials of him in the literature of our profession, and his death leaves a blank which it will not be easy to fill up. To return, however, to students' discoveries—of which, by the bye, the late Mr. Papworth made many and valuable ones—architecture can be better learned from buildings than from books, and it is in visits to buildings, ancient and modern, that you will make the discoveries that will be of most use to you. The most simple building, if it is good, has some secrets, if you can but make them out. Why is it pleasing? Why are there certain irregularities? How is it constructed? What has been its history as a structure? These, and such-like questions, should present themselves to the mind, and if we can but discover the answer to one such question, the visit to the building in respect of which it is asked will have been fruitful. Among the most interesting features of ancient buildings are the traces of their history which they bear indicating the successive enlargements, alterations, rebuildings, and so forth, which they have undergone, and the discoveries of this sort which a keen student, examining an old manor house or a church, a cathedral or a castle, may make for himself are extremely interesting and extremely instructive. One of the most complete accounts of such a series of discoveries illustrating the past history of a great building by its actual visible marks exists in the account of Canterbury Cathedral, from the pen of the late Prof. Willis. No man during the present time of careful research has been more keen or more successful in his examination of ancient buildings than he, and this record is a good example of the manner in which it is possible to make them tell the story of their varied changes, alterations, rebuildings, and extensions. Even without a tenth part of the minuteness and elaboration of Willis's investigation, if you simply establish the broad divisions of Saxon, Norman, Early English, and so forth, in a building with a chequered history, and recognise the most obvious features of each period, you will have discovered the leading facts in the history of the building. In this sort of research it is peculiarly true that "to him that hath shall be given." To a person even of artistic taste and power of observation, entirely devoid of architectural knowledge, a building is almost a sealed book; but when you have got even a little knowledge from other sources a building begins to be legible. As an example, I would suggest to any student who has read something of the changes in tracery, in vaulting, and in mouldings which occur in English architecture, that when he has obtained some knowledge of these things from books he should go to Westminster Abbey cloister, getting first from Scott's book the dates at which it was done, and identify the different features of each period, and the changes both in feature and in general proportions. He will find that he has discovered a good deal of what is really meant by the terms Early English, Decorated, and Perpendicular. It is possible to make discoveries on drawings of buildings as well as on the buildings themselves. As an example of what I mean: If you take the drawings of one of Sir Christopher Wren's churches, and examine them carefully, you may perhaps discover some of the principles upon which he designed them. He was a very orderly and mathematical worker. He had strongly impressed upon his mind the conviction that the establishment of geometrical relations between the main dimensions of his building was a means of securing that their proportions should be pleasing, and if, with this clue in your mind, and a pair of dividers in your hand, you examine a series of engravings giving the plans, sections, and elevations of his churches, and St. Paul's Cathedral, you will, I think, find it possible, and extremely instructive, to discover some of his methods of working. The plan and sections of St. Stephen's Church, Walbrook, generally recognised as the best among Wren's many successful interiors, will be very good to begin with. A famous place to investigate is a good museum. I doubt whether any one of you has seen, let alone studied in, all the museums of London which furnish information about architecture, though I hope most of you have studied, or will study in some. The first, of course, is the British Museum, where a very considerable amount of examples and specimens of Ancient and Classic architecture exist. Setting aside the library, which is enormous, there is a great deal of Egyptian, Assyrian, Lycean, Greek, and Roman work to be seen there, chiefly in the shape of fragments of ornament and features, such as a capital from the Parthenon, and parts of a sculptured column from the temple of Diana at Ephesus. The South Kensington Museum and the connected Indian Section include a great deal of Gothic Renaissance and Oriental architecture and a magnificent collection of casts, practically as good as the originals for our purpose. Another, and perhaps a finer, certainly a better classified collection of architectural casts exists at the Crystal Palace, and a third of Mediæval work at the Architectural Museum. Sir John Soane's Museum, a collection made by an architect to illustrate his art, must not be forgotten, and in every one of these a visitor, going with some knowledge to start upon and a spirit of research, cannot fail to make discoveries that will be both profitable and pleasant. We have spoken about discoveries in a library, in a building, in a set of plans. There are also discoveries in a city. Here in London, architects of more or less skill have been designing and building for a thousand years. Much of their work (good or bad) has disappeared; for the relentless tooth of time has been eating it away almost as fast as it has been done—but not quite, and so in this metropolis a vast mass of architecture, of course chiefly modern, is accumulated. The Great Fire destroyed most of the earlier work, but not all of it, and even putting that aside as most of it too well known to leave much room for discovery, there remains work of the 17th, 18th, and 19th centuries, not a little of it hidden away, to reward the diligent investigator. This is especially true of interiors. In the parts of London which were fashionable a century ago, and where large houses were erected which are now used for different purposes—such, for example, as Lincoln's Inn-fields—you may often discover most interesting fragments of architectural work. There are a few of the Companies' halls which contain good work, but little known, and in one shape and another there is a good deal to discover in Domestic and Secular buildings, of which the authorship may often not be known, but which is appropriate and beautiful. A long series of architects, since the days when the work of the individual architect came to be known by his name, have wrought in London, and though their prominent works may be well known, even these (some of them) may be now in obscurity, and of the best known it is, generally speaking, only the outside that nine observers out of ten have troubled themselves about. London has specimens of the work of Inigo Jones, Wren, Hawksmoor, Gibbs, Chambers, Soane, the brothers Adam, Wilkins, Cockerell, Barry, Pugin, Smirke, Scott, Street, Burges, Sedding, F. P. Cockerell, and many others. Here, too, are specimens of the work of able architects now living, whose designs are influencing the course of public taste at the present day, and are, perhaps, almost as much worth your study as the work of any past age. How many of these do you know about? How many remain to be discovered? And even of those you know, how many interiors have you seen? To go a step further, every cathedral-town in England, every great city, every country town, and pretty nearly every village contains an example, or a group of examples, of architecture in which there is much that you can only known by discovering it for yourself; and even if England has been very thoroughly examined, and a great deal of all the architectural work has been more or less described and illustrated, there is a vast amount that is practically unknown. This is especially the case with English mansions and manor-houses, many of which, if illustrated at all, are in many cases only known from picturesque perspective views, and are not illustrated in such a way as to give an idea of their wealth of architectural treatment. The visitor to Penshurst, Knole, Hever, Bramshill, Purham, Audley End, Westwood, Hatfield, or Woollaton, or Burghley will find plenty of architectural discoveries to make, even though each of these mansions may have been more or less illustrated. That an architect should overhaul the church in any village or town where he may be, if it be of good design or possessed of features of interest, is, I hope, so much a matter of course, that I do not stop to point out how much can be discovered and appropriated in journeys and country rambles; but I am disposed to dwell upon the modern work which awaits the traveller in various parts of England. The country is now thickly sprinkled with fine mansions and smaller country houses, nearly all of them good, and many of them extraordinarily good. The towns are now distinguished by their town-halls, their banks, and other public municipal buildings, and often by the possession of a hospital or the neighbourhood of an asylum of the greatest possible interest, in many cases, to the student of sanitary science. Individual towns also have the impress of the work of architects of genius who have practised chiefly in and round them. You must go to Glasgow and study the work of Thomson; then if you want to know how Greek architecture can be turned to account in supplying the architectural treatment of modern Scottish warehouses and churches, and you will in Manchester learn what a genius Walters was; but there also, and in Liverpool and in the great cities of the North of England, you will find modern work of the greatest possible value done by good architects still living and working among us. Discoveries are more obviously awaiting the traveller who may cross the Channel. It is quite true that France, Italy, and Germany have been visited again and again by keen observers, and the results published; but even so you must see the building and judge for yourself before you can grasp what is meant. Even in the most familiar building—St. Peter's at Rome, or Nôtre Dame at Paris, or St. Mark's at Venice—there is a world of unpublished facts to discover, and much more is this the case the moment we step off the beaten track. France especially is full of good architecture that is very little known in England, and there would be no great difficulty there in practically discovering a first-class church, perhaps even a cathedral. Spain is full of architecture very little published; the East is full of what is yet practically unknown. With regard to modern work, the discoveries that await an observant architect travelling on the Continent, and taking the opportunity of visiting the great cities, are startlingly numerous and strange. I have no doubt that a visitor to the United States would find them not less numerous, and certainly not less startling; but I have not been so fortunate as to see America, and I will not attempt to describe the new architecture of that great country, though I am convinced that there is a better chance of the development of a modern style of architecture in the United States than in any part of Europe. Remaining nearer home, however, the architect who will visit the great German cities, such as, for example, Frankfort and Cologne, Brussels and Vienna, will discover that the Renaissance style on European soil is really capable of new and striking developments which we have rarely attempted. Miles of new boulevards and streets are to be seen in these and in other Continental cities, full of elaborate, vigorously-designed, and costly buildings—all of them (so far as they can be classed as belonging to any style) of Renaissance character, but every one of them differing from the types we have studied and are reproducing. Here, if anywhere, there are discoveries to be made in modern architecture. I do not say that the buildings are all good; but many of them are. I do not say that the details are pleasing—they are often too coarse for that; but there is a freshness, a suggestiveness, and a sense of vigour about these boulevards which make up for a good deal of the deficiency in refinement. In thus considering what at the outset I called personal discoveries—namely, those which a student must make for himself—I have gone through that part of the subject which probably is of the greatest value to you, gentlemen, as students. But you may have expected that I should also tell you, and show you, something of public discoveries in architecture, and we will now, if you please, turn to that division of the subject. The present age has been one in which extraordinary revelations of the past have been obtained by keen investigation to an extent that could never have been anticipated. Of course, inscriptions, sculptures, ornaments, pottery, weapons, and objects of this sort—but especially inscriptions—have furnished this most remarkable and definite information; but no inconsiderable amount of architecture has also been discovered. Buried remains usually display arrangements of plan rather than entire buildings; but in not a few cases they are dug up complete, while abandoned buildings have been found entire in places now solitary, and ancient structures have been discovered standing in inhabited, but seldom visited localities. Fragments, pavements, ornaments, architectural features, and details, and even representations of buildings have been found in abundance. Discovery in architecture may be considered to have begun, so far as we are concerned with it, at the Renaissance in the 16th century. That great change in men's ideas—the starting-point of modern life and art—began in Italy, and the artists of the Renaissance soon became familiar with the remains of Roman art in their own country, and studied them with eagerness. Several of the Italian architects and antiquaries of the 17th century have left treatises and illustrations of Roman buildings, and their own architecture was based on that of their Roman predecessors. In the 18th century Italian architectural books became numerous, and many of them describe monuments; and some of the Roman remains outside Italy, as, for example, Palmyra, appear to have attracted notice at the same time. In the 18th century, moreover, the study of ancient Roman art was much stimulated by a discovery, in the most literal sense of the word, of the utmost interest and importance. I allude to the digging-up of the buried city of Herculaneum, and later on the better-preserved Pompeii. Herculaneum was known as early as 1711, but excavations at Pompeii only began somewhere about 1750. The course of exploration and discovery thus started went on, and has, with brilliant results, been continued from time to time. Nothing has shown us so much of the details of ancient architecture as the Pompeian explorations. At Pompeii, as you know, an extensive buried town has been laid bare, house by house and street by street. Exploration and the publication of discoveries are still going on there, and though the main public buildings were found and dug out long ago, most interesting houses are still discovered from time to time. It was about the middle of the last century that attention in England was seriously drawn to the remains of Greek architecture by the publication in 1762 of the "Antiquities of Athens" by Stuart and Rivett. Though Athens was a well-known city, this careful examination of the most important architecture to be found there amounted to a discovery, and the effect on public taste of the publication of the work was considerable, followed as it was very shortly by the "Antiquities of Ionia." Greece and Asia Minor were by degrees most fully explored and described; but Greece has proved inexhaustible, and is at the present day a field of the most interesting modern research. The next great series of architectural discoveries relates to the architecture of Egypt. Napoleon took possession of that country in 1799, and sent with his army an expedition of men of learning and artists, and the temples and such of the tombs as had up to that time been discovered were visited and explored, and a magnificent book full of engravings and descriptions was published. Since that day this work of exploration in Egypt has been carried further, and the magnificently-illustrated work of Lepsius, in twelve folio volumes, has published to the world the results of a great German exploring expedition there in the years 1843-5. In Egypt, also, exploration and discovery have still gone on, but, of course, the greater part of the recent results belong to the domain of archæology rather than architecture, though the profession of Egyptology in this college has been successful in recovering much that is interesting as to Egyptian buildings. Some other fields of architectural research should not be overlooked. For example, in Asia Minor, Caria and Syria were explored successfully by Sir Charles Fellowes, and Central Syria has been visited with successful results by M. de Vogüé, whose discoveries are of the deepest interest in the deserted cities of Roman origin of Central Syria. His book gives representations of buildings of a sort of Roman architecture, still entire, of great grace, skilfully designed and excellently built, and standing unoccupied and uncared for in the Syrian deserts. I ought not, perhaps, to omit the many discoveries of Roman architectural remains which have taken place in this country. Usually not much more than the stumps of the walls, showing the plan of the building, the hypocausts, and in many cases the richly-ornamented tesselated floors are recovered from such places as Silchester and the various Roman villas, but even so much has great interest and value; and in a few cases, especially in the fine Roman Thermæ at Bath, excavation has brought much more to light and has revealed most of the architectural features of work of a highly-finished character, very well preserved and striking. It is by the spade that the most remarkable discoveries of modern times have been won, and none of them is more valuable than the recovery of Nineveh and other Assyrian cities by Layard, Botta, and Place. Much which is not architecture has been won for us in Assyria. We have been enabled to read the letters, the books, the very accounts and ledgers and cash-books, and we have received a flood of light upon the history of all the nations of antiquity so dazzling that perhaps the architectural part of these discoveries has become forgotten. But we have recovered the plan and the lower parts of the walls of several palaces of the utmost magnificence and complexity, and we have representations of others on the alabaster sculptured slabs which extended not only for feet, or hundreds of feet only, but for miles, along the face of those palace walls. Of ancient Persia, the ruins were not buried in sand and earth to the same extent as in Assyria, and they have suffered much ruin; but here again the spade has, within no very distant period, brought to light objects of surpassing interest. A French antiquary and his wife, Mons. and Mme. Dieulafoi, have discovered and brought home splendid specimens of wall-decorations, as embossed, glazed, and coloured brick-work, now displayed in the Louvre, Paris. The gradual spread of knowledge about countries outside our own shores has brought to light architecture, not so startlingly new as was revealed by the digging up of Pompeii or the opening of the tombs of the Pharaohs at Thebes, but still of moment. These discoveries occurred to some extent in the 17th century, and to a great extent in the 18th, so that in the best-known countries, such as Greece and Italy, the explorers of the 19th century have chiefly been occupied by making our knowledge more complete. Such work, for example, was done by Professors Cockerell and Donaldson, and by Mr. Penrose, in Greece and Asia Minor. Such also was the discovery of the ruined remains of the Mausoleum at Halicarnassus, by Sir Charles Newton, and the recovery of the long-lost Temple of Diana at Ephesus, by the late J. T. Wood. The startling results obtained by Dr. Schliemann at Mycenæ at Tiryns, include the recovery of two Greek fortress-palaces, at any rate of the plans, and that of the fortifications which protected them, and of decorative details of great interest. Research at Athens, at Olympia, at various other ancient sites in Greece, and in Cyprus, Asia Minor, and elsewhere has gone on, and is being prosecuted with interesting results, and it has also been prosecuted with vigour and success in Rome. Very much is now known about the ancient buildings of Rome which was only matter of conjecture 20 years ago, and there is, no doubt, more to follow. Before, however, we wander too far from them, we must for a moment turn to the discoveries that have been made in Christian and in Oriental architecture. We had detected, before all this was carried so far as I have taken it, an English architecture of the greatest variety and beauty, and had learned that there corresponded with it a French, an Italian, and a German Gothic style with countless examples. The important Mediæval buildings of almost all Christendom, except perhaps Spain and Portugal, have been, it is said, discovered and thoroughly examined, measured, photographed, and described, and are as well known for the most part as ordinary methods of publication can make them, and yet there is not a single one of them which is not the depository of artistic secrets not enriched by subtleties or ornaments, which are not for the first-comer, all of them waiting the earnest student to discover them. Nor are the possibilities of finding more startling novelties than we expect exhausted. Very recently a large series of photographs, representing Christian churches, chiefly Mediæval, in towns and cities in Apulia, on the shores of the Adriatic, have made their way to London, and we find that at Bari Botoub and the neighbouring places an Early Italian Gothic flourished, bearing a far closer resemblance to the Gothic of Western Europe than is found in the Gothic buildings of the better-known Italian cities of the west. These photographs are an example of the fact that, well as Italian art has been studied, it remains an inexhaustible mine. There remains still one phase of Christian art, where much in all probability still awaits the inquirer. I allude to the art of the Greek Church. Byzantine buildings exist even in Constantinople that are barely known, and much more are they to be sought for in more remote places. Some of them have been lately studied by M. Schulz and Mr. Barnsley, and these will be in time made known to the world in the book of those gentlemen; but more remain. Constantinople, however, reminds us that there are countries not less extensive and populous than European ones with an art of their own, an architecture of their own, and countless examples in the shape of mosques and temples, palaces and tombs. The entire East, though not unknown, is all but unstudied. I quite admit that there is a something in Oriental art which, beautiful as it is, seems to repel European sympathy, if it awakens almost unbounded admiration. But when I mention Egypt, Syria, Persia, and Japan, and above all India and Burmah, I name a whole hemisphere crowded with buildings of interest and importance, of which not one in a hundred is generally known. In conclusion, let me say that if anyone wants a field where discoveries can certainly and readily be made, let him try India.

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* By Professor T. Roger Smith, F.R.I.B.A., an inaugural lecture delivered at University College, London, on Thursday evening, October 11, 1894.

THE SOCIETY OF ARCHITECTS AND THE PROPOSED EXAMINATION FOR MEMBERSHIP.

THE annual general meeting of the Society of Architects will be held at St. James's Hall, Piccadilly, on Tuesday week, the 30th inst., at 8 p.m., when the election of officers and council for the year 1894-95 will take place. Several alterations have been made in the nominations since the "House List" was published in our columns on Sept. 21st, p. 410—the two members proposed as vice-presidents are Mr. Ernest Day, of Worcester, and Professor Banister Fletcher, while sixteen architects are nominated for the twelve seats on the council, the fresh names being Mr. Edgar Farman, who for many years discharged the duties of honorary secretary with marked efficiency and zeal; Mr. Henry Lovegrove, Mr. W. H. Pertwee, and Mr. Walter M. Thomas, of Liverpool.

The following report of the Council on the membership examination question will also be submitted to the meeting:—

"The subject of the desirability or otherwise of an Examination of Candidates for Membership, was referred to the Council at the General Annual Meeting held in October, 1893, and since then it has been under careful consideration. A Committee was appointed and drew up a series of questions, which were approved by the Council and submitted to the Members of the Society. The replies received have been considered, and the opinion of the Members appearing to be practically unanimous, the Council have decided as follows:—

1. That after October 31st, 1896, Election to Membership will only be open to Candidates who have passed the Society's Examination, with the following exceptions:—

   (*a*) Candidates who are not less than 35 years of age, and have been directly engaged professionally in architectural pursuits, as Principals, for at least seven years.

   (*b*) Candidates who are not less than 35 years of age, and have been directly engaged professionally in architectural pursuits as assistants for at least ten years.

Candidates applying for Membership under *a* and *b* will be required, as heretofore, to submit drawings and other proofs of their professional abilities.

2. That the Scheme of Examination shall be formulated and published before June 30, 1895.
3. That a Register of Students between the ages of 17 and 23 years be open on November 1st, 1894.

   Registered Students shall be pupils or assistants in Architects' offices and be nominated by a Member of the Society, subject to the approval of the Council.
4. Registered Students shall be entitled to the following privileges:—

   Free admission to lectures to be delivered under the direction of the Council in London and the Provinces; a ticket giving admission to the Society's Ordinary Meetings and the use of the Society's Library for reference; and a copy of each issue of the *Journal*.
5. That each Registered Student shall be required to pay 5s. per annum, on November 1st, in each year, and shall cease to be a Registered Student on October 31st next, after his attaining the age of 23 years.

Mr. Edgar Farman has given notice that he will move the following amendments:—

To Clause 1.—"That the following Article be added as Article 11a to the Articles of Association, to become operative on October 31st, 1896: 'Subject to confirmation by General Meeting, the Council shall select from time to time certain Examinations, which shall be deemed Qualifying Examinations for Membership of the Society; and Election to Membership shall be only open to Candidates, approved by the Council, who have passed any one of such Examinations, with the following exceptions:—

(*a*) Candidates who are not less than 35 years of age, and have been directly engaged professionally in architectural pursuits, as Principals, for at least seven years.

(*b*) Candidates who are not less than 35 years of age, and have been directly engaged professionally in architectural pursuits, as Assistants, or as Assistants and Principals, for at least ten years.'"

To Clause 2.—"That the first list of Qualifying Examinations selected by the Council be submitted to a General Meeting, to be called not later than March 31st, 1895."

To Clauses 3, 4, and 5.—"That the consideration of these Clauses be postponed."

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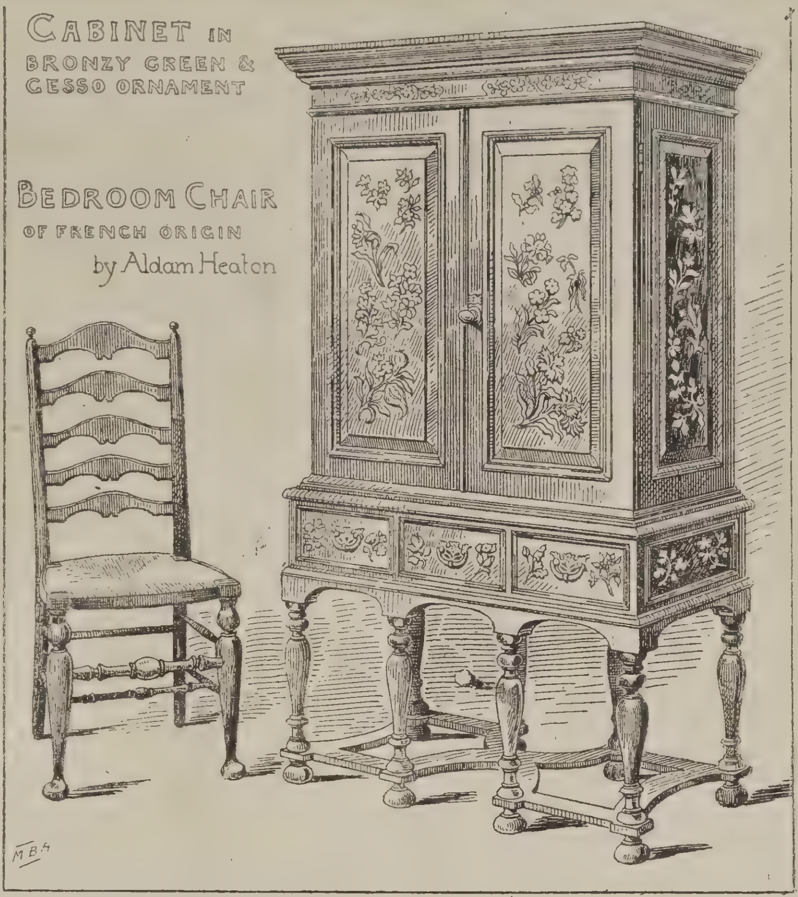
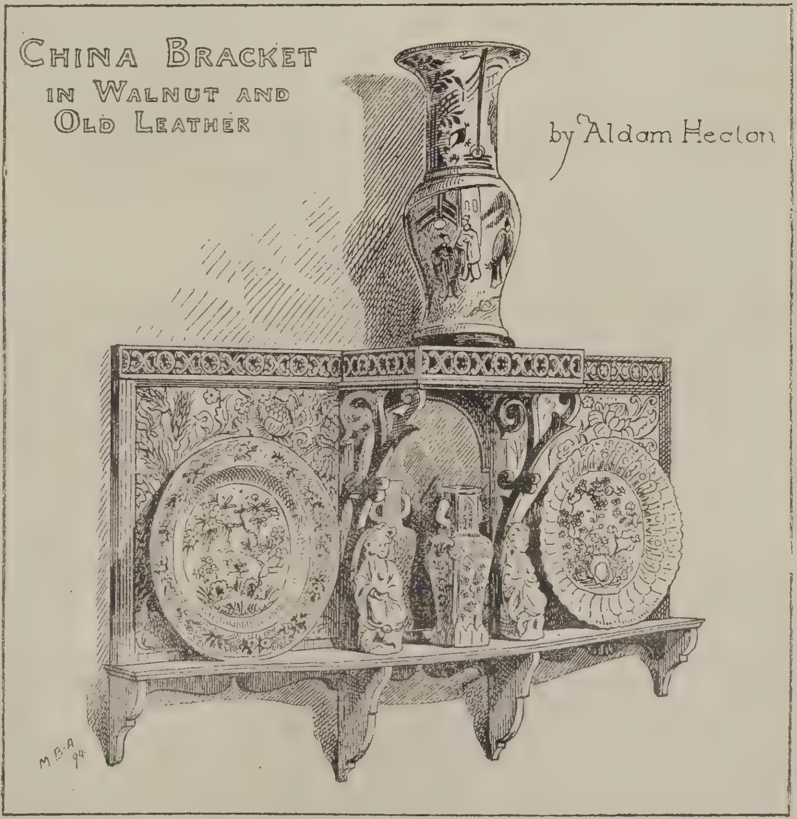
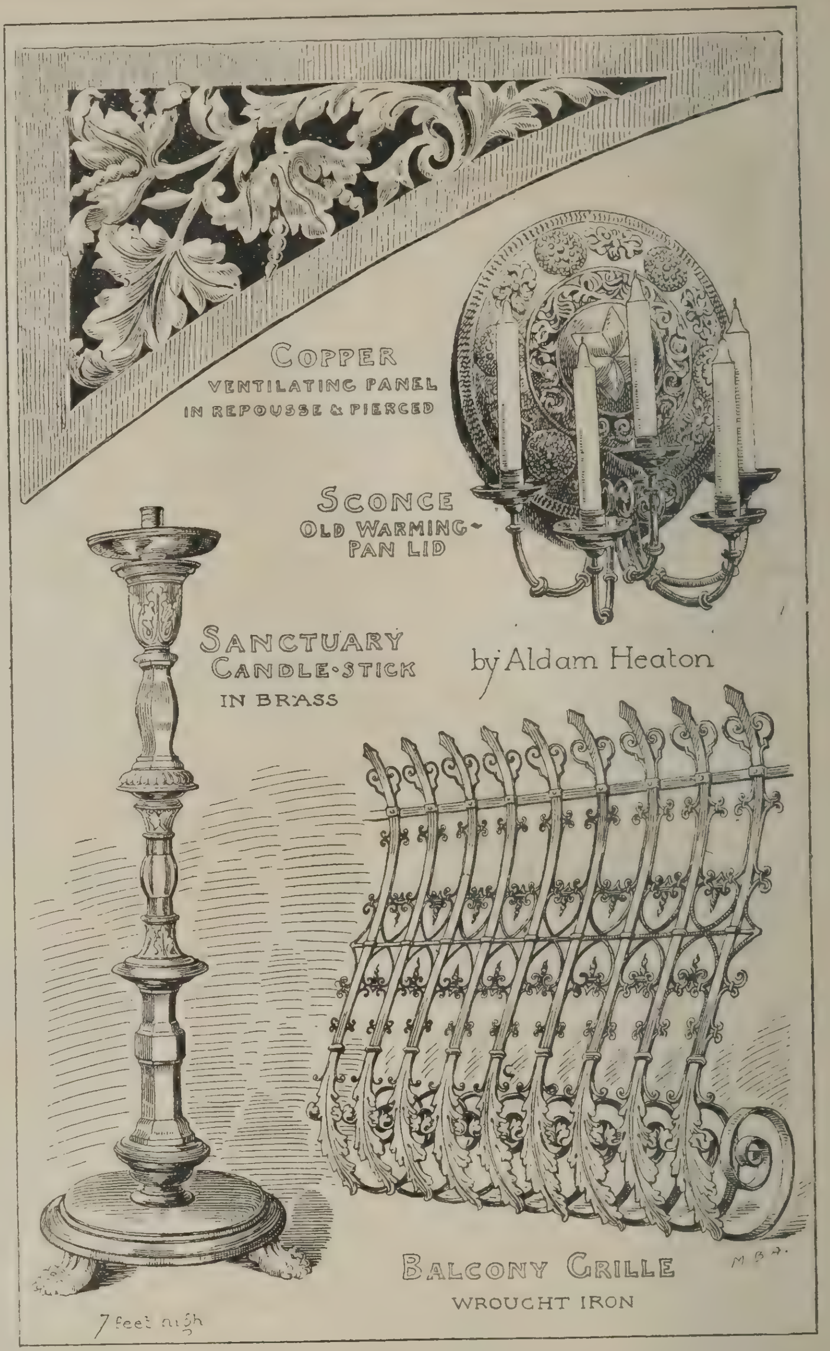
A VISIT TO ALDAM HEATON'S ATELIER.

[WITH ILLUSTRATIONS.]

FOR many years, in two large but distinctly unassuming houses in Bloomsbury, situate at the corner of Charlotte-street, and close by the British Museum, a considerable amount of first-rate decorative work of all kinds has been produced, much of it—by which Mr. Aldam Heaton no doubt established his reputation—being connected with the furnishing and enrichment of several charming mansions and country houses which Mr. R. Norman Shaw has erected in various parts of the kingdom. A private atelier of this kind, distinguished for handicraft of the highest class only, cannot compare, and, indeed, is not intended to compete, with either the character or quantity of work turned out by any of those vast Metropolitan emporiums and wholesale manufactories where artificers are employed in great numbers, and big contracts constitute the bulk of the business done. Personal individuality of style and artistic quality, by the very nature of things, can only be insured where the presiding craftsman and designer is intimately associated with every department of his workshops wherein he has created a school of workers, all of whose capabilities are as familiar to him as the members of his own family. Such an establishment, as

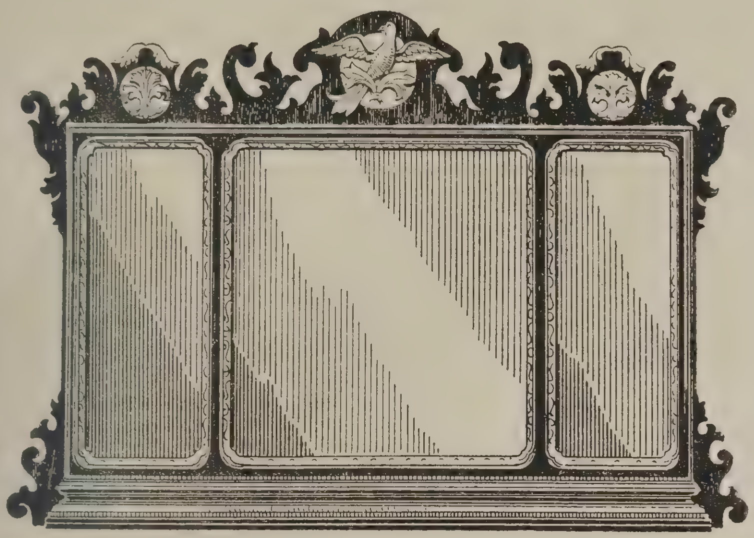

CABINET IN BRONZY GREEN & GESSO ORNAMENT
BEDROOM CHAIR OF FRENCH ORIGIN
by Aldam Heaton
MBA


CHINA BRACKET IN WALNUT AND OLD LEATHER
by Aldam Heaton
M.B.A. 94

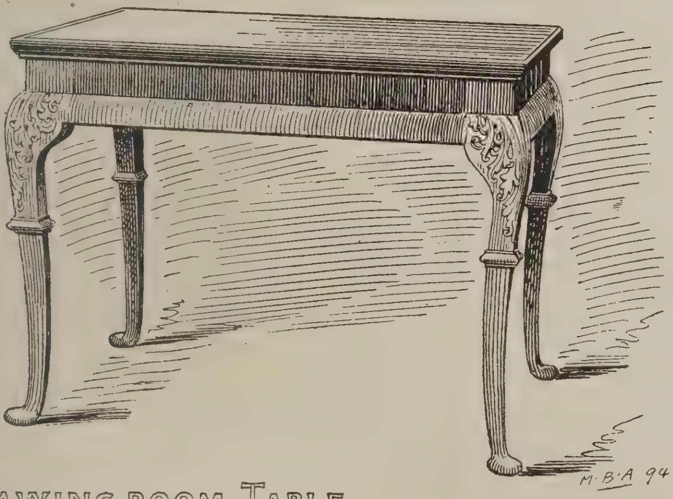


might be expected, presents much that is special in its way and very well worthy of description, so that we propose to place before our readers a brief illustrated account of a recent visit made to Mr. Heaton's studios, where we saw in progress a very varied and most interesting class of work going on. The object of the interview was entirely a practical one, and as such we will confine our notes to the particular points which give so distinct a character to the work which he undertakes. His well-lighted and commodious gallery to the rear of the Charlotte-street premises is a veritable museum of old and new furniture, chiefly old English, and the walls and ceiling of this saloon are decorated in sections to exhibit the usual methods adopted by Mr. Heaton for the treatment of big drawing-rooms and other apartments, and introducing some of the stencil work represented by one of our plates to-day.

The difficulty which all furniture designers must have experienced in producing a satisfactory dining-room ordinary chair is not likely to be forgotten by those who have tried to work out an original design, and probably the task of selecting one is only second in its degree of difficulty. Strength and grace of line, coupled with moderate weight and no undue bulk of scale, are among the conditions of the problem. For small dining-rooms the typical Chippendale or Sheraton chair is too large, and reduced copies look pimping. The gathering of chairs to which Mr. Heaton has given so much thought, when viewed with such considerations as these in mind, certainly leave little to be desired. We noted, too, a feature about most of them which generally is overlooked, and that is the treatment of their back legs, which are finished off with as much care and grace as the front ones. The "Yeoman" chairs, with softly-toned groupings of flowers in marquetry adapted from an old Dutch clock-case, and introduced in the shaped back-piece, and having stamped leather seats patterned with roses by Lethaby, may be named; and the "John Anderson" double armchairs are deservedly favourites. Crocodile skin for seats has the advantage over ordinary leather, for the reason that scratches or stains do not show so readily upon it. The mahogany oval five-o'clock tea-tables, which certainly are pretty, and made in two stages, are contrived to permit refreshments being taken with comfort in the drawing-room by keeping the table-top only 2ft. high. The half "Empire" seats, after Napoleon I.'s favourite chair from the Grand Trianon, like Norman Shaw's "As You Like It" chairs, furnish a room with comfort, and a small series of little walnut sofas covered with French printed jute, or all-wool challis, add grace and ease to any apartment. The sides and edges are covered with plain material, the upper parts only being patterned. The armchairs, which are upholstered with Yorkshire cloth, or mohair satin, specially made for Mr. Heaton, have the arms and headpiece in all cases covered with Utrecht velvet, finished off with sewing-silk fringe. By this means wear is resisted, and. besides, a rich, handsome effect is obtained. We illustrate among our marginal sketches a specimen of the stained-pine and polished furniture, which works out uncommonly well with gesso and gilded foliations, conceived after the fashion of old lacquer patternings in Dutch work. The gesso medium is only used for the bolder parts of the foliage and flowerings, and when dry, the girls who paint them on the wood complete the designs straight away in gold-dust mixed with size. Green stains usually are employed; but a splendid red is obtained by French Hordoré lacquer stain, which, however, is as expensive as good port wine. We have a note of a walnut octagonal table with eight legs, united below by a sort of Flamboyant treatment of rails, prettily moulded and traceried, suitable for a drawing-room or library bay. The Tarsia panels in Zaracotta wood from New Zealand, and inlaid with Spanish olive, suggestive of some designs in the Bargello at Florence, are intended for a dining-car carriage, built by the London and North-Western Railway; and we noticed also some similar exquisite marquetry for the saloon of one of the White Star liners done in walnut with no dyed woods whatever. A great variety of hanging brackets, pier-glasses, and swinging mirrors are grouped about this gallery; and in the next we were much interested in a series of plaster frieze designs, one of which, based upon a pattern enlarged by Mr. Norman Shaw from an old silver bowl, we remember seeing in that Royal Academician's own drawing-room at Hampstead. The chimney-pieces, made in wood, which surround this ante-chamber show off to advantage some choice tiles, made by Mr. De Morgan, to fit their openings. Passing upstairs, we saw the stained and painted-glass studio, where some Gothic-shaped and domed skylights were in progress for the saloons of ships, and a series of exquisite figures for some windows illustrating English poets and authors. In the top ceiling lights Bohemian cut-glass prisms are used, with opalescent whites and "glue-glass," as it is called, insuring a pretty and jewel-like effect. This "glue-glass" is sufficiently obscure to prevent objects being seen through it without obstructing the light, and as it assumes the utmost variety of patterning after the suggestion of fern-leaves or hoar-frost shapings, the ugly monotony of machine-made obscured glass is avoided. The surface is obtained on plate or sheet-glass by painting the ground surface on one side of the glass with glue, and submitting it to the heat of about 90°, when the expansion and contraction between the two materials causes the face to come off, producing very often the most beautiful markings. "Crocodile" glass is produced by water in a similar way, but the skin-like pattern which gives the glass its name, causes splinters of glass to remain adhering to the face of the sheets, rendering it necessary to keep that side well out of reach. Mr. Heaton runs his own leads, fires his work, and completes it all on the spot under his own supervision, the designs in every case being made and executed on the premises. In the adjoining workshops his stencilled papers are made, producing a wonderful diversity of design and colour, combined with a delicate softness. Thus, instead of having the ornament on the walls of a room all of one uniform intensity and definition, no two lengths of paper exactly correspond. The stencils are cut out of cartridge-paper and soaked in japanner's oil size and backed with linen, so as to become perfectly durable, but in the cases of very large patterns metal stencils are employed. Large flat brushes are used by the artists who dab and rub the oil colour on from a big palette, on which several shades and pigments are ready mixed. It is quite impossible to give an adequate idea of the beauty of the decoration often thus obtained, as it were by chance, in this simple way. An all-over ground paper is used, and the powderings of flowers are diversified at the will of the artist. In some, two-widths of stencil foliation is used, reaching in one growing pattern-scroll from skirting to cornice, and so alternating all round the room. In the ceilings and figure-stencilled panels, the work is finished off with the brush by hand. Mr. Heaton is now in this way decorating the Wellington Assembly Rooms, at Liverpool, with stencilled papers. His 10-flock "Abinger" pattern ceiling-paper as used at the Alliance Insurance Offices, Bartholomew-lane, E.C., produces a most handsome appearance, and is without doubt one of the finest productions of its kind. His four-flock "Calavass" paper is both large



PIER GLASS A LA CHIPPENDALE by Aldam Heaton



DRAWINGROOM TABLE IN MAHOGANY

and handsome, a perfect sunset effect being insured by the apricot tone and pale coral red rendering, which is well suited for a cool drawing-room. The "Ducal Palace" ceiling-paper also attracted our attention; but most of all Mr. Heaton has scored with artistic advantage by introducing clear pigments in wall-paper printing, so that the chalky, dead, heavy colourings common to most other papers is avoided, and he has carried out the same idea in painting woodwork, using no white-lead for the finishing coats of colour. By this means, employing clear colours mixed with varnish, and the stipple brush and comb, a singularly transparent richness is insured, besides a splendid wear-resisting surface devoid of all chalky dulness. Mr. Heaton's poker-work, done by young ladies, is executed with a platinum tool kept red-hot by an ether petroleum bellows, very easily manipulated, and the design is generally burnt into sycamore or bass-wood panels for friezes or fascias, &c. Brass and copper *repoussé* work, by lady artists, is made a great feature of by Mr. Heaton for bowls and dishes, as well as for grilles and panels; and wrought-iron work is included in his undertakings. We give a sketch of a balcony front from his design, and a *repoussé* ventilating panel. On the same sheet is a drawing of a 7ft. brass sanctuary candlestick, lately designed and made by him. His original speciality continues to be his strong point—viz., the weaver's art, and this, coupled with purpose-made carpets and with needlework, has been greatly developed of late years in the way of fabrics for curtains and short running blinds in Taffeta or in natural and coloured Shantung silks. The French "Habillement des Troupes" alone imported by Mr. Heaton, makes grand curtains, in excellent red, and his Yorkshire moreen, made of Russian wool, is a beautiful material. The Kelim Cloth, in imitation of the Oriental, as well as his thick blind "Camlet," are made by Mr. Heaton in Yorkshire. Khiva and genuine Eastern Kelims, and other tent coverings of Oriental make, as well as picturesque "Palampores" from India are much used as edgings and borderings for curtains, with good effect. The accompanying sketches of diverse work sufficiently explain themselves, and the subjects were chosen for their typical character. The old Stewart warming-pan lid sconce shows a disused piece of repoussé put to good purpose. The illustrations of the "Poker work" are photographed direct from two samples, and the wall-panel in Gesso on Singapore matting is from a cartoon, so the texture of the material is not shown on the plate. The stencilled paper ceiling decoration is represented with part of a general design, and the figure-panels to a larger scale in detail.

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THE A.A. CONVERSAZIONE.

THE forty-eighth session of the Architectural Association was inaugurated on Friday evening by a conversazione given at the Queen's Hall, Langham-place, W., and was numerously attended by members and lady visitors. The body of the hall was cleared of seats and rearranged as a drawing-room, lounges being interspersed with screens for the display of various exhibits, while a profusion of flowers and foliage plants added to the brightness of the effect. A reception was held by the President (Mr. E. W. Mountford) and the Committee, and from the orchestra a full programme of vocal and instrumental music was performed by members of the Rebec Orchestral Society, conducted by Mr. W. Horsey, lightness and variety being introduced into the performance by the members of the Pierrot Banjo Team, three in number. On the walls beneath the gallery were hung the students' prize and other drawings executed in the Marlborough-street studio, and a numerous display of architectural photographs by members of the A.A. Camera Club, chiefly mementoes of visits made to Ely, Canterbury, and Croydon; the lion's share was provided by Mr. E. W. M. Wonnacott, but Mr. F. R. Taylor, the hon. secretary to the club, also sent a good many, and among the other contributors of good work was Mr. George Fleetwood. An interesting exhibit of allied character was the photographs taken during the recent A.A. excursion to Wells by the late Mr. John L. Robinson, R.H.A., a special feature being a complete series of 15 photographic groups of each excursion-party, from that to Kettering in 1882 to the present time. These portrait assemblages, ranged in triple line along a wall, attracted much attention, showing the great changes that have gradually come over the *personnel* of the party, and also evidencing a steady improvement, from a technical standpoint, as photographs; but it was not imagined by anyone of those who scanned the groups that the gifted and genial "hon. photographer to the Association" and ex-president of the Camera Club had that evening passed away, and that consequently the series then brought together for the first time was also completed. On one of the screens was hung a number of water-colour drawings made by Mr. R. Phené Spiers, F.S.A., during a recent visit to Rothenburg and neighbourhood, and Mr. J. W. Singer, of Frome, lent a collection of half-a-dozen old processional crosses in brass and copper. Messrs. Jeffrey and Co., of Essex-road, showed a number of wall-papers, designed by Mr. Walter Crane, Mr. Heywood Sumner, and Mr. S. Webb; and other fresh patterns in wall-hangings were exhibited by Messrs. Essex and Co., Messrs. Haywood and Sons, and Messrs. Percy Heffer and Co. Cabinets, mantelpieces, and other decorative furniture were contributed by Messrs. Collinson and Lock, and Messrs. S. J. Waring and Sons, the successors to Messrs. C. Hindley and Sons; while Messrs. Turberville Smith and Co. lent a number of carpets, the Graisland Block Printing Co. showed examples of their work executed on silk, tussore, linen, and cotton-plush, and Messrs. Watts and Co. had on view a selection of specimens of, and photographs from, church metal work and embroidery designed by Mr. G. F. Bodley, A.R.A., Mr. J. L. Davenport, and other artists.

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THE SOCIETY OF PORTRAIT-PAINTERS.

THE fourth exhibition of this society, on view at the New Gallery, Regent-street, contains a fairly representative collection of portraits by well-known living painters in this branch. In style and treatment the visitor will notice much diversity. He will see the carefully-painted conventional portrait, treated after the best traditions of Reynolds and Gainsborough; the semi-dramatic or theatrical presentment, in which action is represented; the allegorical, the naturalistic, and impressionist manners. Several important portraits are sent by J. J. Shannon, as those of Mr. Hoffman; the late "Henry Vigne, Esq., Master of the Epping Harriers" (35), in the West Room; "Mrs. Creelman" (58), a charmingly-painted study of a lady possessing nice features upon a broken tapestry-like background; the wife of the painter (87), an effective study in the drawing and colour, the lady in large hat relieved by a green background, in the North Room; a characteristic portrait of "Signor Rosetti" (116) and one of "Mrs. Burnet" (112), a pretty face, with bright eyes, in a low-cut silk dress trimmed with pink, a seated and graceful study, in the South Room. The latter picture is full of expression, and delicate in the handling. The "Earl of Radnor" (99) is another portrait. Percy Bigland contributes four subjects, all of interest. His standing figure, "Imrati" (5), in light-green drapery, is a graceful study of a lady, and the portrait of "R. D. M. Littler, C.B., Q.C." (89) a carefully-painted subject. G. F. Watts, R.A., has also four pictures. No. 7, "Mrs. Percy Wyndham," is a full-length portrait of that lady, represented against a balustrade backed by foliage, strong in colour and not lacking in dignity and grace. "Miss Fenwick" (105), "Sir Henry Taylor" (110), and "Mrs. Cameron" (145), in the South Room, are also good examples of this master's work, boldly handled and massive in tone. In the West Room, Mouat Loudan, a rising painter of children, of considerable power, has a clever portrait study (9) of a young lady in browns of a neutral shade, and a very pleasing child-study, "Celia" (32)—a little girl in white frock, with expressive blue eyes looking straight out of the picture, simple and childlike. In the West Room also is a large picture, "Portrait of Mrs. William Duncombe" (20), by A. Stuart W. Wortley, a lady in rich plum-coloured velvet, partly kneeling against the back of an arm-chair by the side of a grand piano, her music-books lying on the floor. Mr. Wortley has painted his subject with a certain dramatic power; the deep tones of the velvet dress and the surrounding adjuncts are in strict harmony and depth of tone. His portrait of "Mrs. Cayley" (34) is another clever study in brown. In the North Room are two other portraits of ladies by the same hand. A very graceful standing, full-length figure is H. J. Hudson's "The Hon. Mrs. Alex. Stewart" (23), who is represented standing before a palm. This picture, in its delicacy and grace of tone, contrasts strongly with the next subject, the Hon. John Collier's portrait of a stout lady, seated, in light-grey silk dress, knitting, with a screen background. E. A. Walton's portrait of his wife is a noticeable contribution. It is rather a subject-study in tones than one of simple portraiture; the lady, a trim, small-featured woman, sits at the end of a couch, dressed in black—a quaint-like treatment. The background is grey. "Lady Gorell Barnes," by W. Llewellyn, in green velvet, is a stately figure. John Lavery has a full-length portrait of "Mrs. Fitzroy Bell" (27), and the contribution of J. H. Lorimer (28), a child in yellow and brown, is quaint and demure. The portrait of "Herman Herkomer," a youth, by Professor H. Herkomer, R.A., is worth notice for its solidity and strength, and for the carved frame which contains it. Bastien Lepage's "Mrs. Lebégne" (30) is remarkable as a specimen of the portraiture of this great French naturalist. It is a full-length study of the lady in white satin quilted underskirt, with a deep-blue robe, and is a stately figure, painted with much detail. "Miss Bertha Clay" (37), by Miss Lily Delissa Joseph, has a weird look; the wan, pale face of the young lady, with the blue figured cloak, and the woodland background take it out of the commonplace, at least. The reclining full-length portrait of "Miss Brenda Pattinson" (41), by the Hon. John Collier, is gracefully drawn; the lady's dress is a rich mauve, contrasted by a background of green wall-paper, and produces a pleasing colour harmony.

One of the most beautiful and subtle canvases in the South Room is A. Gandara's "The Princesse Chimay," which was exhibited in the Paris Salon, where it was much admired. The figure of the Princess is tall and graceful in pose; she is shown full-length standing in a dress of white satin, her face turned away in profile—a queenly figure, her auburn hair bright and rich. This fine figure, in the charming delicate satin robe of the high-waist type, is set off upon a background of purply-brown, and the painter has lavished his skill upon the refined draperies and modelling. The chief beauty of the subject is the simple lines of the flowing dress and the charm of the attire. Professor Herkomer's large and powerful canvas, too large for the merits of the subject, represents that chaming danseuse "Miss Letty Lind" in her "serpentine" dance. The whirl of skirts in rainbow colours is full of movement. Solomon J. Solomon (119) sends a very delicately toned study of "Miss Edith Cirola Loder," a dark-featured lady, set off by a primrose background. John Sargent, A.R.A., T. Graham, R. Lehmann, Mrs. Louise Jopling, Mrs. Swynnerton, and Fred Sandys contribute other clever studies of portraiture, and Prince Troubetzkoi sends the "Home Rule" Portrait of Mr. Gladstone from Downing-street sittings. The copy of the Home Rule Bill with the ex-Premier's autograph is inclosed in the frame.

CHURCH ARCHITECTURE AND DECORATION.

At the closing meeting of the Church Congress at Exeter, on Friday, an address on this subject was given by Mr. W. B. Richmond, A.R.A. It was tempting, he said, in these days, which were full of puerile as well as offensive novelties, all products or signs of decadence, to fold one's hands and watch the progress of events, and to become more and more conservative lest by chance any statement or critisism might place one within the ranks of progressive prigs. It was dangerous to allude to progress without being misunderstood to mean change. Art was a subject worthy of the consideration of these meetings, because while it had been a dependant of the Church it was once one of its buttresses. Though it was not to be apprehended that any one of his audience desired our sacred edifices to be decorated by the newest inherited ideals, it was to be presumed that they all wanted an improvement in the present state of ecclesiastical art. Nor could any cultivated audience think that our senate would be enriched or our pulpits adorned by that ridiculous, preposterous species the new woman. That would be progress towards chaos. They would like to preserve true methods of work and to weaken the strictly commercial spirit by which religious art was environed. Churches were the palaces of an invisible King, into which had flowed so affluently the highest achievements of man's creative powers. When the Church was in active union with art of all kinds those palaces of the King could be of two kinds—noble by their grave austerity, as the caves of the anchorites or the cell of St. Francis, or resplendent with silver and jewels, mosaic and marble, as the shrine of St. Mark's upon the shores of the Adriatic. There was, however, a medium below these which could not be desired—a shoddy concern, and the art by which it was maintained was of that character. Indifferently theatrical and quite ephemeral, there was a plethora of it grown as well as growing. This was a result of ignorance prompting a desire for trash, and a sign of vulgarity which demanded ornament under all circumstances. It also demonstrated a want of discrimination, so characteristic of a class which longed for "Brummagem," and adorned itself with sham jewelry and artificial flowers. The evidences of its existence were shown in a great deal of modern art, and it had crept already into ecclesiastical structures and their appointments. A commercially-turned-out reredos was erected, of a well-known pattern, bearing considerable resemblance to a Twelfth Night cake, inlaid, perhaps, with a little sugar-plum mosaic, rivalling by its tinsel brilliancy the Christmas cracker. May be some ill-carved and commonplace saints occupied niches, or an oil picture, the copy of an old master, resembling an oleograph, might depress still more the monotony and dulness of the whole design. The stained-glass window was a great fetish of the pious world, and there was a great trade for that commodity. It was of two kinds—the trade and the art window; but granting that there were a few notable exceptions, the one was pretty nearly as valueless as the other. Hundreds of both were turned out every year with machine-like precision and rapidity. In the place of robust design full of meaning and such manly work as the 12th, 13th, 14th, 15th, and even the 16th-century artists made, we were asked now to accept mawkish sentiment, weak or pretty saints, who, if they were like their portraits, would have flinched from the gridiron and become hysterical in the Roman amphitheatre. The sacred central figure of Christianity was too often misrepresented as a characterless, weak man, to whom no one would go for advice, much less worship. Let a man go to Chartres, Assissi, Santa Maria Novella, York, Tewkesbury, Rome, Verona, Oviedo, Wells, Venice, Lincoln, Exeter, and try to persuade himself that the work was designed by architects and carried out by the trade, and they would fail to be so persuaded. Or let them go on to some homely English churches before the parson and the tradesman-architect had had the temerity to pull them about and shear every particle of vitality off them. If they had lived in those days of intense life and feeling they would have seen the architect, or the master-workman—that was his proper name—employed on the building in common with his assistants, the sculptor, in reality the mason, busy revealing the treasures of his imagination, making the stones live under him, the window painters marking out lines of life and character, the painters painting their dreams directly on the walls like men. The causes of the change were manifold. Puritanical dread of idol worship had dismissed the painter and image-maker, and the opening of churches on Sunday only had rendered it useless to make them beautiful. But the forces of centralisation had narrowed the sphere of art as of religion. Painters had filled exhibitions and neglected churches. In place of sculptors were third-class carvers employed to execute from the architect's feeble reflections of Continental visits. Superficially stated, the remedies were simple—to desire the best, to know the best, to spend no money but on the best. The middle-man must be a thing of the past. The Church authorities must get into immediate and candid relation with the artists, whoever that might be. The architect, painter, and sculptor must be satisfied with moderate gains, leaving the idea of seeking a fortune to the members of the Stock Exchange, and they would be in part paid by the happiness of doing healthy work. Thus we should regain something of what we had lost. In place of feeble decoration we should have virile work. The Church would gather once more the sympathy of real artists, and she would thereby be strengthened, broadened, humanised, as well as refined.

NOTES FROM EDINBURGH.

Probably there are few large towns for which less is needed and more done in the way of providing recreation grounds than the City of Edinburgh. At all points the most central parts are within easy walking distance of urban parks or gardens, or hill scenery or country roads, and unquestionably a great deal has been done, especially in later years, to make the city healthy by bringing the advantages of country life to counteract the disadvantages of the town—with what result it is perhaps rather early to say, except that the ratio of annual mortality is always more or less decreasing. Improvement schemes have been reducing the overcrowded areas, and the drainage of the city may be considered as perfect as the condition of the public sewers and registered sanitary plumbers can make it. The Water of Leith drainage scheme is now completed, and the river flows nearly, if not quite, as free from sensible pollution as it ever did. Trout have been introduced into its lower reaches, and hopes are entertained of its becoming one of the most attractive features in the city landscape, with finely-wooded banks and a crystal stream. The weekly mortality this year has been as low as 10 per 1,000, though for one week it reached the high figure of 26, when an epidemic of smallpox was prevalent for a short period. This was the normal mortality 30 years ago, without symptoms of abating, when the population was a little under 170,000. At present, with a population of about 262,000, the normal rate of mortality is 18 per 1,000, with symptoms of decreasing. This is the evident result of several improvement schemes and greater attention to sanitary matters, and has been obtained at cost of a very large expenditure, probably about two millions. That large outlay, however, has been made without much increase in the public burdens, the rateable annual value being just about double what it was 30 years ago.

In connection with the present, which is the third of the series of great improvement schemes, instituted since the early years of the century, a beginning has been made in demolishing the high tenements forming one side of Bristo-street, opening up to view the new University hall in a way that shows its proportions and details to great advantage, besides converting a narrow thoroughfare into an open place, which will by-and-by be made ornamental to the city. For the more densely-populated district of Old Edinburgh, a scheme has been formally laid before the council for providing better housing for the working classes. Indeed, as things appear to be tending, Old Edinburgh, with its closes and pends and back courts, will soon be numbered with the things that have been, and exist only in the sketches of popular artists. Hitherto the method has been uniform. One or more closes back from the main street—i.e., the High-street, have been thrown into one, and more air and better light secured for a smaller or larger open square. The Cockburn-street improvement scheme was not intended for more than a better access to the railway centre, and the Jeffrey-street is in the same category. The improvement scheme of 1826 was similar, but all of these opened up the countless narrow lanes or closes to the light and air, and probably did more for their better ventilation than the system of making confused but larger open courts behind the main buildings of the principal thoroughfares. Long before sanitary matters were held to be important, and before the New Town provided attractions for the exodus of citizens of the wealthier class, Milner-court and James-court were built on speculation, and remain to this day. The scheme now before the council proposes to deal in similar fashion with the much larger area between the iron church and the Fishmarket-close, to the south of the High-street, and down the slope to the Cowgate. The plan proposed differs from previous schemes, inasmuch as it seeks to provide accommodation for a certain class of tenants, and draw the rental for the city's good, as well as the benefit of poorer tenants, who can afford to pay for a single room or a two-roomed house. The scheme has been subjected to slight discussion as yet, and at first sight appears to be objectionable, as providing for too large a number of tenants in large tenements—in fact, perpetuating the system of overcrowding occupants within limits not consistent with approved sanitary requirements, excluding far too much the light and air essential to city life. Of course, it would be possible, on such a good southern exposure as to site, to build healthy houses of two floors; but this arrangement is one that could not pay, and in all likelihood the plan will have to be abandoned, and the improvement take some other line of operation. At present the population of the area is extremely dense, and it is hardly worth while incurring an expenditure of £30,000 for making the change into larger but little better ventilated courts.

The council, which has taken the electric lighting into its own hands, has now completed the work of laying the cables, &c., in the principal thoroughfares of the New Town, and where it may be taken advantage of by those who can afford to use it. It has, however, a powerful rival in the incandescent gas-burner, which provides a very brilliant light at a very small consumption of gas. Nicolson-square has been lighted with these burners, and the installation is considered a success. The mantle, or burning apparatus, has been in some way recently improved, and smaller apartments can be lighted with burners, consuming only 1½c.ft. of gas per hour.

The question of additional water supply is in a fair way to be settled. After a great expenditure, without satisfactory results, in trial borings for reservoir for the Talla water, the advocates of St. Mary's Loch appear tc have been convinced that the scheme is impracticable on the score of the probable cost, both in execution and for compensation of proprietors. The Report of the Water Commission has therefore recommended the Tweed and tributaries supply as the most economical, and as providing better water. The inclusion of the Moorfoot Hills supply, by the last scheme, has not improved the city water, as it contains a very large percentage of vegetable impurities. To this cause is ascribed the frequent and rapid destruction of boilers, which become useless by the chemical action making many minute holes in the iron.

The plans for a new North Bridge are now being estimated, the piers to be constructed of sandstone and brick. Granite, it appears, can be brought in large blocks to Leith, axed or dressed, for 3s. per cube foot from Norway or Swedish quarries, or more cheaply than from Aberdeen, and in a structure requiring strength, it is the most likely material to make what should be an imperishable structure. The piers of the present bridge are said to be as sound as when built, and it is said that granite is not insensible to the chemical disintegration of a very smoky atmosphere, which Edinburgh somehow has had the credit of possessing.

BOOKS RECEIVED.

Specifications: for the Use of Surveyors, Architects, Builders, &c. By J. Leaning, F.S.I., &c. (London: Sampson Low, Marston, and Co., Ltd.)—Mr. J. Leaning, the author of "Quantity Surveying," well known as a textbook, has done useful service in republishing in book form the "Notes on Specifications" which appeared in these columns in 1893. The notes have been amplified, and made more comprehensive. The author's experience as a quantity surveyor has led him to make several suggestions of value in dealing with the several trades, and it is mainly from this point of view that the book has been written. The preliminary remarks are worth reading by all students and architects, as, for instance, as to the maintenance of the same order in all descriptions of similar things, in the use of good expressive words, and the writing of an entirely separate specification in all trades of a particular building like a conservatory, a stable, &c. The trades are dealt with in due order, and the sequence of the items and points to be observed are shown under various heads; useless model specifications are avoided, but the specimen clauses will be found of value. Mr. Leaning's work is one of the best guides to specification writing we have seen.——*American Plumbing*, by Alfred Revill, illustrated (London: The International News Company, Bream's-buildings, Chancery-lane), is a complete handbook of practical plumbing, from solder-making to high-class work. The work is well illustrated by diagrams and appliances of approved types, and the remarks on lead, solder-making, plumbing tools, joints, bends, traps, soil-pipes, closets, kitchen boilers, &c., show a practical insight. The plumbing regulations of New York are appended.——*The Practical Engineer Pocket-book and Diary*, 1895, edited by W. H. Fowler, Wh.Sci., M.Inst.M.E., &c. (John Heywood, Manchester, and Amen-corner, London), is a well-known, compact pocket-book that has been revised and enlarged. It is full of data, tables, and formulæ on every branch of mechanical engineering, and is fully illustrated. It is handsomely bound in roan, gilt edges, 1s. 6d. ——*Transactions* of the American Society of Civil Engineers for August contains several papers. "Friction Rollers" is treated by Messrs. C. J. Randall, member, and A. Marston, associate; "The Quality of Water Supplies," the "Tequixquiac Tunnel, Valley of Mexico," the "Sandrock Sewers of St. Paul, Minn.," the "Niagara Gorge," &c., with discussions.——*A History of Lancashire*, by Lieut.-Col. Henry Fishwick, F.S.A. (London: Elliot Stock, Paternoster-row), is another volume of the "Popular County Histories" published by Mr. Elliot Stock. As in the former histories we have noticed, eight of which are published, the author begins his sketch with pre-Roman Lancashire, the Roman Occupation, Roman Remains, and then proceeds to treat of the Saxon and the Dane, the Normans and Plantagenets (1066-1485), the Tudors (1485-1603), the Seventeenth Century, the Rebellion, the Eighteenth century, &c. Many interesting incidents are told, and facts are given touching the social changes and religious persecutions in this country. In Lancashire the feeling in favour of the old form of religion was very strong for a long time after the Reformation, and we read of some rather disreputable things done by the Reformed Lancashire clergy, who were foremost in their complaints against the old fasts and festivals. As a county history, Col. Fishwick's volume will be found a valuable addition to our topographical literature.

The memorial stone of St. Stephen's Presbyterian Church, Craigie, near Perth, was laid on Saturday. The plan is that of a Latin cross, with nave, aisles, transepts, and chancel, and having a tower and spire at the south-west angle over the main entrance doorway. In the mean time the transepts and tower are not to be built. Externally the architectural treatment is of the simplest character, with detail of the Early Gothic period. The estimated cost of the building is £3,500.

Operations in connection with the sewering of the borough of Stafford have already been begun by the contractor, Mr. Enoch Tempest, who is about to erect some powerful pumping machinery at the depot, with the object of draining the borough and lowering, as far as possible, the subsoil water, in order to facilitate the sewering of the Backwalls section of the work. For this purpose, sumps will be dug in various parts of the town as a preliminary step to this undertaking, and one boring has already been commenced in Eastgate-street.

The extensive Roman Catholic buildings which Father Beauclerc has been erecting at Holywell, in close proximity to St. Winefride's Well, will be ready for use on the occasion of the Feast of St. Winefride, on Sunday, the 4th prox. The large schoolroom has a total length of 75ft., is 50ft. in width and 30ft. in height, and is provided with a stage. In front will be erected a marble statue of St. Winefride, which is now being sculptured at a cost of £200. The total cost of the buildings and fittings will be about £2,000.

ARCHÆOLOGICAL.

Babylonian Antiquities and the Turkish Government.—A correspondent of the *Times* states that since the lapse of Mr. Rassam's exceptional privileges, obtained for him by the late Sir Henry Layard, which enabled him to send to the British Museum everything he found in Assyria, Babylonia, and Armenia, the Porte has persistently refused to allow the agents of foreign museums to appropriate or export any antiquities out of Turkey. Whatever is found in the excavations or obtained by purchase by such agents is taken possession of by the Turkish Government. Under these rules no fewer than 47 cases of antiquities from the American diggings and about 12,000 inscribed clay tablets of those of the French, discovered by M. Sarzac at Tel-Loh, have been appropriated and sent to Constantinople. At Sippara, or Sepharvaim (the site which was discovered by Mr. Rassam about 14 years ago), the Ottoman authorities have been carrying on lately extensive operations under the superintendence of a Latin priest. At that place a large collection of inscribed clay tablets have been found and despatched to the Turkish capital. It is believed that there must be at the present time no fewer than 50,000 newly-discovered inscribed objects at the Imperial Ottoman Museum in Constantinople, obtained from different Babylonian sites, which might add materially to the existing knowledge of the ancient history of Chaldea and Assyria. Two black basalt statues, covered with fine inscription, have lately been found by the Arabs; one at Imjaileeba, the site of the great palace of the kings of Babylon, and the other in a cave near Nimroud, on the opposite side of the Tigris, about 20 miles to the south of Mossul. These images have also been sent to Constantinople. The greatest find by Arab diggers of inscribed objects that has come to light lately was at Tel-Loh, after M. Sarzac, the French agent, left. They discovered a large chamber full of inscribed clay tablets, most of which they sold to Armenian, Syrian, and Jewish brokers for exportation to England, France, Germany, and America. Parts of the collection have already reached London and Paris, but the remainder has been seized by the Ottoman authorities at Bagdad.

CHIPS.

The master painters and decorators of the United Kingdom will hold a national convention in Manchester, on Tuesday next, Oct. 23, and following days. The object is to raise the status of the business by the founding of an institute. The proceedings include a trip to the Duke of Westminster's place at Eaton.

No fewer than 576 architects have entered the competition for the preparation of plans for the projected Paris Exhibition of 1900.

During the last two months the Highbury-quadrant Church has been closed for extensive alterations, which are now complete. The church, as now enlarged by the addition of side galleries, is one of the most spacious Nonconformist churches in London, the seating accommodation being for nearly 1,600. The organ has also been improved by the addition of new stops.

A project is on foot by which the waters of the river Kent shall be applied to the purposes of a new railway in the Lake district. It is proposed to construct an electric tram line from the Furness district to Bowness, with an auxiliary undertaking eventually carrying it on to Ambleside. A meeting has been held at Cartmel with reference to the scheme, and water rights have already been secured in order that the electric current may be generated from turbine power.

The principal door to Christ Church, Broad-street, Bristol, has just been reconstructed from the designs by Mr. Henry Wilkins, of that city, by whom the church was restored ten years since. Messrs. R. Wilkins and Sons, of Bristol, were the builders, and the carving was executed by Mr. William Smith, of Montpelier.

The boat-house of the Clifton Rowing Club, below Saltford Weir, on the Avon, which was burnt out three months ago, has just been rebuilt from designs by Mr. Frank Morris, of Bristol, in a half-timbered style. Mr. Hendy, of Kingsdown, was the contractor.

The electric railway to Snowdon is beginning to take shape. A company has been registered with a capital of £6,000 in 600 shares of £10 each, to construct a railway from Llanberis, Carnarvon, to a point near the summit of Snowdon, and to erect and carry on an hotel at or near the summit. The subscribers include F. W. Holme, Crosshall-street, Liverpool, architect, and G. Nicholson, 24, North John-street, Liverpool, contractor.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

A.A. Camera Club.—At the general meeting of the A.A. Camera Club, held on Oct. 1, 1894, Mr. George Fleetwood, F.S.I., was unanimously elected as president. The other officers and committee elected were:—Mr. E. W. M. Wonnacott, A.R.I.B.A., vice-president; Messrs. T. H. Bishop, J. P. Clark, C. H. Freeman, and R. Elsey Smith, A.R.I.B.A., committeemen; and Mr. Francis R. Taylor, hon. secretary. At this meeting the methods to be adopted by the A.A. Postal Print Exchange Club were discussed, and the first portfolio of architectural photograms was put into circulation. On Oct. 12 several photograms and lantern-slides by members of the club were exhibited at the A.A. conversazione.

Sheffield Society of Architects and Surveyors.—The members of this society held their annual conversazione at the Cutlers' Hall, Sheffield, on Thursday evening in last week, when a distinguished company of between 300 and 400 guests assembled, and witnessed the presentation of prizes to the successful students. The visitors were received by Mr. E. M. Gibbs, the president; Mr. C. Hadfield, vice-president; Mr. F. Fowler, treasurer; and Mr. C. J. Innocent, the hon. secretary. In a brief address, Mr. Gibbs, on behalf of the council and members of the society, heartily welcomed the visitors. Having referred to the exhibition of sketches and measured drawings of ancient buildings in the district, executed during the summer months by the younger associates and students of the society, Mr. Gibbs explained that the work of the society was largely educational. They carried on their work in the form of lectures and discussions on special subjects, and the formation of a library for the benefit of all the members, and in the form of classes on the study of the history and styles of architecture, sketching, designing, and surveying and levelling for the benefit of the younger members. The society was also active in matters relating to professional practice, and desired, whilst protecting the interests of the profession, to command the respect of the general public by maintaining the honour of its members and the standard of their ability to solve successfully the complex problems of modern building and surveying by combining the most perfect arrangements of plan, the best construction, and the most artistic conception and finish, with the soundest advice as to values and cost and the practical superintendence of the work. The first prize of the sketching class was awarded to Mr. Frank W. Chapman for sketches and measured drawings of parts of the churches of Ecclesfield, Whitwell, Beauchief Abbey, South Anston, and Laughton-en-le-Morthen, and other places in the neighbourhood; and the second prize to Mr. J. C. Amory Teather for drawings of the same buildings. At the close of the distribution, the guests inspected the collection of pictures of the Sheffield Society of Artists, which were on view in the drawing-room and reception-room, and afterwards listened to a musical programme rendered by Messrs. R. C. Poole, J. Mack Clark, Charles Stokes, A. Riden, R. C. Honey, William Brown, and T. A. Macaulay.

At the annual meeting of the Governors of St. Mary's Hospital, Manchester, on Monday, it was announced that the trustees of the David Lewis Fund had made a grant of £70,000, under certain conditions, which involve amalgamation with the Manchester Southern Hospital. The scheme proposed by the trust involves the building of two additional hospitals.

The new coroner's court which the Battersea Vestry have provided in Apthorpe-grove, Bride-road West, Battersea, was opened on Monday. The premises were formerly used as the offices of the surveyor to the Battersea Vestry, who has now been provided with more suitable quarters in the new Town Hall, Lavender-hill (built from Mr. E. W. Montford's designs), where all the municipal offices are now situated.

Major-General H. D. Crozier, R.E., one of the inspectors of the Local Government Board, held an inquiry on Friday at Stoke-on-Trent with respect to an application by the town council for sanction to borrow £1,500 for the purpose of public street improvements. The town clerk explained that the loan was required for the work of paving footpaths and kerbing and channelling in various parts of the borough. The borough surveyor (Mr. W. Bowen) submitted plans and estimates of the proposed works, which he explained in detail. The application was unopposed.

Engineering Notes.

Improvements in the Danube.—Mr. Percy Sanderson, British Consul-General for Roumania, reports on the improvements made in the navigation of the Lower Danube during the years 1878 to 1893 inclusive. The engineering works, which have been carried out under the superintendence of Sir Charles A. Hartley, K.C.M.G., chief engineer to the Danube Commission, are classed under three heads, viz., those on the Black Sea coast-line, those in the port of Sulina, and those in the river. The approaches to the port have been made safe by beacons, as well as by fog signals and a whistling buoy, and the south pier at Sulina has been prolonged considerably. An even depth of $20\frac{1}{2}$ft. has been maintained at the mouth of the river, and will be increased to $23\frac{1}{2}$ft. by the completion next year of parallel dams. A minimum depth of 15ft. has been obtained on the whole of the Sulina branch, while the course of the river has been shortened by six nautical miles.

Leeds.—Extensive improvements, estimated to cost £90,000, are in progress at the North Eastern new station. The area of the platforms and roofs will be doubled, and five new lines of railway provided in and about the station. The river and an offshoot of the Leeds and Liverpool Canal have to be crossed. Two new lines from the east end of the station to Call-lane are in process of construction for goods traffic. In the station itself, the main platform at the western or Holbeck end is to be lengthened 370ft., and the roof at this end will be continued another 180ft. Over the river Aire the brick archway is being extended. The east end of the station is also to be considerably enlarged. The main platform will be made much wider, and its present length increased by over 300ft., while the roof at this end will be made 280ft. longer. On the Boar-lane side of the station two new lines are in process of construction, for Scarborough and Bridlington passengers. New Station-road will be diverted and carried across in the direction of the Midland station. A new parcels office in Neville-street, north of the station, is part of the project, and also station offices in Neville-street, five stories high. The railway contractors are Messrs. Naylor Brothers, for whom Mr. Parkin is acting as superintendent engineer. For the railway company, Mr. Copperthwaite is the engineer; Mr. W. D. Rudyard, of York, being the resident engineer to superintend the practical engineering work. Mr. Green is the brickwork inspector.

Spalding.—A new bridge for the Midland and Great Northern Railway Companies, built by Messrs. Handyside and Co., of Derby and London, was on Sunday placed in position over the river Welland, at Spalding. The structure is of three steel lattice-bar girders, with a total span of about 110ft., and carries a double set of rails. It was removed from its temporary position where it had been erected into its permanent one in five minutes on Sunday. The old bridge was lifted by hydraulic jacks and moved bodily away in seven minutes. The new structure, which weighs over 200 tons, was afterwards tested by two fully-loaded engines, each weighing about 80 tons. The bridge was designed by Mr. Richard Johnson (a native of Spalding), the chief engineer of the Great Northern Railway Company, and the work was carried out under the supervision of Mr. C. A. Kirby, M.I.C.E., of Boston, the company's resident engineer for Lincolnshire.

Telpher Railway at the Devil's Dyke.—On Saturday a Telpher railway across the Devil's Dyke on the Sussex Downs was opened by the Mayor of Brighton. The track cables of the railway are carried upon a series of supports attached to a catenary cable, secured to the sides of the gorge, the structure being steadied and further strengthened by iron columns at about 200ft. from the extremities of the railway. The main cable is 1,200ft. in length, the space between the two stations about 1,100ft., while the span between the columns is 650ft. The cars are conveyed at a height of about 230ft. above the lowest point of the gorge, and are moved by an endless cable worked by a Crossley's patent $4\frac{1}{2}$H.P. oil-engine. Mr. W. J. Brewer, C.E., was the engineer, and Messrs. E. Scott Russell and Molesworth the consulting engineers, while the contract has been carried out by Messrs. Heenan and Froude, who are also erecting the Wembley Park Tower.

The Simplon Tunnel.—The Swiss Federal Council has approved in principle the project of the Jura-Simplon Railway for cutting a tunnel through the Simplon, and the contracting firms—Messrs. Brand, Brandau, and Co., of Hamburg, Sulzer Brothers, of Winterthur, and the Bank of Winterthur—have undertaken to carry out the works. The company contracts to complete the tunnel within five and a half years from the commencement of the works, and to throw it open for traffic with one track by that time. At the same time a lateral gallery is to be driven for a second tunnel and a second track. The Jura-Simplon Railway, on its part, undertakes to pay the contractors £280,000 for preparations; £1,900,000 for making the first tunnel with one track and a widening at its highest point for a crossing, as well as for the gallery of the second tunnel and cross-galleries; and £600,000 for the construction of the second tunnel, if built. The railway company has to decide within four years whether this second tunnel is to be made.

The Wrexham and Ellesmere and Wirral Railways.—During the week the directors have inspected the works of the Wrexham and Ellesmere Railway, which will be ready for opening in the course of a few months. The railway commences by a junction at Wrexham with the Wrexham, Mold, and Connah's Quay Railway, and terminates by a junction with the Cambrian Railways, near Ellesmere Station. At Wrexham a joint station will be erected. The line will be about $12\frac{1}{2}$ miles in length. The directors of the Wirral Railway have also made a tour of inspection over the works of the Wirral line, which are now in course of construction. The new railway, which will be about 14 miles in length, commences by a junction with the Manchester, Sheffield, and Lincolnshire Railway, on the north side of the Hawarden Swing Bridge, and will terminate with the Hoylake line at Bidston. The line will shorten the distance between Liverpool, Birkenhead, and North Wales very considerably; for instance, the distance from Liverpool to Connah's Quay by the existing route is $35\frac{1}{2}$ miles, and by the new line $15\frac{1}{2}$ miles, or a saving of 20 miles. These two railways, the Wirral and the Wrexham and Ellesmere, are the only remaining links necessary for the completion of the through route sanctioned by the Welsh Railways Through Traffic Act, 1889. The Wirral Line will be ready for opening next year.

CHIPS.

A disastrous fire, in the course of which the church of St. Simon and St. Jude, Granby-row, was partially destroyed, as well as the packing-case works of Messrs. Roebuck, occurred in Manchester on Friday morning.

By a bare majority (22 votes to 21) the London School Board decided, at their last meeting, to reckon in future the accommodation of new infants' schools on a basis of 9sq.ft. per scholar, instead of 8sq.ft., as at present.

The ceremony of stone-laying in connection with a Primitive Methodist Chapel in Station-street, Ashbourn, took place on Wednesday week. Mr. Henry Harper, of Nottingham, is the architect, and the contract, for £1,465, has been let to Mr. Vickers, of the same place. The new building is to accommodate 400 persons.

A new church in Roundhay-road, Leeds, erected as a memorial to the late Dr. Woodford, Bishop of Ely (formerly vicar of Leeds), and dedicated to St. Aidan, was on Saturday consecrated by the Bishop of Richmond. The edifice, situated in a populous and rapidly growing suburb, is a red brick structure in the Roman Basilica style of architecture, and has accommodation for 1,000 worshippers. It has cost about £15,000.

The local board of New Swindon have adopted plans by Mr. J. E. Marsh, of Bath, for a bridge over the Wilts and Berks Canal and Regent-street.

Sir George Verdon has purchased for the Melbourne Art Gallery David Roberts's picture of the "Interior of St. Anne's Church at Bruges," the price paid being £525.

The foundation stone of a new church at Clydach Vale, a populous mining district in the Rhondda, was laid on Tuesday week. The church, which will be dedicated to St. Thomas, will cost about £3,000. There will be accommodation for 450, with a schoolroom underneath for 300 children. The architect is Mr. E. M. Bruce-Vaughan, Cardiff, and the contractors are Messrs. Hatherley and Carr, of Bristol.

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ILLUSTRATIONS.

PUBLIC OFFICES AND PUBLIC LIBRARY AT BARKING.—ASTON HALL.—DECORATIVE WORKS, BY MR. J. ALDAM HEATON.—STAIRCASE IN HOUSE AT BERLIN.—HOUSE AT WOODLEY, CHESHIRE.

Our Illustrations.

NEW PUBLIC BUILDINGS, BARKING.

This block of public buildings, which was opened yesterday by Mr. J. Passmore Edwards, has been recently erected in East-street, Barking, by the local board for the purpose of public offices, public library, and technical rooms. The building consists of a central block with a wing on either side. The ground and first floors of the wing to the left of the building will form the lending library and reading-room respectively. The basement floor of this wing and the rooms formed in the roof over the whole building will constitute the technical classrooms; the remainder of the building will form the local board offices. The fronts of the building are faced with pressed red bricks relieved with Monk's Park stone; the roof is covered with Westmoreland green slates, and surmounted with a turret containing a striking clock with illuminated dials. A wide, open area surrounds the front and one end, admitting ample light and air to the basement floor. The stone mullion windows are glazed with plate-glass below the transoms, and leaded lights of antique glass in geometrical patterns above same. The staircases throughout are of concrete; the floors of entrance hall, corridors, and landings are of fireproof construction and paved with marble mosaic, the walls of which are lined to a height of 6ft. with embossed glazed tiles to form dado. The accommodation provided for the local board offices is as follows:—Basement floor: drawing office, strong room, and caretaker's apartments; ground floor: general offices, clerk's, surveyor's, nuisance inspector, and collectors' offices; first floor: board, committeee, and rate rooms. The building generally has been arranged for a large public hall to be built at the back, a space being reserved for this purpose. Other buildings on the same site have also been erected by the local board, consisting of fire station, public mortuary, stables, cart-sheds, and foreman's house. The contract price for the whole of the buildings is £12,738. The contractors are Messrs. Kirk and Randall, of Woolwich, and the architect Mr. C. J. Dawson, F.R.I.B.A., surveyor to the board.

ASTON HALL.

The illustration, which will be found amongst this week's plates, is a reproduction from a wash drawing by Mr. Ernest C. Bewlay. It was submitted by him in our competition for the "Picturesque Rendering of Architectural Subjects," and obtained a consolation prize. Aston Hall is situated in the parish of Aston, a suburb of Birmingham. Sir Thos. Holt, whose family had long dwelt in this parish, inclosed the park, and began to build the present hall in 1618; it was completed in 1635. Dugdale, who saw it when new, speaks of it as "a noble fabric, which for beauty and state much exceeded any in those parts." It underwent a three-days' siege by the Commonwealth forces, and suffered to some extent, the marks of many of the cannon-shot being still very evident. The arcade shown in the illustration is at the N.W. angle, and was added shortly after the completion of the main structure. The hall became the property of the Birmingham Corporation in 1864, and is now used as a museum. We published a general view of the front in the Building News for Sept. 27, 1889, in which number a more detailed description may be found.

MR. ALDAM HEATON'S ATELIER.

(Further illustrations accompany the descriptive article on pp. 529-531.)

STAIRCASE IN HOUSE, XXV. KURFUERSTENDAMM, BERLIN.

An exceedingly comprehensive collection of detail drawings, with plans, elevations, and sections, in illustration of the internal treatment of houses, commercial premises, and public buildings in Germany, has just been completed, under the direction of Messrs. Cremer and Wolffenstein, by Mr. Ernst Wasmuth, the well-known architectural publisher, of Markgrafenstrasse, Berlin. The title of this practical work, which is issued in a series of folios containing 200 plates, is "Der Innere Ausbau Sammlung Ausgeführter Arbeiten aus Allen Zweigen des Baugewerbes," which indicates pretty clearly the character of the book. We cannot do better than exhibit exactly the style of work represented within its pages by reproducing, to rather a reduced scale, one of the plates, which we have chosen because of its suggestive design, besides on account of the typical methods which the drawing so well illustrates. Its subject is a staircase, carried out by Messrs. H. and A. Mittag, the builders, of a private house, No. 25, Kurfuerstendamm, Berlin, which they erected, with others, from the plans of Mr. Alfred Messel, architect, whose work bears investigation, both for its originality and suitability of scale. Among so many varied and multifarious an assemblage of working drawings illustrative of modern German architecture, there, of course, is much which scarcely commands admiration from English taste, though few can fail to gather ideas of value from most of the designs thus brought together in so attractive a form and to so ample a size, showing how thoroughly the work is executed as well as carefully conceived. All kinds of internal fitments are shown from hotels, restaurants, theatres, business showrooms, libraries, salons, and private dwellings. Plasterwork, metal-work, joinery in ceilings, chimney-pieces, doors, windows, and panellings, glazings and painted decorations, form the bulk of the subjects represented. Many excellent collotype plates from photographs enhance the utility and artistic appearance of the publication. The plates measure 12½in. by 19in.

HOUSE AT WOODLEY.

This small country house is being built at Woodley, Cheshire, for Mrs. Salmon, from designs by Messrs. Charles Clegg and Son, architects, Manchester. The lower portion is in rubble stonework, the stone being quarried in the district. The upper portions are of half-timber work in the Kentish style, with the roof covered with brown tiles, the wall tiles being red. Mr. S. Megarity is the builder.

Sir Richard Webster presided on Monday, in the dining-hall of the Royal National Hospital for Consumption at Ventnor, on the occasion of the unveiling, by his sister, Miss Webster, of a portrait of the founder, Dr. Arthur Hill Hassall, from the brush of Mr. Lance Calkin.

A new gas-holder erected by the Bristol Gas Company at Barton Hill was opened last (Thursday) evening. The tank, which has been constructed of Pennant stone, is 222ft. 6in. in diameter, and about 50ft. in depth. The gas-holder, which is of steel, is one of the largest in the provinces, and is capable of storing five and a-half million cubic feet of gas; it is 150ft. in height, and is in three lifts. Messrs. Aird and Sons, of Lambeth, were the contractors.

Trinity College, Glenalmond, situated on the banks of the Almond, about ten miles from Perth, was greatly injured by fire on Monday. The Prefect Common-room, together with the masters' sitting-room and the janitor's offices on the ground floor, a museum, and several sleeping-rooms on the second floor, and a large dormitory on the next floor, were destroyed. The damage is estimated at £5,000.

COMPETITIONS.

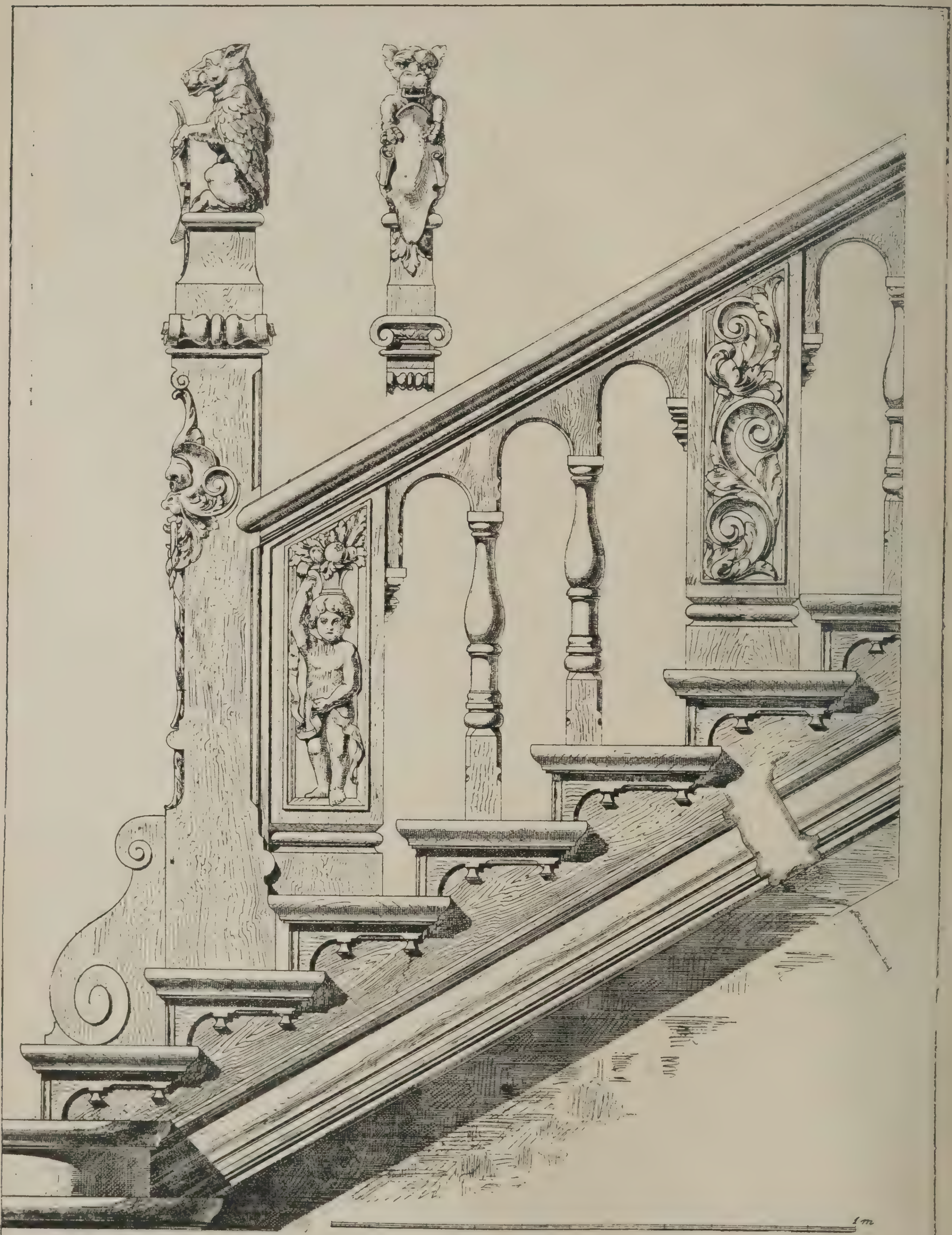
Bristol.—A special meeting of the Bristol Finance Committee has been held with reference to the laying out of the roads and open space above St. Augustine's Bridge. The city council recently instructed the finance committee to advertise for plans, and to offer premiums for designs for dealing with the space. "None of the designs sent in," says a local journal, "seemed quite to answer the expectation of the committee, and consequently Mr. Yabbicom, the assistant borough engineer, was asked to prepare plans, which he accordingly did." The plans first submitted were referred back for amendment, and the amended plans were submitted to the committee at their last meeting. In the revised scheme, Mr. Yabbicom proposes that a portion of the space should be thrown into the roadway at St. Augustine's Bridge, giving a total width of 160ft., and thus opening up a thoroughfare for vehicular traffic from Baldwin-street and Clare-street to Colston-street and College-green. With regard to the laying out of the open space, the proposal is that there shall be a central promenade 40ft. wide, laid with asphalte or impervious paving, and a gravel walk on each side 20ft. in width and edged with trees. The estimated cost of laying out the space as suggested would be about £1,300, and if the scheme were carried out in its entirety, including the alteration of the roadways and laying the new thoroughfares with wood pavement, the cost would be about £8,500. So far as the roads were concerned, the committee decided to accept the plans of Mr. Yabbicom, and to recommend the council to deal with the roads in the manner suggested; but as there was a difference of opinion as to the method of laying out the open space, that part of the scheme will not be reported upon at the next meeting of the council.

The Cripplegate Institute.—The governing body of the new Cripplegate Institute met, says the *City Press*, at the Quest House, Fore-street, on Tuesday in last week, to open tenders for the erection of the building. The scheme provides for the expenditure of £20,000 on the construction of the building, and certain selected firms were invited to submit tenders in accordance with the plans and specifications drawn by Mr. S. R. J. Smith, F.R.I.B.A., the architect whose designs were adjudged by Mr. Macvicar Anderson to be the best submitted in competition. These plans had been approved by the Charity Commissioners, and it was stated that a building such as that proposed could be erected at a cost not exceeding the stipulated sum. When the tenders were opened, however, it was found that the lowest tender was more than £7,000 above the sum mentioned. In these circumstances no tender was accepted, as the governing body found themselves in a dilemma. The matter is now under consideration, and it is not at present known what course will be adopted. It may be that the extra money required could be raised by subscription; but it is questionable whether such a proceeding would be regarded as fair to the other competing architects who were asked to furnish designs for a building not to exceed £20,000, and who, in the event of success, were to receive a commission of 4 per cent. upon that amount. In any case, the commencement of building operations will necessarily be delayed.

Dudley.—At the meeting of the School Board on Monday, the chairman reported that thirty-seven plans of the proposed new schools at Eve Hill had been sent in for competition. The selection ultimately lay between those prepared by the following architects:—Messrs. R. F. Matthews, Birmingham; A. Long, West Bromwich; F. Grazebrooke, Dudley; and A. Ramsell, Dudley. On the recommendation of the building committee, the Board accepted the plans of Mr. R. F. Matthews, Birmingham, on condition that the cost does not exceed the amount specified.

Mr. Bunting has been appointed borough surveyor of Maidstone, at a salary of £200 a year, and Mr. Grant has been appointed assistant surveyor to the same authority.

A new Roman Catholic church at Harrow was dedicated on Tuesday. It has been built from designs by Mr. Arthur Young, and is dedicated to Our Lady and St. Thomas of Canterbury. The style is Late Decorated, carried out in masonry, and there is a low battlemented tower crowned by a dwarf spire at the intersection of nave, chancel, and transepts. Messrs. Turner and Son, of Watford, were the builders.



STAIRCASE IN HOUSE AT·25·KURFUERSTENDEM BERLIN ALFRED·MESSEL·ARCHT

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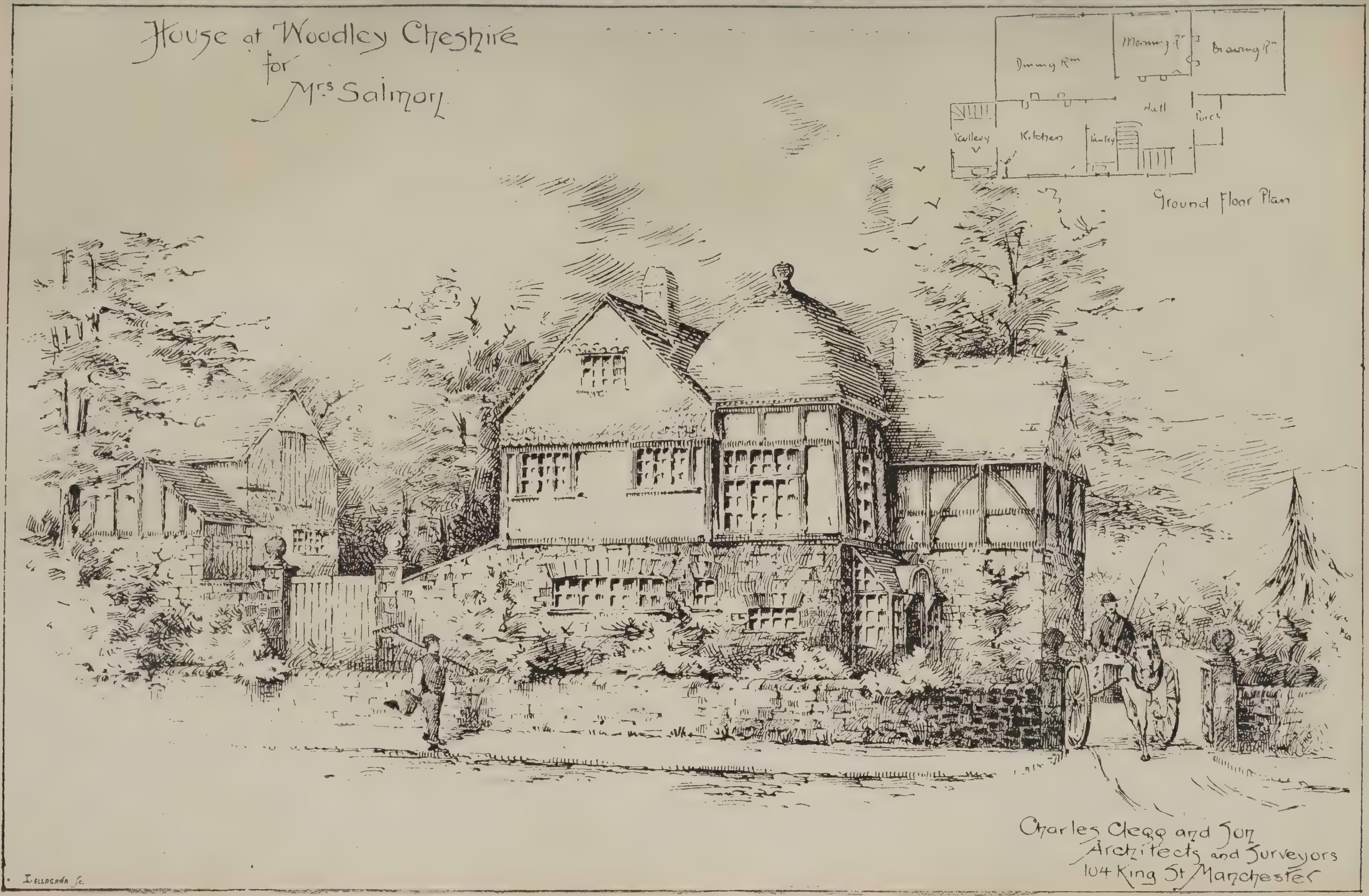

House at Woodley Cheshire
for
Mrs Salmon

Charles Clegg and Son
Architects and Surveyors
104 King St Manchester

Dellagana Sc.

WAYSIDE NOTES.

All who are really interested in the welfare of architecture should attend the closing sessional meeting of the Society of Architects at St. James's Hall next Tuesday week. The report of the council on the membership examination question will be submitted to that meeting, and I hope the recommendations of the council will, after suitable discussion, be unanimously adopted. After duly consulting the members, who appear to be unanimously in favour of the proposed changes, the council recommend that after October 31, 1896, election to membership will only be open to candidates who have passed the Society's examinations, a scheme for which is to be formulated by June 30, 1895. The exceptions to this rule are to be candidates over 35 years of age who have been directly engaged as principals for seven years, or as assistants for ten years.

I think it would have been better if no exceptions at all had been made; but the council have doubtless carefully considered the matter, and there *may* be reasons for the conclusion at which they have arrived, though I confess they seem all the other way to me. I don't see why able young men should submit to examination when if they wait till middle life they can slip in comfortably by a back door, and I trust these exceptions are destined to last but a very little while. In all else I wish the new examination scheme of the Society the most complete success. The council's provision for the enrolment of registered students is also an admirable one. For five shillings a year the student can enjoy all the privileges of ordinary membership till his 23rd year, when it is to be hoped he will duly pass his examination and become a full member. If the scheme succeeds—and I think it is bound to—we shall get the best features of the Institute and the Association combined under one roof at the Society of Architects, without the obvious drawbacks that of late years have diminished the popularity of the other two bodies.

A young foreign articled pupil, who knew English very imperfectly, according to the *Daily Telegraph*, was sent out to purchase sixpennyworth of drawing pins, of which the supply in the office had unexpectedly fallen short. He knew very well that in his own language a drawing-pin is known, among architects at any rate, as a "punaise," but not being quite sure of the English equivalent he determined to look up the office dictionary, where the only explanation given was "a bug." So he entered the shop of a bookseller and stationer in Holborn—was it Batsford's, I wonder?—and in broken English demanded "sixpennyworth of bugs." The astonished elderly gentleman behind the counter looked at him—you can all just picture to yourselves how Batsford senior would look—and replied, "We don't keep them here." Either the budding architect did not understand, or thought the shopkeeper was joking, for he commenced to vociferate and gesticulate "I 'av been send for 'em; you 'av' 'em; it is necessary for me to 'av' 'em—sixpennyworth of 'em, tout-de-suite." The shopkeeper thought he really had to do with a person out of his senses, and cautiously slipped along the counter into the wooden office, shut the door, and then again cried, "Go away; we don't keep them," followed by a summons for help. The bewildered foreigner went away, and narrated his experience to his colleagues in the office, who spent the remainder of the afternoon in laughter. He now knows that a "punaise" for a drawing-board is quite a different thing from the other.

The legality of rood-lofts in churches is once more before the Ecclesiastical Courts. The Chancellor of the Diocese of Norwich has held a Consistory Court to hear an application to grant a confirmatory faculty for a choir screen, rood-loft, and rood-beam in the Church of St. John, Timberhill. Sir Walter Phillimore contended that the Crucifixion was no more illegal as an historic representation than the Ascension or any other Biblical scene. The Chancellor inquired whether, as a matter of fact, all rood-lofts had not been destroyed, and Sir Walter Phillimore, in admitting this, pointed out that, not only had superstitious images been removed, but all images "except those of persons who were not saintly." The statute of Edward was repealed in Mary's reign, and not re-enacted under Elizabeth, and the test now was, not whether images or crosses were legal or illegal, but whether they were liable to be abused. The case of Bradford v. Fry, with regard to the chancel gates, was also discussed, and, after listening all day to the arguments of counsel in support of the faculty, there being no opposition from anyone in the parish or diocese, the Chancellor stated that, after such an array of authorities, he should reserve his judgment.

Continued success deservedly attends the Auctioneers' Benevolent Fund, of which the annual meeting was held on Monday in the Auction Mart, Tokenhouse-yard, under the presidency of Mr. Daniel Watney. The subscriptions during the past twelve months had exceeded those of any previous year, the amount being £322, as against £303 received in 1893. Seven persons had received assistance during the year, and the sum of £242 had been paid to twelve annuitants. The suggestion of Mr. Price that honorary secretaries to the fund should be appointed in large provincial towns and in agricultural centres had been adopted, with successful results. In the ten years ended 1893 £2,114 had been given in relief, while in the previous ten years the sum was only £524. This may be taken as proof of the progress of the fund.

An exhibition of the arts, crafts, and industries of Finland will be opened in London next month. Weaving is the common handicraft of the Finnish people, and few machine-made materials are used by them, though on the western boundary the petty trader has from time to time introduced foreign fabrics, which have been adopted by the more sophisticated townspeople. The embroidery exhibits will be of great interest, as pointing to the Oriental origin of this ancient people. The embroideries are heirlooms handed down from mother to daughter, and anyone comparing the Runo singer's costume and that of the North American Indian will notice the curious similarity. Most of the embroiderers know 73 of these patterns, and some of them have named over 300. Every small portion of the pattern has a distinguishing name of its own, borrowed from the pine-needles, birds' eyes, feathers, and, strange to say, Buddhist symbols which they resemble.

CHIPS.

At the recent Civil Service examination, lasting ten days, for assistant surveyors, R.E., civil staff, the following gentlemen were successful:—Messrs. L. Brown-Bagot, A.M.I.C.E., A. T. Walmsley, and G. H. Bryant.

The partnership heretofore subsisting between M. A. Manuelle, M. A. Manuelle, jun., and G. S. Manuelle, stone and granite merchants, Lime-street, E.C., under the style of Charles M. Manuelle, has been dissolved.

The town council of Ipswich discussed at great length at their last meeting the proposal to purchase the greater portion of Christchurch Park for the public recreation. The estates committee reported that they had provisionally negotiated for the purchase of 51 acres of the central portion of the park, including the Elizabethan mansion and the lodge, with three entrances, the sum to be paid being £16,000. A petition, signed by 5,600 ratepayers, was presented in opposition to the purchase, but happily, broader and more liberal-spirited views prevailed, and, by 23 votes to 11, it was decided to acquire the property as a park.

A special service was held on Wednesday week at the parish church of St. Thomas, Exeter, for the purpose of unveiling a window and brass tablet on grey marble mount, which have been placed in the church, on the north side, as a memorial to the late Bishop Medley, a former vicar of St. Thomas. The window, of stained glass, executed by Mr. F. Drake, of Exeter, occupies a place in the baptistery, and represents the Presentation in the Temple. The brass, or rather latten, is the work of Messrs. Harry Hems and Sons, of Exeter.

At the last meeting of the Southampton town council a portrait of the late Mr. R. S. Pearce, for 23 years town clerk of the borough, was unveiled. It has been painted by Mr. F. McFadden, and will be hung in the council chamber. At the same meeting it was unanimously decided to adopt Part III. of the Housing of the Working Classes Act, 1890.

At a meeting of the Langholm Burgh Commissioners, on Saturday, a letter was read from the Chamberlain to the Duke of Buccleuch, offering, as a free gift to the town of Langholm, the Town-hall and its site. The building was recently renovated by the Duke.

OBITUARY.

The Architectural Association has lost a good friend in the death of its hon. amateur photographer, Mr. John Loftus Robinson, R.H.A., T.C. of the city of Dublin, whose death we record with sincere regret. He died on Friday night last at his residence, "Rathruadh," Glenageary, from typhoid fever, at the early age of 46. Mr. Robinson was a member of the council of the Royal Institute of Architects of Ireland, and has been for a long while a member of the municipal council of Dublin, in which he represented Trinity Ward. In politics Mr. Robinson was an ardent Parnellite, and acted as secretary to the Nationalist party in the corporation. He was an active member of the National Liberal Club in London. For years he was chairman of the Kingstown Commissioners, during which time he secured the opening of a public park for the district. The Dublin Sketching Club owes much to his energy, the members being often entertained by him. Last week only he conducted the Royal Society of Antiquaries of Ireland to places of interest in the old city of Dublin. Mr. Robinson was ex-president of the A. A. Camera Club, and last February gave an address on "Architectural Photography" before the members at Great Marlborough-street, and during the same month he delivered an illustrated lecture at Conduit-street on "The Last Three A. A. Excursions." His genial, loquacious style, as he graphically described the buildings visited, was enlivened by wit and enriched by a knowledge of his subject in which he was enthusiastically interested. For fifteen years he has attended all these outings, acting as hon. photographer, and taking, from first to last, thousands of views, copies of which he presented year by year to the A. A. library. Only the week before last we reproduced two of his studies, taken on this year's excursion at Wells. He organised an excursion of architects to Ireland about five years since. Among the buildings erected from his designs, we may mention Kingstown Town-hall, overlooking the harbour; St. Michael's Hospital, Kingstown; St. Saviour's Dominican Priory, Dublin; completion of the Mater Misericordiæ Hospital, Dublin; St. Patrick's Training College, Drumcondra; the Female Training College, Bagot-street, Dublin; Convents of Mercy at Kingstown, Brickfield-lane, Dublin, and Newport; industrial schools at Booterstown and Goldenbridge; schools at Dundrum, Rathnew, and Dolphin's Barn; houses at Glenageary (where Mr. Robinson built himself a residence), in Dublin, and elsewhere. Among the buildings in progress from his plans at the present time are the National Schools, Carysford; the Industrial Schools and Novitiate Chapel, Blackrock, Dublin, costing £35,000; Whitefriars National Schools, Dublin, costing £6,500; St. Michael's Church, Kingstown, transepts, tower, and spire, £12,000; Dorset-street Schools, Dublin, £3,500; Terenure College additions, £6,379; St. Patrick's Training College, £12,806; and National Schools, Drumcondra, Dublin, £2,200 At the time of his death he was engaged upon designs to be submitted in the forthcoming select competition for the big asylum about to be erected at Portraine, near Dublin, at a cost of about £200,000. He was also preparing plans for a large extension of the Richmond Asylum, co. Dublin. Mr. Robinson was buried on Monday morning last, at Glasnevin Cemetery, when a vast number of clergy and friends attended, including Archbishop Walsh, who read the service at the grave, and the Lord Mayor of Dublin, several members of Parliament, the City Corporation, the Royal Hibernian Academy, and nearly every leading architect in Dublin, so great was the high regard and esteem in which Mr. J. L. Robinson was held by all who knew him.

The city council of Chester have authorised the improvement committee to accept a tender for re-erecting, at a cost of £180, Pemberton's Parlour, on the city walls, which collapsed last year.

A mosaic tablet resting on a richly-carved base has been placed in St. Augustine's Church, Highbury New Park, as a memorial of the late Prebendary Gordon Calthrop. The tablet was designed by Mr. J. Douglass Mathews, F.R.I.B.A., and the carving and mosaics are by Mr. Harry Hems, of Exeter, and Messrs. Powell, of Whitefriars.

A meeting of the works committee of the Edinburgh and District Water Trust was held on Monday, at which instructions were given for the lodging of the necessary Parliamentary notices in connection with the Talla scheme.

Building Intelligence.

Aston.—The new police-courts, erected on the site of the older buildings in Victoria-road, were opened on Monday by Lord Leigh. The building is in a Free Renaissance style, the front elevation of red brick, dressed with buff terracotta. Two terracotta friezes run the length of the building, and are ornamented with figures. From the main entrance and vestibule a large public hall is reached, from which a staircase, with wrought-iron balustrade and granolithic steps, leads to the first floor. On the ground floor there are various offices for the carrying-on of the clerical and other work; while in the basement the cells of the old police buildings remain intact. The two courts are on the first floor, and have in close proximity a magistrates' room, rooms for barristers and solicitors, for witnesses, and another for prisoners and their legal advisers. The two courts are similar in character, and are each 50ft. by 30ft. The furniture is of oak, and the walls are covered with a coloured plaster surface. The heating and ventilation are on the system laid down by Mr. William Key, of Glasgow. The building has been erected from the designs of Messrs. Mansell and Mansell, of Colmore-row, Birmingham, under the direction of Mr. John Willmot (surveyor to the county of Warwick). The contractor is Mr. John Bowen, of Birmingham. At the rear is a drill-yard, and overlooking this will soon be erected a police barracks, to accommodate 30 single officers.

Burslem.—The technical schools which have recently been built in connection with the Wedgwood Institute were opened by Princess Louise on Monday. The institute, which was erected about thirty years ago, has its principal façade in Queen-street, near the centre of the town. The design was emblematical of the arts of the district, and illustrative of the use of terracotta, its Pointed style being based upon those types of ceramic architecture so prevalent in Northern Italy during the 15th and 16th centuries. The building comprised a school of art, a laboratory, and a free public reading-room and library. It was enlarged, and it was decided in 1887 to further extend the institute by the addition of a technical school. The new buildings, which were designed and carried out under the superintendence of Messrs. Ford and Slater, architects, Burslem, comprise two blocks. That on the Baker-street side is three stories in height, with basement in addition. The ground-floor contains two modelling-rooms, on the first floor is an antique classroom, and above this is a laboratory, in connection with which are a lecture theatre, classrooms, balance-room, and master's room. The old museum at the rear of the institute is now utilised partly in connection with the school of art and partly by the science department. The second block of building is on the Brickhouse-street side, and is four stories in height. On the ground floor is provided a reference library and a librarian's department. On the first floor is a classroom for elementary art, whilst on the second floor is provided two classrooms for technical instruction, and on the top floor is a gymnasium. The Baker-street front is very plain, but the elevation to Brickhouse-street accords with the original part of the building. The walls of the buildings throughout are of red brick, with strings and dressings of terracotta, the floors being of fireproof construction of tiles laid on concrete resting on iron girders. The rooms are warmed by hot water on the low-pressure system, by Mr. W. Boulton, engineer, Burslem. The building contracts have been carried out by Mr. William Grant and Mr. William Cooke, of Burslem. The cost of the additional buildings, including fittings and heating, several alterations, and the redecoration of the original building, is upwards of £5,000.

Camden Town.—The chancel and other additions just made to St. Michael's Church were consecrated on Saturday last. The site of the church was bought in 1878; an iron church was built in 1879; the nave of the present church finished in 1881; a church room built in 1885; the Mission Buildings in 1888; and the church has been completed this year. The additions now made consist of the chancel, south aisle, and chapel. The chancel is in harmony with the nave and aisles, an adaptation of 14th-century architecture. It is of high proportion, its general dimensions being 48ft. long, 25ft. wide, and 59ft. high to the apex of the roof. The original design had to be modified considerably from want of funds, the chancel being shortened, the wooden waggon roof being substituted for a vaulted stone roof, and a simpler east window taking the place of the original design. On the north side, divided off by stone traceried screens, is a low stone vaulted chapel, contrasting well with the high chancel. The vestries still remain to be built, and the stone tracery has been omitted from the south screen on account of expense. A panelling of wood, painted dark olive green, has been added, and gives warmth to the appearance of the church; the walls of the nave have been plastered, and a warming apparatus has been put in. The roof has been decorated by painting three bands of scroll-work in each bay, and the aisles have been painted in red, with the sacred monogram in black and white. An inscription runs round the roof. The panelling and canopy behind the altar is richly painted and gilded. The church has been erected from the designs of Messrs. Bodley and Garner, of 7, Gray's Inn-square, the builders being Messsrs. Stephens and Bastow, of Bristol, with the assistance of their foreman, Mr. Hampton. In 18 years there has been spent in round figures on the site, £2,400; the nave, £9,500; the mission buildings, £2,100; while the portion just completed, including the outlay on the nave, has been about £5,500. The west front of the church was illustrated in the Building News for June 24, 1881.

Edinburgh.—A new hospital, in connection with the Deaconess Institution of the Church of Scotland, was opened by Lord Polwarth on the 11th inst. The hospital comprises, on the ground floor, doctors' and managers' rooms, a parlour for probationary nurses—kitchen, &c., with passenger lift and staircase; outside there is laundry and mortuary. The two upper floors contain the wards with accommodation for 20 beds. In the attic are the matron's bedroom, and another room which is set apart for any infectious cases. The wards are heated each with a Musgrave ventilating stove and an open fireplace, and ventilation provided by air inlets in the walls and special exhaust flues with inducers. The cost of the building is about £2,300, and with furniture and fittings, &c., about £3,000. The cost of maintenance is expected to be about £800 per annum. The architects were Messrs. Hardy and Wight, Edinburgh.

Newcastle-under-Lyme.—The Bishop of Lichfield attended on Sunday a service at St. Giles's Parish Church, Newcastle-under-Lyme, for the dedication of the work of restoration of the tower and the improvement of the bells. The massive sandstone tower, one of the finest in the county, dates back from the 13th century. It is 106ft. high, and the outside width is 33ft. 6in., the walls being 6ft. 9in. thick. The present church, which was erected from the plans of Sir Gilbert Scott in 1873, is the fourth fabric which has been erected against the tower. For many years the latter has been in need of restoration, the surface showing evidences of decay from the effect of time, and a wooden shoring being erected for its support at the north-west corner. About eighteen months ago Mr. F. Stanier, Peplow Hall, High Sheriff of Shropshire, undertook the work of restoration in memory of his family. The cost has been about £5,000, and the restoration has been carried out by Messrs. Willcock and Co., Wolverhampton, from the plans of Mr. Ewan Christian, London. All the stone has been refaced, but none of the original masonry has been taken away unless when necessary to insure the stability of the structure. The tower has a new roof and battlemented parapet, with four pinnacles, three being 22ft. in height, and the fourth, which carries a vane, rising 27ft. above the level of the floor. There is a flag-staff 45ft. high. The peal of eight bells, which were cast in 1732, have been re-tuned and rehung, at a cost of £150.

Roath, Cardiff.—Memorial stones of a new Congregational hall and vestry were laid at Roath on Wednesday week. The Roath public hall in Stacey-road has been purchased by the Congregationists for £15,000—being £800 less than it cost to build. The first part of the scheme is to erect a building at the rear of the Roath public hall, which may be used for public worship and Sunday-school purposes; and the memorial stones of this were laid on Wednesday week. The contract for this section has been taken by Mr. Styles, and amounts to nearly £800. The architects, Messrs. T. Waring and Son, have prepared plans whereby the side and back walls of the Roath public hall will be retained, but the front, which faces Oakfield-street, will be reconstructed, and thus provide sitting accommodation for 626 worshippers, which can be increased to 809 by the addition of side galleries. The total outlay for alterations and additions is estimated at £2,300.

Salford.—The new model lodging-house in Bloom-street, adjoining the gas offices, was formally opened on Saturday last. The site has a frontage of 150ft., and is 57ft. deep at one end and 120ft. at the other, the area occupied being 1,410 square yards. The scheme is based upon the successful design for the London County Council Model Lodging House (the competition for which was settled just about the time the buildings were determined upon), and this general principle has been adhered to throughout, though the London plans have been departed from in nearly every detail and in many important points. The building consists of two main blocks, each five stories in height, separated by a one-story entrance-hall. The dormitories occupy the whole of the three upper stories. The elevations are in common brickwork, relieved with terracotta dressings. Between the two main blocks is a hall 30ft. wide and 36ft. long, roofed with Duroline. Immediately on each side of the inner door are two offices. On the left side of the hall there is the day-room, 71ft. by 31ft., and 14ft. high, lighted on three sides by windows, and next to it is a locker room. To the right of the hall is the dining-room, 48ft. by 31ft., and adjoining are the grocery shop, crockery room, scullery, and kitchen. At the rear of the block, in a range of one-story buildings, are the lavatories, baths, conveniences, and laundries. Above the ground floor the plan resolves itself into two main blocks, with a connecting landing and staircase, and with conveniences semi-detached, on the pavilion system. The one block is 69ft. by 31ft., and the other averages 71ft. by 31ft., the clear height of each story being 12ft. Each of the three dormitories in one block is divided into 48 cubicles, each of the other three into 47, and thus there is accommodation for 285 lodgers. The cubic space allowed for each lodger is nearly 600c.ft. The cubicle divisions are of sheet steel, on Messrs. Falkners' patent. The ventilation is arranged on the "natural" principle. From the ceiling of each room a foul-air outlet shaft runs up to the roof, where it terminates in a cross tube running from one side of the roof to the other, with louvre outlets; so that the wind, from whichever direction it blows, may create an exhaust at one or the other end of the cross tube. The fresh-air inlets are all provided near the floor level. In the laundry a small disinfector has been set up on the Washington Lyons principle. The construction is, as far as possible, fire resisting. The floors of the dormitories and dayrooms are of solid planks, grooved and fitted with iron tongues; the stair treads are of greenheart timber, carried on steel framework; the cubicle divisions are of sheet steel. The floors of kitchen, scullery, and bathroom are constructed of rolled steel joists and concrete. Sets of fire-extinguishing apparatus are provided on each staircase landing; each set including a hydrant from the water main, a hosepipe and nozzle, and a set of fire-buckets. From each dormitory an external iron fire-escape staircase has been provided. A small detached manager's house has been erected on one corner of the site. The contractors for the main building were Messrs. Wm. Southern and Sons, Salford, who had with them as sub-contractors contractors the following firms:—Bricklayers, work, Messrs. Healey, Salford; terracotta work, Mr. Jabez Thompson, Northwich; concreter, Mr. B. Morton; masons' work, Mr. J. Stopford; slaters' work, Mr. J. Barrow; ironwork, Messrs. Carter Bros. and Co., Manchester; plasterer and painter, Messrs. R. Higson and Sons, Salford; plumber and glazier, Mr. J. Kershaw, Heywood; duroline glazing material, The Wirewove Roofing Co., London; and steel cubicle divisions, Messrs. Falkner and Co., Hersham. The plans, specifications, and quantities were prepared in the office of the borough engineer, and Mr. T. B. Patterson has acted as clerk of works. The cost has been: site £1,550; building £11,000; and furniture, &c., £2,300; in all, £14,850.

Trentham, Stoke-on-Trent.—Some important improvements are being carried out on the Duke of Sutherland's estate at Trentham, including the lighting of the hall by electricity, the motive power for the dynamos being obtained from the river Tent. The lake in front of the hall has been emptied for the first time for six years, and is being cleansed from an accumulation of mud. The hall is being redecorated, and a dairy is being added. The entrance to the hall grounds from the park has been remodelled, and new gates are being provided. A new drive has been cut from the entrance at the west front of the hall to the Whitmore-road, crossing the Hanford Brook by an elliptic bridge about 40ft. in length, the span of the arch being about 15ft. There will be an entrance lodge on the Whitmore-road. Other improvements are being effected in the park and gardens, and in the village the Duke is building a number of workmen's cottages, and near the old inn on the Newcastle-road a village institute. In the vicinity of the institute a girls' school, with mistress's house, is being erected. The whole of the work is being designed and carried out under the supervision of Mr. T. Roberts, the architect to the estate. The work has given employment to about 400 hands, and the cost will probably exceed £20,000.

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CHIPS.

Considerable progress is being made with the alterations and extensions which the Great Western Railway Company are carrying out at their Taunton station. The work of laying the new loop line for goods traffic, which is to be about a quarter of a mile long, is being rapidly pushed forward. The company are expending about £25,000 in improvements at Taunton.

The proposed railway bridge across the Hudson at New York will cost about £2,800,000, and the superstructure about £2,250,000. In addition, the land to be expropriated on either side is estimated to cost another four or five millions. The clear central span is 2,020ft. and the construction will be, like the Forth Bridge, on the cantilever principle.

Mr. Henry Westlake, of Chumleigh, Devon, formerly architect and surveyor on the Preston Estate, but who had retired from practice for some years, died last week, aged 76 years.

The Government of India has decided to spend 520 lakhs of rupees this year, and 500 lakhs in each of the two following years, on railway construction and irrigation works. This will provide for the commencement of the Rohri-Kotri line, the linking up of the mètre gauge lines in the North-West Provinces, and the Ennore-Madras section of the Bezvada-Madras line during the current year.

At Friday's meeting of the Waterworks Committee of the Leeds Corporation, the engineer (Mr. Thomas Hewson) reported that the reconstruction of the Eccup embankment was proceeding satisfactorily, that the whole of the puddle wall was now removed out of the trench, and the trench lowered to a depth of 145ft., being, at the southerly end, within 14ft. of the intended total depth. Mr. Hewson also reported that a new 30in. water-main which is being laid between Arthington and Swinsty, to complete the third line of water-mains from the latter reservoir, was laid to the extent of three miles out of the total of eight.

Mr. W. J. Bird Clerke, M.Inst.C.E., held an inquiry at Stratford, E., last week as to an application of the town council for sanction to borrow £11,507, the chief items being £1,990 for widening Forest Gate bridge, £2,815 for pitching Bidder-street and Quadrant-street, and £1,465 for paving the paths round the recreation ground at Canning Town.

Major-General H. D. Crozier, R.E., a Local Government Board inspector, held an inquiry at Fenton, Staffs, on Friday, as to the application by the local board for sanction to borrow £6,150 for the purposes of street improvements. Mr. S. A. Goodall, surveyor, gave evidence in support of the application, to which no opposition was offered.

The statue erected in Queen's Park, Toronto, to the memory of the late Sir John Macdonald, was unveiled on Saturday by Sir John Thompson, the Premier. The statue, which is in bronze, and the actual life size, stands in front of the Parliament Building, near the statue of the late George Brown. It is the work of Mr. Hamilton MacCarthy.

The death is announced of Mr. Henry James Eyre, late registrar of and for 36 years in office at the Royal Academy. Mr. Eyre died on the 10th inst. at his residence in Maida Vale, in his 87th year.

At Worcester, on Friday, the corporation electric light works were opened. The current will principally be generated by turbines placed in the river Teme at Powick, where there is a fall of 12ft. From Powick the current is conveyed underground a distance of three miles to Worcester, and there distributed. Besides lighting the streets and public buildings, the electric power is used for pumping at the corporation waterworks, and the council supply the electric current to private consumers for either lighting or motive purposes.

Correspondence.

ARCHITECTURAL PHOTOGRAPHS.

To the Editor of the Building News.

Sir,—One of your correspondents in last week's issue of the Building News suggests that the project for the exchange of architectural photograms is one which might well commend itself to the A.A Camera Club.

Well, Sir, the A.A. Camera Club is fully alive to the importance of the exchange of architectural photograms, and on the initiation of its vice-president, Mr. E. W. M. Wonnacott, the A.A. Postal Print Exchange Club has been formed, having for its objects the criticism and exchange of architectural photograms. The first portfolio was put into circulation on October 1st last, amongst members of the A.A. Camera Club; but it is proposed to extend the privilege to all A.A. men, and a scheme is now under consideration whereby architects and architectural students at present outside the pale of the Architectural Association can participate in the advantages offered.

If any of your readers will communicate with either Mr. Wonnacott or myself at 56, Great Marlborough-street, W., further particulars will be furnished with pleasure.—I am, &c.,

Francis R. Taylor,
Hon. Sec. A.A. Camera Club.

Sir,—I am proposing, with the consent of the Council of the Royal Architectural Museum, to arrange, after the pressure of the year's session of our School of Art classes is over in the spring, an exhibition of architectural photographs of a thoroughly representative character, and with this view shall be glad to receive offers of co-operation from amateurs as well as professional photographers. New as well as old work will be included, provided the subjects are of artistic merit and general interest, and the scheme will be so extended as to include decorative and sculpturesque subjects.—I am, &c.,

Maurice B. Adams, Hon. Sec.
Royal Architectural Museum, Tufton-street,
Dean's Yard, Westminster, October 12.

Sir,—I fully concur in the admirable remarks upon "A Neglected Resource," as given in the leading article of your issue of the 8th inst., and with the letters of Mr. Anderson, A.R.I.B.A. and "Gothic," thereon in your present issue. It will give me pleasure to join such a proposed society, and as an amateur photographer afford any assistance I can to further the object in view.

In a paper read by the writer before the Society of Architects on the 20th April, 1893, upon the subject of "The Use of Photography in its Relation to Architecture," it will be noticed in the paper read (on page 146, Vol. V. No. 10 of the Society's *Proceedings*) that some such club or society was proposed therein, having similar objects in view (together with the loan of lantern-slides of interesting architectural subjects for lectures, &c.) to those set forth more fully in your article.

Such a society as you suggest would, I am sure, prove to be the medium of affording information to architects, and especially to architectural students, of a nature very valuable and instructive, and that could not by other means be obtained, or in a manner so economical.—I am, &c.,

William Allport, F.S.I., M.S.A.
Bedford Mansions, Henrietta-street, Covent
Garden, W.C., October 13.

◆

A new schoolroom has been recently erected in the village of Boxted, Essex, as an addition to the school close to the church. The new room is 40ft. long by 18ft. wide inside, and is built of red bricks with slated roof. The room has been built by Messrs. N. Saunders and Son, of Dedham, to plans prepared by Mr. J. W. Start, F.S.I., architect, of Colchester, Clacton, and Harwich. The total cost has been £359.

A party of visitors from inland towns were invited to Pwllheli, on Saturday, by the Mayor of that Carnarvonshire watering-place, for the purpose of viewing the great development which has taken place there since the Victoria Parade was opened six years ago. At his own cost Mr. Solomon Andrews, the head of a local syndicate, is laying down a tram-road extending 2½ miles along the beach, and is constructing a road and bridge, which he purposes conveying to the corporation. He has also erected an hotel, at an outlay of £8,000.

Intercommunication.

QUESTIONS.

[11227.]—**Sound-proof Rooms.**—I built a house some time ago, and being a light sleeper, instructed my architect to take means to insure my having a quiet bedroom. He accordingly packed the floor overhead between the joists very tightly with silicate cotton, and stuffed the plaster walls on each side with the same. Having my dressing-room on one side, and my smoke-room on the other, there is no noise from them; but it being necessary to use a room above as a servant's bedroom, and having a robust little kitchen-maid occupying it whose duty it is to rise early, and whose lightest tread is ponderous, the noise from above is distracting. Can any one tell me how to cure this without disusing the room overhead? Would a raised platform of 4in. or 5in. mend matters? My own architect doesn't seem to be able to offer any suggestion. —Q.

[11228.]—**Bills of Quantities.**—What is the recognised percentage to be charged by architects generally for preparing bills of quantities? There is a firm here that is charging 3 per cent. besides "expenses" for a job of from £11,000 to £12,000. Is not this excessive? Perhaps some architects would state in your columns the rates they usually charge.—Provincial.

[11229.]—**Priming Internal Joiners's Work.**—Is it desirable to prime internal joiner's work (intended to be painted) prior to its being taken to building, so as to prevent the usual swelling of wood and flying of joints caused by the moisture from new plastering, as work is now carried out hastily?—Learner.

[11230.]—**Steel bearing middle Gutters to Roofs.**—Are these an improvement over cast or wrought iron, and how are they as to durability?—Sceptic.

[11231.]—**Wasted Stone.**—Can any reader of experience favour with a few useful hints as to the best treatment? I am thinking of redressing the stone, and painting it with Szerelmey's or Ransome's fluid, but am informed that this won't last long. What is the best treatment known?—Manxman.

[11232.]—**Domestic Hot-Water Supply.**—Should flow-pipe from boiler to cylinder be of greater diameter than return-pipe of same—say, 1in. flow, and ¾in. return? Is there any objection to blow-off pipe being turned down into supply cistern, so as to dip into cold water, and thereby prevent dampness arising from steam issuing into the open air of cistern-room. For protecting hot-water pipes underground or in chases, I am given to understand that sand or sawdust are good non-conductors, and not only prevent the radiation, and consequent loss of heat, but form a good protection against frost. If this is so, would not hair-plaister be an economic mode of covering pipes?—Teachable.

[11233.]—**Metal Laths.**—What are the best metal laths, and how are they fixed to the studs? Is metal lathing more expensive than the ordinary fir laths? I should be obliged for any information.—J. P.

[11234.]—**Staining Timbers.**—Which is the most approved plan—to stain and varnish the exposed timbers of a church roof? or to leave them quite plain? A gentleman, an authority on such matters, thinks the latter course the best, and says many of the most recent church roofs have the timbers left quite bare. Can anyone give me the names of a few churches near London so treated and the names of the architects? Ceiling between the rafters, once common, is also said to be going out in favour of boarding. I should like to hear a few opinions on this head and the advantages of boarded roofs.—One Who Wishes to Learn.

[11235.]—**Ash Vents to back of House Firegrates.**—I should like to know the desirability of providing these or otherwise from under side of firegrate up back of same to smoke-flue gathering over fireplace opening?—Doubtful.

REPLIES.

[11226.]—**Iron and Steel Girders.**—Steel may be distinguished from wrought iron by placing a drop of dilute nitric acid (1 acid to 4 water) upon the surface. If the metal is steel, a dark-grey stain will be produced, owing to the separation of the carbon.—P. G. F.

◆

The town council of Aberdeen approved on Monday a scheme for declaring the Exchequer-row an unhealthy area under the Housing of the Working Classes Act, the cost of acquiring the lands and buildings, clearing the sites, and incidental works being estimated at £25,776. It is calculated, however, that from the ground that will be feued off there will be an annual revenue of £365, which at thirty years' purchase amounts to £10,950. The net cost of the scheme will thus be about £14,826.

A block of stores for chilled meat is about to be built in St. John-street, near Smithfield Market, from plans by Mr. H. F. Donaldson, the engineer to the India Docks Joint Committee. Accommodation will be provided for between 80,000 and 90,000 carcases. The building, covering an area of nearly 10,000sq.ft., and constructed of red and blue bricks and terracotta, with a main frontage 131ft. in length, will consist of basement, ground floor, and four floors above. There are to be 16 cold chambers in all, their total capacity being 360,000c.ft. On the ground floor will be a range of shops and offices. In the basement immediately underneath will be the engine-room and boiler-house, in the former of which will be placed two sets of hydro-carbonic refrigerating engines, together with the pumps and condensers, as well as the machinery required to light the whole of the chambers by electricity.

Legal.

COPYRIGHT OF PLANS.

SOME architects and others have thought that by the registration of plans for buildings as copyright, they could prevent people from building according to the same design or upon the same model. This, however, does not appear to be so, for though pirating the publication of such plans would possibly be illegal, there seems no way of stopping the erection of a building that would be identical. The recent case of "Hollinrake v. Truswell" (*Times*, 9th Aug.) is of practical importance because of the general principles laid down in the judgments given by the Court of Appeal, and especially by that always luminous lawyer, Lord Justice Lindley. This case arose about a cardboard pattern sleeve, which was called a "sleeve-chart," and which really consisted of the shape of a sleeve for a woman's dress with figures and words upon it, giving directions by which it might be used for the purpose of cutting out such sleeves scientifically. Mr. Justice Wright had held that the thing came within the Act as a chart or plan, and so could be registered for copyright, and he granted an injunction to stay any infringement by the defendant. On appeal this was reversed, on the broad ground that the so-called chart was really a measuring machine like a mathematical rule, and that although, if new, it might be the subject of a patent, it could not be registered as copyright, and the appeal was allowed, with all costs.

In his judgment Lord Justice Lindley said that copyright does not extend to ideas or schemes, or systems or methods. It is confined to their expression, and if their expression is not copied, then the copyright is not infringed. There was one case in which the author of a system of bookkeeping had registered his book as copyright; but it was held that he had not thereby acquired any monopoly in the system but, was only able to prevent any other person from copying his description of it as published. So with the plans of a house: they might probably be registered as copyright if published, and no one would be able to copy them as to words and figures &c., legally. But, even if this were done, it would not give the author any monopoly in the idea which really formed the basis of those plans, and upon which they had been drawn. Thus we should say that a house could be built upon the same design by anyone who could draw up the plans from the house itself. Of course, unless published, there could be no copyright at all under the Act in plans of this kind, and even then it may be doubted whether they would, strictly speaking, come within the Act, so as to be entitled to its protection in practical use, though probably their actual publication by others could be prevented.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Architect. — Land. — Tenant. — Building.—In this case it appears that a yearly tenant built two cottages upon the land he rented, and paid this rent for 20 years. But having no lease, he is still only a yearly tenant, and his successor or assignee can have no better title upon the facts as stated.

W. J. P. — Land. — Agreement. — Enforcing. — The receipt signed by the vendor's agent and yourself is too vague to support an action for specific performance, and therefore I do not consider they can compel you to accept the terms now proposed, or to go any further in the matter. I presume, of course, that there is nothing else signed by you?

L.—Chimney.—Summons.—Time. —It would generally be issued against the builder or contractor, though the owner is also legally liable. The time limit is six months from date of offence, or of its discovery.

J. H. C.—Building.—Lease.—Damage.—If the lessee has covenanted to uphold and maintain and the like, he would be liable to do this work as between him and the lessor. But he may have some claim for compensation against the corporation upon proof of the facts here stated.

Scottie.—Drains.—Obstruction. — Strictly speaking, A. had no legal right to block up this right of way without C.'s consent. But as this appears to have been tacitly given, or, at all events, no objection was made until the work was half-done, the Court would not grant any injunction.

B. B.—Architect.—Contract.—Dispute.—I consider that the client should pay the architect, and that if he does not do so he could be sued for the money. The client could then only set up a counter-claim for damages on the ground of the architect's negligence; but he would have to prove a good deal to succeed in that contention, and he would also have to show that loss had resulted to him directly from that negligence.

LEGAL INTELLIGENCE.

In re J. H. Jefford. — James Harris Jefford, against whom a receiving order has been made, states that, having for several years previously been employed as a journeyman carpenter and foreman, he commenced his present business of a builder in September, 1890, and continued the same at Victoria-avenue, Upton-park, E., and elsewhere, down to the date of the receiving order. From the observations of the Official Receiver, it appears that in July, 1884, the debtor, having for a few years previously carried on business in partnership, was adjudged bankrupt, with liabilities £1,051. Under these proceedings no dividend was paid, and his discharge was granted in March, 1885. In June, 1888, in connection with a liability subsequently arising out of the partnership referred to, he was again adjudged bankrupt, his discharge being granted subject to a suspension of about eight months, expiring on December 31, 1889. The debtor attributes his present failure to losses (especially during the last two years) on contracts taken at too low a price, and of which he kept no proper account. He has furnished a statement of affairs showing liabilities £5,127, of which £4,877 are unsecured, with assets £351. An adjudication of bankruptcy has been made.

Alleged Jerry Building at Chiswick.—At the West London Police-court, on Friday, a Mr. Marsh, who was convicted in penalties last week in respect of a building in Chiswick, complained that he had received a notice from the local board threatening to pull the building down. He thought the payment of the penalty ended the matter. Mr. Curtis Bennett said it did not. There would probably be a summons taken out to show cause why the building should not be pulled down. The applicant thought it would be unjust to pull down a sound building. Mr. Curtis Bennett: That is a question. I saw the mortar when it was produced. The applicant declared emphatically that the statement respecting the quality of the mortar was false.

Swansea Waterworks.—A meeting of the water and sewers committee of the Swansea Corporation was held on Tuesday to consider a proposal for the settlement of a claim brought by Messrs. Balary and Yerburg, the constructors of the Upper Lliw reservoir, for £67,000 extras claimed. The question has for thirteen days been the subject of arbitration before Mr. Bucknill, Q.C., M.P., sitting in London, and the offer of the claimants was to settle for £10,500, each side to pay its own costs and half each of the arbitration and shorthand writers' charges. The committee decided to accept this offer. The following are the full terms of the settlement:—"The corporation to pay the contractors the admitted extras and retentions, which has been agreed to at £8,447 3s. 7d., and the further sum of 10,000 guineas. The plaintiffs to take out of court the £125 4s. 5d. still in court. Each party to pay their own costs, notwithstanding any order to the contrary, including half the arbitrator's fee, the shorthand notes, printing, and the expense of room. If any difference arises in carrying out these terms, the same to be referred to Mr. Hudson and Mr. Graham, and, if they differ, to the arbitrator."

What is a New Street?—London County Council v. Miller.—This case, which has been in progress from time to time since 1890, was again before Mr. Bros at the North London police-court on Friday. The parties now appeared to consult with the magistrate as to a case to be presented before the Judges of Appeal. Miller's-avenue is made up of houses built upon the site of houses and gardens demolished when the North London Police-court was erected. At the end of 1888 Miller's-avenue was commenced, with a 22ft. roadway; and the London County Council summoned the builder—Mr. James Miller, a local auctioneer—for contravention of the Metropolitan Building Act by laying out a road, passage, or way which was a new street within the meaning of the Act at a less width than 40ft. On that summons Mr. Bros decided that Miller's-avenue was a private place, having gates at the entrance, capable of shutting out all but the actual tenants; and, therefore, that it was not a new street within the meaning of the Act. When, in 1890, Miller's-avenue was extended by adding more houses, another similar summons was brought; but Mr. Bros decided in favour of the defendant, on the ground that the circumstances had not materially altered, and that it was no more a new street than it was before. The case was carried to the High Court, and on a technical objection was dismissed. Following this, another building was added to Miller's-avenue, somewhat higher than the remainder, and the London County Council issued another summons for contravening the law as to the height of buildings in a street. Mr. Bros held upon that, that there was no contravention of the law, because the place was not technically a street; but the defendant, to avoid litigation, brought down his building to a level with the other buildings. The London County Council, however, brought another summons, when it was decided to be *res judicata*, and that the defendant had certificates of dismissal of the summonses already brought against him in respect of this property, and the statutory period for upsetting the certificate, which declared Miller's-avenue to be not what is technically known as a new street, had expired. In deciding the case to be laid before the judges, Mr. Bros now said that he had again viewed the place, and his opinion was unaltered that it was not a new street within the meaning of the Act. But, of course, if the judges held him to be wrong, in his decision in 1890, the case, as then presented, would have to come back to be tried upon its merits. The only case to send to the judges was as to whether he was right in accepting the certificates of dismissal as a defence to the later summonses.

CHIPS.

The Duchess of Rutland opened yesterday (Thursday) the new building of the Midland Deaf and Dumb Institution at Derby.

Wesleyan school extensions at Woolfold, near Bury, Lancs, were inaugurated on Saturday. Mr. Byrom, of Bury, was the contractor for the building, which comprises an infants' room, with two classrooms above.

The Bristol Corporation will promote a Bill next session for the extension of the boundaries of the borough. Powers will be sought for so enlarging the municipal area as to include the parishes of Horfield, Stapleton, St. George, Kingswood, Shirehampton, parts of the parish of Westbury-upon-Trym, Henbury, Mangotsfield, Bedminster, Brislington, Long Ashton, and Easton-in-Gordano.

The Archbishop of Canterbury opened on Saturday a new wing of the Croydon General Hospital. This is the second addition that has been made to this institution, the last having been made in 1885. Two wards, each containing 20 beds, form the principal features of the present extension, whilst additional accommodation for the medical staff and servants has been provided.

The Ipswich corporation received at their last meeting a favourable report as to experiments that have been made by the borough surveyor, Mr. E. Buckham, in the deodorisation and sterilisation of sewage by the Hermite process, in which electrolysed sea-water is employed. They decided to expend £2,000 in providing Hermite plant, the annual cost of treatment being estimated at about £400. It was reported that part of an Early Norman church font, found by Mr. F. Bennett, builder, while excavating foundations for a factory through the Town Ditches, near Crown-street, had been presented by Mr. Bennett to the borough museum.

The churchyard cross at Fillongley, Warwickshire, which has long been in a very dilapidated condition, is about to be restored by Messrs. Farmer and Brindley, of Westminster Bridge-road, S.E.

Tweedy's brewery at York has just been reopened after the addition of a new copper and a new heating tank. The building operations have been carried out by the following local tradesmen:—Bricklayers' work, Mr. J. R. Manfield; joiners' work, Mr. R. Harker; plumbing, Mr. Geo. Best.

Major-General Crozier held a Local Government Board inquiry at Nantwich, on Tuesday week, as to the schemes of the local board proposing to borrow two separate loans of £1,200 and £1,150, for works of water supply and sewage respectively. The inquiry was attended by Mr. Baldwin Latham, as consulting engineer to the local board.

At a meeting of the Fraserburgh Harbour Commissioners, on Saturday, tenders for the deepening of Balaclava Harbour and relative works were submitted, and that of Messrs. Price and Wills, of Westminster, amounting to £39,805 0s. 8d., was accepted. The additional works scheduled but not included in the tender, contingencies, &c., will bring the total cost of the improvement scheme up to £50,420 15s. 8d.

Mr. Holman Hunt has been appointed by the Chancellor of Oxford University to be Romanes Lecturer for the ensuing year.

An immense number of papyrus documents has lately come into the possession of the Royal Museum of Berlin. About 5,000 of them have already been catalogued, and the Museum Commissioners are making arrangements for the editing and publication of some of the most important. The whole of these papyri are in the Greek language, and they throw a flood of new light upon the smallest details of the daily private life and the legal affairs of the Greek people in the first century of the Christian era.

WATER SUPPLY AND SANITARY MATTERS.

Gloucester.—The mayor and corporation of Gloucester paid a visit to Newent on Monday week, for the purpose of inaugurating the new waterworks, which are to be constructed under contract by Messrs. Timmins and Son, Runcorn, by virtue of the powers obtained in the Gloucester Corporation Act 1894. The work undertaken is to sink a shaft into the new red sandstone, and erect a pumping-station on a site given by the trustees of the Onslow estates for certain considerations, in the parish of Oxenhall, just outside Newent, the water to be pumped into a service reservoir, and from thence delivered into Gloucester by the natural force of gravitation.

Thirlmere Water Supply to Manchester.—The supply of water secured by the Manchester corporation from Lake Thirlmere was inaugurated on Monday. The training well at the south end of the lake, and the sluice-valve house at the north end of it, are built of grey rock, with redstone copings and battlements, and in a castellated style. The dam itself at the north end of the lake is 18ft. 6in. wide at the top and 50ft. at the bottom. Its depth in the deepest part is 58ft., and its total length is 857ft. Its exterior faces are of masonry, and the space between them has been filled with layers of concrete 9in. deep alternated with 3½ ton monoliths. The aqueduct is carried from the lake to Prestwich reservoir, near Manchester, a distance of about 96 miles. When the level of the lake has been raised to the contemplated height of 50ft. above its original level, Thirlmere will be equal to a supply of 50 million gallons daily for 150 days without rain. The aqueduct consists of tunnels through Dunmail Raise, Moore How, Nab Scar, Skellgill, and other places, making in all about 14 miles; 38 miles of "cut and cover," or concrete waterway cut in the open and covered over; and 44 miles of cast-iron pipes. The tunnels and "cut and cover" have been made and constructed to meet the necessities of the full supply of 50 million gallons daily, but the piping to a great extent is equal to no more than present needs. For the present, the level of Thirlmere has been raised 20ft., equal to a supply of 10 million gallons daily. The whole of the works have been carried out from plans by, and under the supervision of, Mr. G. H. Hill, M.Inst.C.E., of Manchester, at a cost of two and a half millions sterling. The supply was inaugurated by a display of a jet of water from a fountain in the centre of Albert-square, Manchester. The fountain, which consists of two basins, has been erected by Messrs. Southern and Son, contractors, Salford, from the designs, and under the superintendence of, Mr. J. W. Beaumont, architect, Manchester.

Wootton-under-Edge —The new water supply obtained from Hamlin Brake, on the Tetbury-road, was inaugurated last week. Mr. A. P. I. Cotterell, of Bristol, has been the engineer, and Mr. Stephen Ambrose, of Bath, contracted to carry out the works, the cost amounting to about £3,200. Mr. Butler was the resident engineer and clerk of the works. The water is conveyed from Hamlin Brake in cast-iron 4in. mains to a reservoir of concrete holding 99,000 gallons, the site of this service tank being 200ft. above the town, and about a mile distant from Wotton. From the service tank the supply is conveyed in 4in. and 3in. cast-iron pipes through the town. Altogether five miles of piping are used.

The town council of Cardiff have proceeded another stage towards providing a town hall more worthy of the borough. They have adopted a plan prepared by the borough engineer for utilising land adjoining the existing building. Part of the additional area will be thrown into the principal streets, and the remainder, having a frontage to Westgate-street of 332ft. and to Quay-street of 150ft., will be built upon.

A new epoch is dawning over historic Bamburgh. Lord Armstrong, who has bought the castle, contemplates vast changes and improvements. Sites are marked off on the estate for workmen's houses, and already a gang of men is busy at the castle, the operations at which are calculated to extend over some years. Meantime, the parish church of St. Aidan is being restored at a cost of about £2,000, and the public monument to the North-Country heroine, Grace Darling, who was born and died in Bamburgh, is also to be repaired.

It has been decided to hold at the New Gallery during the coming winter an exhibition devoted to the arts of Venice and the territories of the Republic. The tradition of Venetian style, which is so closely linked with the subsequent development of modern European art, will be traced from the date of its origin down to the close of the 18th century. Apart from painting, it is intended to include examples of the drawings of the Great Masters, besides specimens of sculpture, engraving, goldsmiths' work, pottery, glass, metal-work, arms, armour, furniture, wood-carving, embroidery, lace, and articles of costume.

Our Office Table.

The Royal Scottish Academy is at present applying to the Privy Council for certain amendments on the Supplementary Charter which was obtained a year or two ago. The chief points are:—(1) There is to be an honorary retired class of Academicians and Associates, to which they retire of their own will. But if a member fails for five years to fulfil his duties, he can be put on this list by a two-thirds majority vote of R.S.A.'s. This class can only exhibit one work in the exhibition. They can speak at meetings, but not vote; and while retaining their titles cannot serve on Council. (2) Under another provision it is enacted that R.S.A.'s are to decide what proportion of painters, sculptors, and architects are to be elected; nominations are to be made in a book, and there are regulations as to fixing the number to be elected and the method of proposal. (3) The other important provision reads as follows:—"We hereby give to the members of the Academy, at these assemblies of Academicians, power to make rules providing that any member of the Academy who, after the date of this Supplementary Charter, shall become a member of, or exhibit with, any other society of artists established in Edinburgh, shall forfeit his membership of the Academy, and all the rights and privileges pertaining thereto; provided always that such rules shall not apply to members of the Academy elected prior to the date of this Supplementary Charter, who may, after its date, exhibit with any society of which they were members prior to the date of this Supplementary Charter."

At the last meeting of the London School Board, a report was submitted by the Sanitary Sub-Committee upon the progress made in carrying out sanitary improvements to the schools of the Board. They stated that reports had been received upon all schools, with the exception of four. The Committee submitted a rough estimate of the probable cost of dealing with the drainage of the whole of the schools of the Board, amounting to £151,370. The Department were sanctioning loans for the full amount of the expenses required for carrying out the new drainage scheme. The sanitary surveyor was carrying out the necessary improvements at 18 schools, in addition to those which were in the hands of the architect.

In the second lecture on Egyptian history at University College, London, delivered on Saturday, Professor Flinders Petrie noticed the importance of the defect of the Egyptian calendar caused by its omitting to notice leap years. The day which was thus omitted every four years made the whole calendar retrograde through the seasons once in 1,460 years; this period was known as the Sothaic cycle. Every month of change was celebrated by a great festival, which fell every 120 years; while every week of change a lesser festival came once in 30 years. These feasts thus form most important landmarks for fixing the absolute dates and the intervals of various reigns. Mahler of Vienna has calculated the date of Thothmes III., in the middle of the XVIIIth Dynasty, as being from 1503 to 1449 B.C., and the festival in his reign at 1470 B.C. This is exactly confirmed by an inscription lately noticed, dated in this year—the 33rd of his reign—and naming this festival only a few days after it had taken place. Four other such fixed dates are known within three or four centuries, and in this manner a firm footing is obtained for Egyptian chronology, about which very little doubt remains as far back as 1600 B.C.

At Monday's meeting of the Halifax School Board, a discussion arose as to the acceptance by the sites and Building Committee of the tender of a Halifax firm, Messrs. Blackburn and Davenport, for slaters' and plasterers' work at Siddal School, at £514. Mr. Shoesmith, who moved the rejection of this minute, argued that the committee had practically boycotted one of the town's most respectable tradesmen, and caused the board to pay from 18 to 20 per cent. more for the work. With respect to the tender he alluded to, that of Messrs. Bancroft and Son, the committee wrote that firm asking if they paid the standard rate of wages in the district, and the firm asked the board to be good enough to send them the standard rate, and to state who fixed it—a very pertinent inquiry. Without replying to Messrs. Bancroft's letter, the committee accepted the tender of Messrs. Blackburn and Davenport. Messrs. Bancroft, the speaker understood, had in their employ a number of men who had been with them thirty or forty years, and who were willing, rather than be cast upon the streets, to take lower wages, yet the committee, by their action, boycotted them. Other members thought the committee justified in their action, and ultimately Mr. Shoesmith withdrew his motion.

According to the communication from Lieut.-Col. Duncan A. Johnston, R.E., read at the last meeting of the Southampton town council, the revision on the 1-2500 scale of the Ordnance Survey plans of the county of Hants has been commenced. It will not include at the public cost the revision of any plans on a scale larger than that of 1-2500 or 25·344in. to a mile. The Mayor and Corporation of Southampton were asked if they desired to have the existing plans of the town on the 1-500 scale revised at the cost of the town when the survey of the adjacent district was taken up. The difference of cost between a revision of surveys on the 1-2500 and the 1-500 scales might be taken to amount on an average to about 15s. per acre; while if new large-scale surveys outside the area of the existing plans were likely to be required, the additional cost might be estimated at about 30s. per acre. The above rates did not include the cost of publication. If the town should desire that the revised plans should be published on the 1-500 scale, the cost would be about 4s. an acre in addition. If the Corporation should not consider it necessary to have the existing large scale (1-500) survey of the town revised by the Ordnance Survey Department, on payment by the Corporation of the above difference of cost the revision and publication of the plans of the town would be carried out at the public expense, and without any charge against the town, on the same scale as the plans of the adjacent country, namely, 1-2500 or 25·344in. to a mile. The communication was referred to the Works Committee.

At the annual convention of the Western New York Chapter of the American Institute of Architects held in Rochester, N.Y., on Monday September 24, a committee reported unanimously in favour of the proposed State license law for architects, whereby each one in the profession will be prohibited from styling himself a "professional" architect unless he has first been given a State license. The Legislature two years ago passed such a law, but the Governor failed to sign it. It is now proposed to revive the bill, for the licensing, or as we should term it, registration of architects, on the ground that public safety requires that the buildings in our cities shall be in the hands of competent persons, the same as our physical bodies. The report was adopted unanimously.

The following is an authoritative list of town councils which have adopted the fair wage clause: — Accrington, Ashton-under-Lyne, Barrow, Blackburn, Blackpool, Bolton, Bradford, Brighton, Bury, Birmingham, Bristol, Cardiff, Derby, Dublin, Edinburgh, Glasgow, Gloucester, Grimsby, Halifax, Hull, Ipswich, Leeds, Leicester, Liverpool, London, Manchester, Northampton, Nottingham, Oldham, Plymouth, Rotherham, Salford, Scarborough, Sheffield, Sligo, Stockton, Stafford, Southport, Sunderland, Swansea, Wakefield, West Ham, West Hartlepool, Widnes, Wolverhampton.

On Saturday an application was made to the Chancellor of the diocese of Norwich for a confirmatory faculty for a choir screen, rood loft, and rood beam in the Church of St. John, Timberhill. The arguments occupied the whole of the day, and the chancellor reserved his judgment.

The Bishopsgate Institute will be opened on Saturday, Nov. 24th. It has been built from designs by Mr. C. Harrison Townsend, F.R I.B.A., selected in competition, and is Early Renaissance in style. Mr. J. T. Chappell was the original contractor, and the cost has been about £26,000, exclusive of site.

Mr. Moss, the owner of two houses (225 and 227) in Arlington-road, Camden Town, was summoned to Marylebone Police-court on Wednesday, at the instance of the St. Pancras vestry, on the ground of the drainage of the houses causing them to be dangerous and unfit for human habitation. For the defence it was contended that the combined drainage of the two houses was not a drain, but a sewer, and that consequently the vestry was responsible for its condition and repair. The magistrate dismissed the summons, and allowed the defendant three guineas costs, remarking that it was incumbent on the sanitary authority to do all that was necessary.

MEETINGS FOR THE ENSUING WEEK.

Wednesday.—Carpenters' Hall. Lecture to Students in Sanitation, by Professor H. Robinson. 8 p.m.

Friday.—Architectural Association. Annual address, by the President, E. W. Mountford. 7.30 p.m.

CHIPS.

The Great Western Railway Company's engineers are engaged in pegging out the land required for the construction of the Avonmouth and Severn Tunnel Junction Railway.

A new clock has just been fixed in the parish church of Newland, Gloucestershire, which strikes the hours, chimes the quarters, and shows the time on a 6ft. dial. The whole of the work has been carried out by John Smith and Sons, Midland Clock Works, Derby, who made the clock of St. Paul's Cathedral.

Deepcar Church was reopened on Saturday. The additions to the church have been principally erected at the expense of Mr. C. Macro Wilson, and include chancel, organ-chamber, vestry, and new pulpit, while the parishioners have subscribed for the south aisle.

At the meeting of the A.A. Camera Club to be held on Monday week, Oct. 29, at 56, Great Marlborough-street, W., at 8 p.m., a lecture will be given on "The Frena Hand-Camera and its Special Suitability to Architectural Photography," by Mr. Fred O. Bynoe.

The new church schools, Gosport, are being warmed and ventilated throughout by means of Shorland's patent Manchester grates and patent exhaust roof ventilators, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The Committee of the Sunday Society have decided upon the first Sunday in December as the date for Museum Sunday this year, which will be the third occasion on which a Sunday has thus been set apart for advocating the objects of the Society from the pulpit.

The memorial stone of the new buildings now being added at the rear of Burlington Sunday-schools, Ipswich, was laid on Monday. The addition provides infants' school and classrooms, and is connected with the old building by a corridor and staircase hall. The chief room is 25ft. by 20ft., and there are also a ladies' room, 22ft. by 16ft., and five new classrooms. By moving the revolving shutters between classrooms a hall 41ft. by 18ft. is available. Messrs. Eade and Johns, of Ipswich, are the architects, and Mr. E. Catchpole is the builder. The cost will be about £1,300.

The infirmary to the Isleworth Union will comprise eight wards, about 70ft. long by 24ft. span. Mr. W. H. Ward, of Birmingham, is the architect. The whole of the floors will be fireproof on the Fawcett system. The smoke-flues will be carried in the thickness of the floor.

The Baths Club, Dover-street, Mayfair, W., which will shortly be ready for the reception of members, is novel as far as London is concerned. The object of the club is to afford its members accommodation for swimming and gymnastics, and also for Russian, Turkish, and other baths. Those parts of the building which contain the dining, reading, smoking, billiard, and bedrooms (40), while communicating with, are distinctly separate from, the baths and gymnasium. The building has been erected by Messrs. J. Allen and Son, of Kilburn, and the whole of laundry machinery has been supplied by Mr. Harper Twelvetrees, of London and Manchester. The total cost of the works has been about £70,000. The architect was Mr. Collins B. Young, of Cockspur-street, and Mr. Donald Milne his clerk of works.

The town council of Crewe have decided to give £800 for a site of land in Richard Moon-street, whereon to erect an art school costing about £5,000, and to acquire five acres of land at Coppenhall to erect thereon an isolation hospital costing probably about the same sum.

New board schools are being erected in Church-road, Lowestoft, at a cost of about £7,500. Mr. G. E. Hawes, of Lowestoft, is the contractor.

New board schools are being built at Ross, Herefordshire. Mr. A. H. Pearson is the architect, and Messrs. J. B. Kemp and Son are the builders.

Another ambitious undertaking was entered upon by the Blackpool corporation on Tuesday. Three large estates to the north of Claremont Park, embracing The Cliffs and over 160 acres of land, are to be purchased at a cost of £32,500, and it is intended to construct a new promenade and carriage drives, with a view to adding a new and extensive suburb to the town.

The underground portion of the Walthamstow and Epping Forest Railway will be constructed on the Greathead shield principle. This is the only line that is authorised to use either steam or electricity.

Trade News.

WAGES MOVEMENTS.

The Building Trades.—The monthly report of the Labour Department states that most branches of the building trades continue well employed, though a slight falling off is observable with carpenters and plumbers, with the result that the percentage of unemployed in the Unions connected with this group of industries has risen from 3·4 to 3·6. The furnishing and woodworking trades are, as a rule, fairly busy. The percentage of unemployed in Unions concerned is 4·7, compared with 4·8 at the end of August. The number of new disputes in September shows a decrease compared with the preceding month, 69 having been recorded, as compared with 86 in August and 54 in September, 1893. Of these 69 disputes, 12 occurred in the building trades.

Glasgow.—The plasterers' labourers are still on strike for an increase from 6d. to 6½d. per hour.

Liverpool.—A social gathering of the members of the National Association of Operative Plasterers and the Liverpool Local Society of Operative Plasterers was held on Saturday evening at Thredder's University Hotel, Brownlow-hill, the object being to bring about the amalgamation of the local with the National Society. Mr. Arthur Otley, general secretary of the National Society, came down from London to preside, and was supported by Messrs. J. Gough, president, and O. Roberts, secretary of the Liverpool branch of the National, and R. King, president, and J. Kenny, secretary of the local society. A large number of the trade were present. After dinner, the Chairman and Messrs. Roberts, King, Gough, Baldwin, and others spoke in favour of the scheme proposed, which was adopted.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Bath.—For painting the gas-lamps in the city, for the corporation:—

Stapleford, P., Widcombe (accepted)	£61 5 4

[Lowest tender but one.]

Bethnal Green, E.—For erecting a mixed school for 420 children in Old Bethnal Green-road, for the London School Board:—

		A.
Downs, W.	£12,940	£170
Green, T. L.	12,911	189
Grover, J., and Son	12,620	210
Reed, A., and Son	12,508	200
Killby and Gayford	12,434	195
Longley, J., and Co.	12,344	166
Cox, C.	12,053	187
Lawrance, E., and Sons	11,976	187
Patrick, J. & M., Rochester*	11,430	207

* Accepted.

A.—If brickwork be built in cement, add.

[(*a*) Cost of school buildings and closets, £8,662; (*b*) tar-pavement and playgrounds, £954; (*c*) boundary walls and gates, £415; (*d*) two teachers' rooms, £200, (*e*) works to existing buildings, £141; (*f*) extra depth of foundations, £1,058; (*g*) brickwork to be built in cement, add, £207; total, £11,637. Cost per head of (*a*), £20 12s. 5d.; total cost per head, £27 14s. 1d.]

Bromley, E.—For the provision and erection of three temporary iron buildings on vacant land near the Bromley Hall-road School, for the London School Board:—

Charteris, D.	£1,997 0 0
Dixon, I., and Co.	1,905 0 0
Morton, F., and Co.	1,865 0 0
Cruwys, T.	1,850 0 0
Croggon and Co., Limited	1,825 10 0
Humphreys, Limited	1,810 0 0
Keay, E. C. and J., Limited	1,702 0 0
Harbrow, W., South Bermondsey*	1,595 0 0

* Accepted.

Bromley, E.—For sanitary work at the Alton-street School, Bromley, for the London School Board:—

Revised tenders—

Cruwys, T.	£1,356 0 0
Calnan and Co.	1,150 0 0
Knight and Son	1,125 0 0
Lidstone, N.	1,125 0 0
Lawrance and Sons	1,107 0 0
Parker, G., Sumner-road, Peckham*	970 0 0

* Accepted.

Bromley, E.—For the erection of a school for 780 children on the Old Palace site, St. Leonard's-street, Bromley, for the London School Board:—

		A.
Reed, A., and Son	£16,999 18 0	£230 10 6
Lovatt, H.	16,974 0 0	271 0 0
Killby and Gayford	16,828 0 0	300 0 0
Pattinson, S. and W.	16,596 0 0	407 0 0
Gregar, W., and Sons	16,513 0 0	280 0 0
Lawrance, E., and Sons	16,312 0 0	305 0 0
Cox, C.	15,831 0 0	305 0 0
Kirk and Randall	15,575 0 0	339 0 0
Mowlem, J., & Co., Grosvenor Wharf (accepted)	15,339 0 0	285 0 0

A.—If brickwork be built in cement, add.

[(*a*) Cost of school buildings and closets, £10,549; (*b*) tar-pavement and drainage, £1,011; (*c*) boundary walls and gates, £374; (*d*) two teachers' rooms, £200; (*e*) schoolkeeper's house, £684; (*f*) cookery and laundry centres, £1,026; (*g*) manual training centre, £1,017; (*h*) extra depth of foundations, £478; (*i*) brickwork built in cement, £285; total, £15,624. Cost per head of (*a*) only, £13 10s. 5d.; total cost per head, £20 0s, 7d.]

Camberwell, S.E.—For enlarging the infants' department of Crawford-street Schools, Camberwell, by 140 places, for the London School Board:—

		A.
Johnson and Co.	£2,701 12 0	£24 9 0
Higgs, F. and H. F.	2,692 0 0	43 0 0
Nightingale, B. E.	2,636 0 0	41 0 0
Bowyer, J. and C.	2,533 0 0	45 0 0
Smith, J., and Sons	2,456 0 0	46 0 0
Marsland, J.	2,433 0 0	42 0 0
Mid-Kent Building and Contracting Works, Limited, Beckenham (accepted)	2,377 10 7	45 7 6

A.—If brickwork be built in cement, add.

[(*a*) Cost of school buildings and closets, £1,701 11s. 5d.; (*b*) tar-pavement, £41 3s.; (*c*) works to existing buildings, £560 14s. 2d.; (*d*) extra depth of foundations, £74 2s.; (*e*) add for brickwork in cement, £45 7s. 6d.; total, £2,422 18s. 1d. Cost of existing school, £12,636 1s. 10d.; cost of proposed enlargement, £2,422 18s. 1d.; total, £15,058 19s. 11d. Total accommodation of school, including proposed enlargement, 1,260; total cost per head of ditto, £11 19s.]

Charlton, S.E.—For the erection of a school in Fossdene-road, Charlton, for 789 children, with cookery and laundry centres, for the London School Board:—

		A.
Collinson, J. and F.	£18,199	201
Nightingale, B. E.	17,671	287
Green, T. L.	17,598	300
Holliday and Greenwood	17,440	258
Longley, J., and Co.	17,342	229
Patrick, J. and M.	17,334	286
Reed, A., and Son	17,291	285
Wallis, G. E., and Sons	17,175	287
Pattinson, S. and W.	17,025	275
Shillitoe, J., and Son	16,700	230
Kirk & Randall, Woolwich*	16,601	287

* Accepted.

A.—If brickwork be built in cement, add.

[(*a*) Cost of school-buildings and closets, £12,279; (*b*) tar-pavement and playgrounds, £1,085; (*c*) boundary walls and gates, £1,247; (*d*) two teachers' rooms, £200; (*e*) schoolkeeper's house, with room for cookery and laundry centres, £1,320; (*f*) extra depth of foundations, £470; (*g*) brickwork built in cement, £287; total, £16,888. Cost per head of (*a*) only, £15 11s. 3d.; total cost per head, £21 8s. 1d.]

Chelsea, S.W.—For providing four hot-water coils with tubular boilers, in four classrooms at Saunders-road School, for the London School Board:—

Pearson, R. H. and J.	£55 10 0
Purcell and Nobbs	54 15 0
Parsons and Harris	54 0 0
May, J. and F.	45 0 0
Davis, G., Silver-street (accepted)	44 0 0

Darenth.—For erecting five fire-escape stairs at the School for Imbeciles at Darenth, near Dartford, Kent, for the Metropolitan Asylums Board. Messrs. A. and C. Harston, 15, Leadenhall-street, E.C., architects:—

Freeman, P.	£1,085 0 0
St. Pancras Ironworks Co.	910 0 0
Miskin, C.	895 0 0
Hart, Son, Peard, and Co., Ltd.	850 0 0
Stone, J.	825 10 0
Clarke, J. F., and Sons	818 0 0
Ludgate, H., and Co.	787 0 0
Marshall and Hatch	784 0 0
Clark, Bunnett, and Co., Ltd.	749 0 0
Moorwood Sons and Co.	732 0 0
Mears, C., D'Oyley and Co.	688 10 0
May, J. and F., 259, High Holborn, W.C. (accepted)	615 0 0

Frazerburgh.—For the deepening of the Balaclava Harbour, for the harbour commissioners:—

Price and Wills, Westminster (Accepted).	£39,805 0 0

Gillingham, Kent.—For the erection of schools in Byron-road, for the Gillingham School Board:—

Snow (accepted)	£4,995 0 0

[Highest tender, £6,276; lowest, that from Wilford, of Snodland, £4,780.]

Fulham.—For alterations and additions to the Norfolk Arms, North End-road, Fulham, for Mr. L. Ascott. Mr. Richard Dickinson, 5, John-street, Adelphi, architect :—

Burman	£2,840	0	0
Lascelles	2,647	0	0
Turtle and Appleton	2,565	0	0
Dearing and Son	2,430	0	0
Beer and Gash	2,420	0	0
Edwards and Medway	2,355	0	0
Mark	2,194	0	0

Golden-lane, E.C.—For the erection of the Cripplegate Institute. Mr. S. R. J. Smith, F.R.I.B.A., architect :—

Castle Bros.	£30,265	0	0
Hall, Beddall, and Co.	29,980	0	0
Simpson	29,174	0	0
Dove Bros.	28.845	0	0
Mowlem, Burt, and Co.	28,500	0	0
Higgs and Hill...	28,444	0	0
Higgs, T. H.	28,296	0	0
Fort, Hickson, and Co.	28,075	0	0
Perry	27,990	0	0
Lawrance	27,800	0	0
Bywater	27,658	0	0

Hampstead.—For providing and fixing low-pressure hot-water apparatus for Broomsleigh-street Board School, Hampstead :—

Maguire and Son	£327	0	0
Wharton, W. H.	260	0	0
Davis, G.	245	0	0
Duffield and Co.	200	0	0
Cannon, W. G....	195	0	0
Gray, J., Danvers-street, Chelsea*	156	10	0

* Accepted.

Hampstead, N.W.—For the provision of a manual training centre at Broomsleigh-road School, Hampstead, on a schedule of prices :—

Lawrance and Sons (accepted) on schedule of prices.

Hayle, Cornwall.—For furnishing the Passmore Edwards Institute :—

Fuzzy, J. and A. J., Penzance (accepted).

Heywood, Lancs.—For supplying illuminated dials and chimes to the tower of St. Luke's Church :—

Joyce, J. N., Whitchurch, Salop (accepted).

For preliminary stonework to same—

Thompson and Brierley, Bury, Lancs (accepted).

High Wycombe.—For alterations and additions at the Cross Keys p.h., High Wycombe, for Messrs. Leadbetter and Bird. Mr. Arthur Vernon, 29, Cockspur-street, London, S.W., and High Wycombe, architect :—

Barker, Kensington	£695	0	0
Nash, Wycombe	542	0	0
Loosley, Wycombe	490	0	0
Gibson, Wycombe	448	0	0
Hunt, Wycombe	393	0	0

High Wycombe.—For the erection of new hotel, with outbuildings, &c., in Green-street, High Wycombe, for Messrs. Leadbetter and Bird. Mr. Arthur Vernon, 29, Cockspur-street, London, S.W., and High Wycombe, architect :—

Barker, Kensington	£1,490	0	0
Boyle	1,450	0	0
Harris, Bolter End	1,361	10	0
Smith, Lane End	1,340	0	0
Hunt	1,287	0	0
Dickens	1,266	0	0
Loosley	1,237	0	0
Nash	1,235	0	0
Harris	1.200	0	0
Flint	1,167	0	0
Gibson (accepted)	1,140	0	0

(Rest of Wycombe.)

Holborn.—For heating works at St. Luke's Workhouse, City-road, E.C., for the Guardians of the poor of Holborn Union. Mr. A. Saxon Snell, F.R.I.B.A., 22, Southampton-buildings, Chancery-lane, W.C., architect :

Comyn, Ching, and Co., Long Acre	£1,294	3	0
Defries & Sons, Houndsditch, E.C.	1,191	0	0
Waller & Co., Fish Street-hill, E.C.	1,160	10	0
Kite and Co., Euston-road, N.W....	976	0	0
Purcell & Nobbs, Cleveland-street...	973	0	0
Benham and Sons, Wigmore-street	951	0	0
Vaughan and Brown, Kirby-street	950	8	0
May, J. and F., High Holborn ...	918	0	0
Clarke, J. F., and Sons, Moorgate-street, E.C.	750	0	0
Moorwood, Sons, and Co., Southampton-street, W.C.	550	10	0
Strode and Co., Osnaburg-street, N.W. (accepted)	497	0	0

Homerton, E.—For erecting a chimney-shaft in connection with the new boiler provided at the Upton House Industrial School, Urswick-road, Homerton, for the London School Board :—

Nightingale, B. E., Albert Works, Albert Embankment (accepted)...	£258	0	0

Lambeth.—For providing hot-water coils and radiators with small boiler, for hall and two classrooms at South Lambeth-road School, for the London School Board :—

Ellis, J. C. and J. S.	£115	0	0
Maguire and Son	112	0	0
Pearson, R. H. and J.	110	0	0
Russell and Co.	104	15	0
Wontner-Smith,. J., Gray, and Co.	94	0	0
Berry, Z. D, and Sons	88	0	0
Clarke, J. F., & Sons, Featherstone-street, E.C. (accepted)	83	0	0

Limpsfield.—For excavations and foundations of the Caxton Convalescent Home, Limpsfield, Surrey. Mr. A. Saxon Snell, F.R.I.B.A., architect. Quantities by the architect :—

Durtnell, R., Brasted	£501	7	4

Llanishen.—For lodge and stables, Llanishen :—

Cough Bros.	£1,070	0	0
Dunn, C. C.	1,050	6	0
Symonds, W., and Co.	1,029	10	0
Best, W., and Co.	1,025	0	0
Cox, R., and Bardo	995	14	8
Gibson, J.	980	0	0
Luke, E. M.	940	0	0
Evans, E. R., and Bros. (accepted)	938	0	0

(All of Cardiff.)

London, E.—For providing small low-pressure hot-water apparatus at Monteith-road School, Tower Hamlets, for the London School Board :—

Purcell and Nobbs	£87	10	0
Vaughan and Brown	63	10	0
Parsons and Harris	60	10	0
May, J. and F., High Holborn* ...	57	10	0

* Accepted.

London.—For the extension of the staff quarters, laundries, &c., at the South-Western Fever Hospital, Stockwell, for the Metropolitan Asylums Board. Mr. T. W. Aldwinckle, architect. Quantities by Mr. W. T. Farthing :—

Kerridge and Shaw	£29,009	0	0
Lowe, R. A.	28,930	0	0
Edward and Medway...	28,923	0	0
Wallis	28,354	0	0
Lorden and Sons	28,027	0	0
White and Son	27,579	0	0
Higgs, F. and H. F.	26,582	0	0
Kirk and Randall	26,140	0	0
Proctor, E.	25,295	0	0
Johnson, W., & Co., Ltd. (accepted)	24,300	0	0

London.—For repairs and decorations to the Crystal Tavern, Burdett-road, E. Messrs. C. Foulsham and H. Riches, Bromley-by-Bow and Crooked-lane, City, architects :—

Osborn, T. and Sons, Lower Thames-street, E.C. (accepted)	£205	0	0

London.—For new drainage at Guilsfield, King's-road, Clapham-park, S.W. Mr. H. Riches, 3, Crooked-lane, London, E.C., architect :—

Osborn, T., and Sons, Lower Thames-street, London, E.C. (accepted ...	£104	0	0

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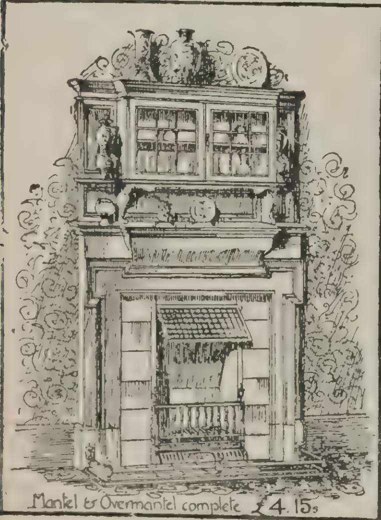

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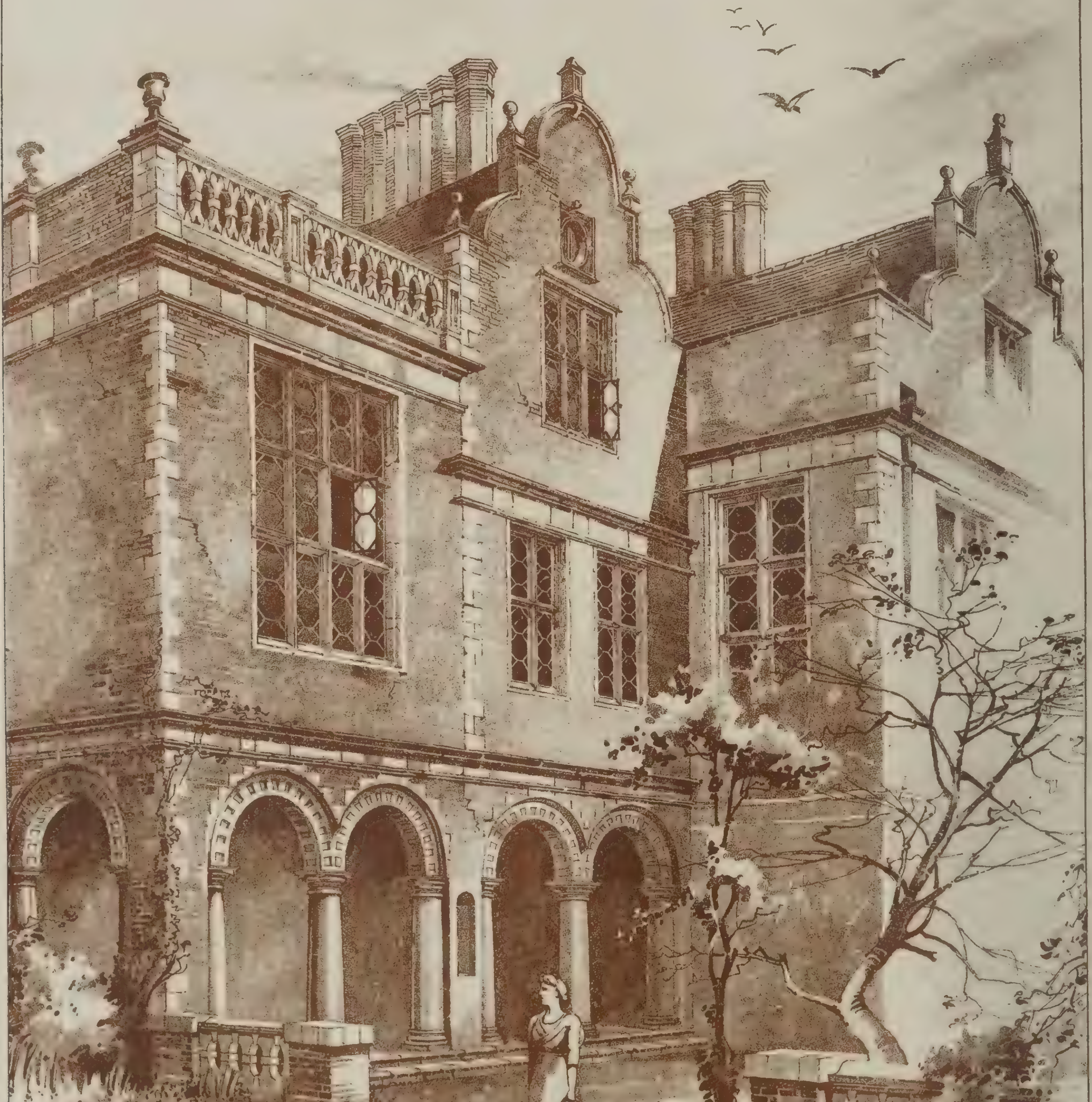

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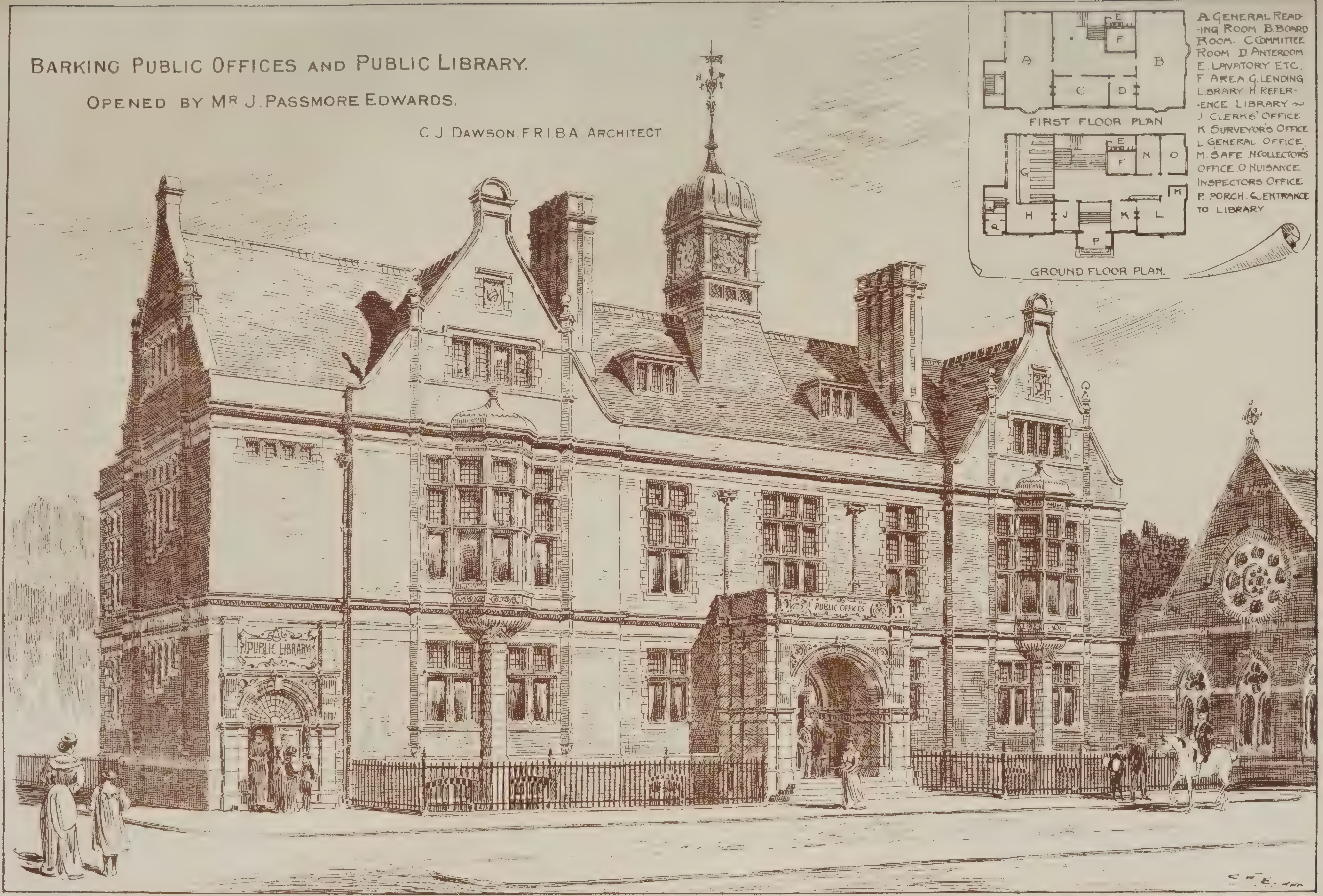

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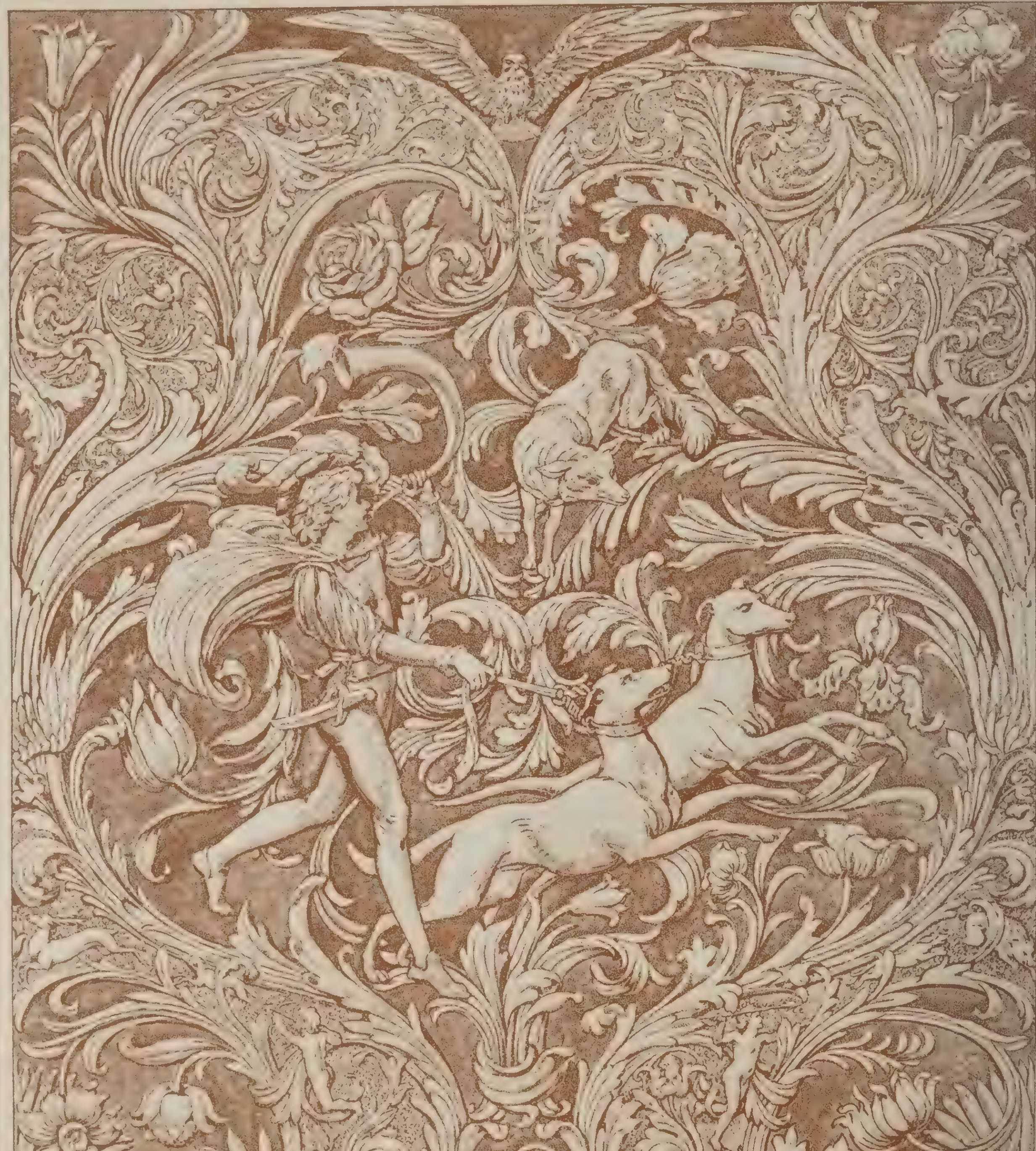

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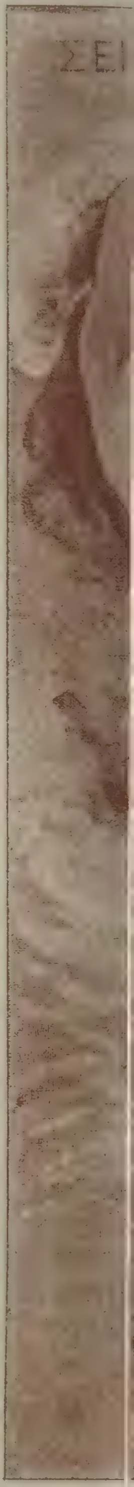

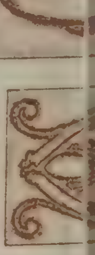

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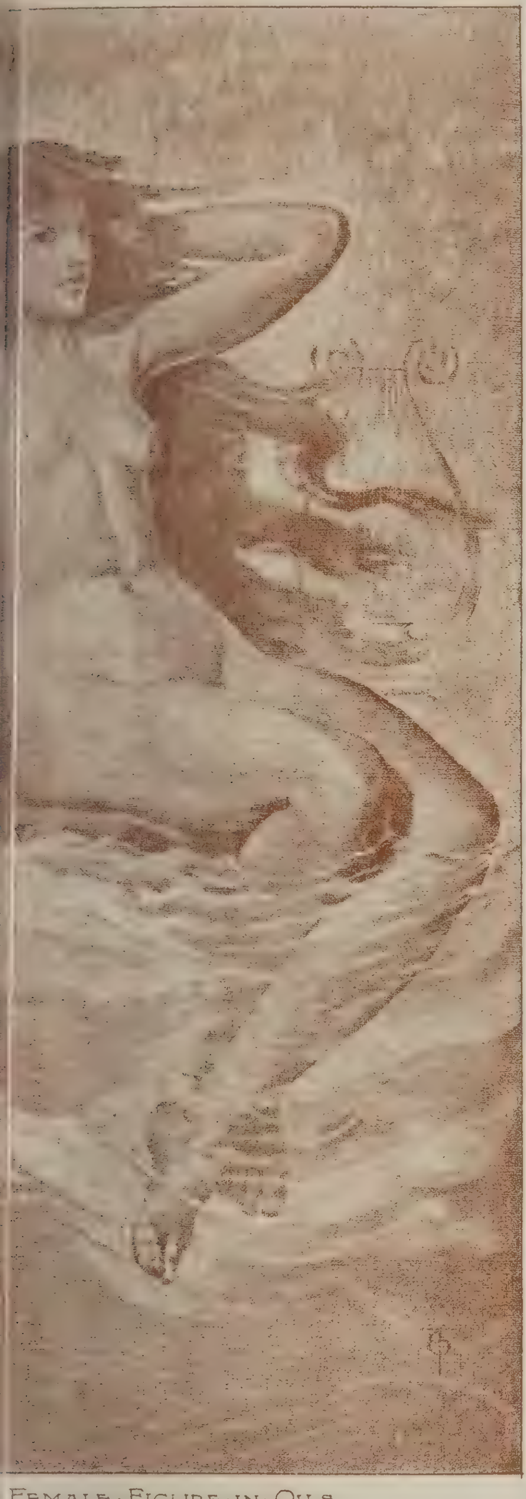

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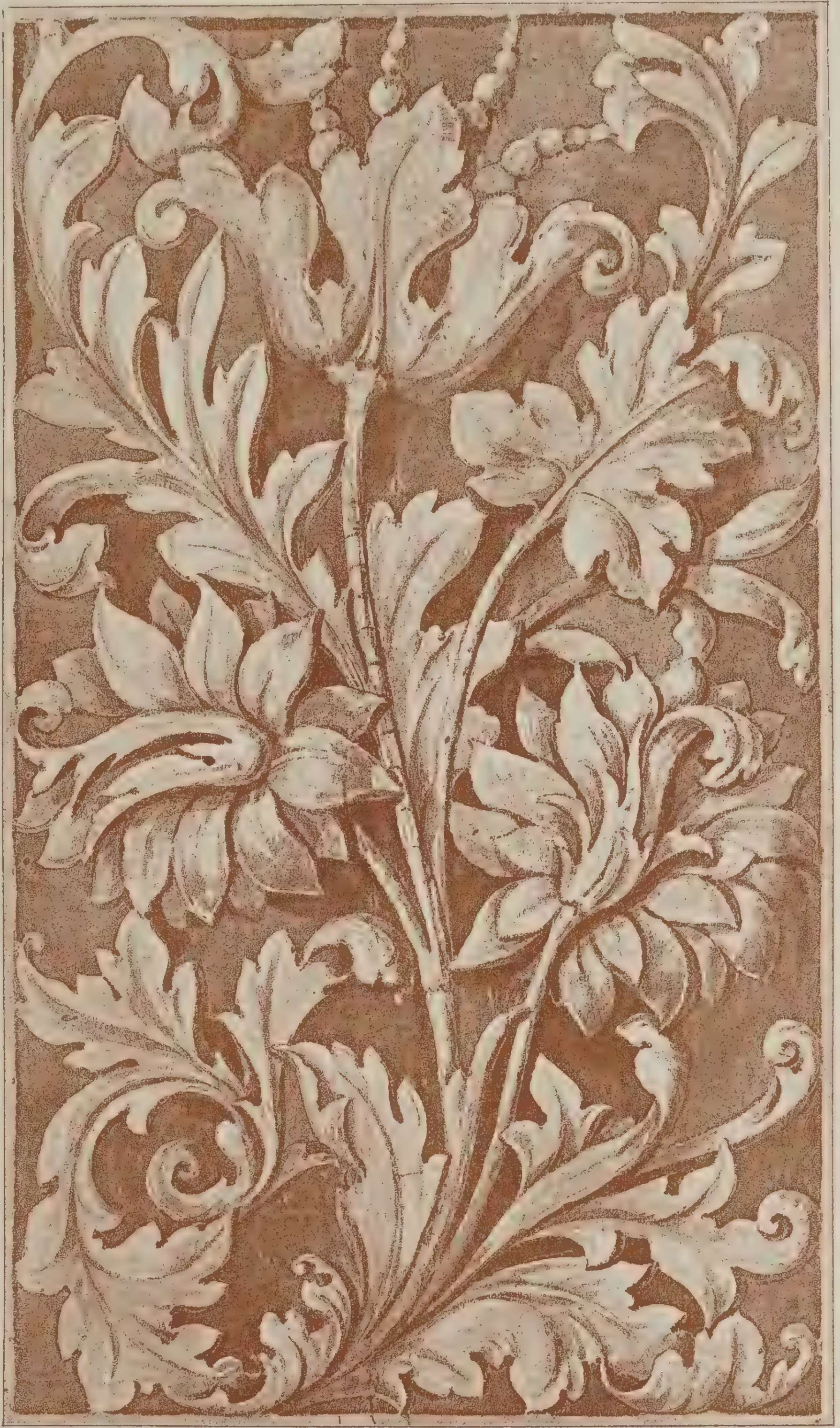

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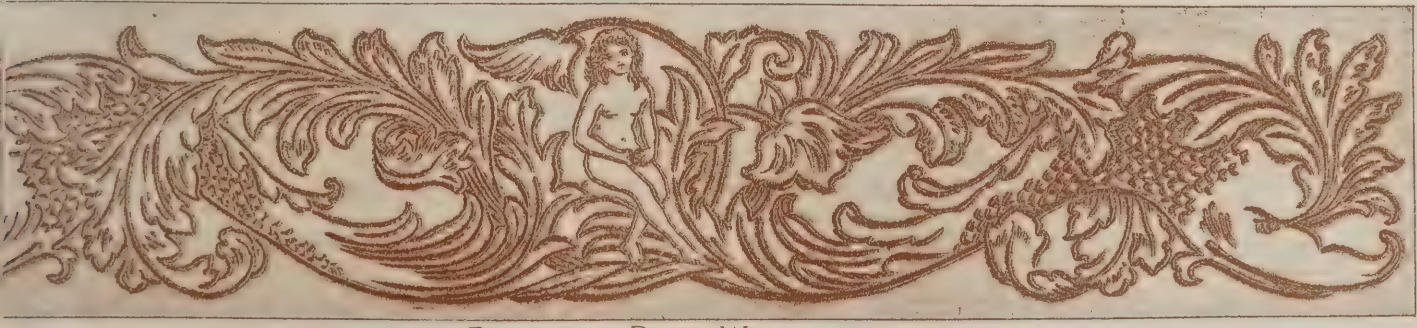

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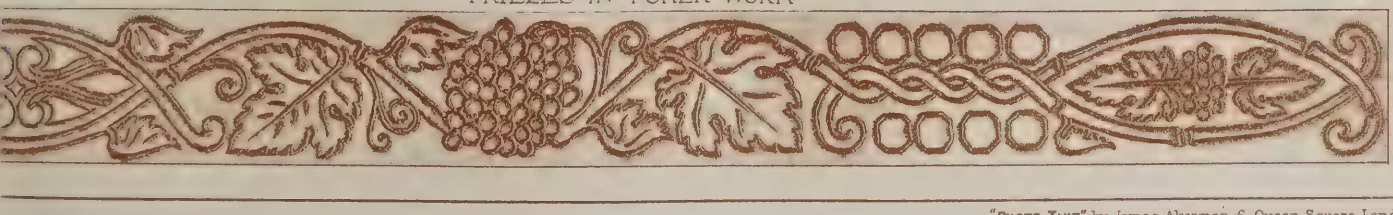

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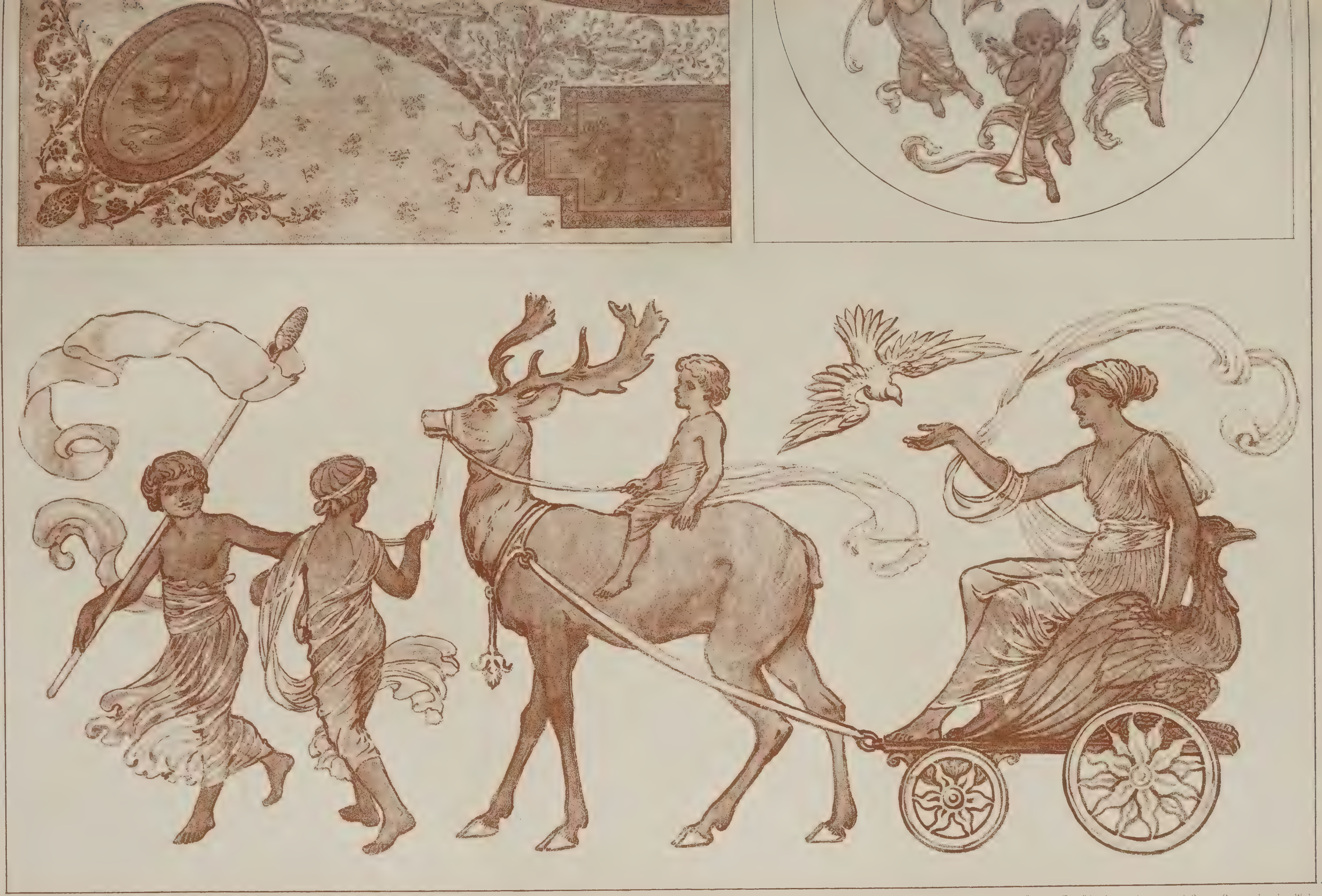

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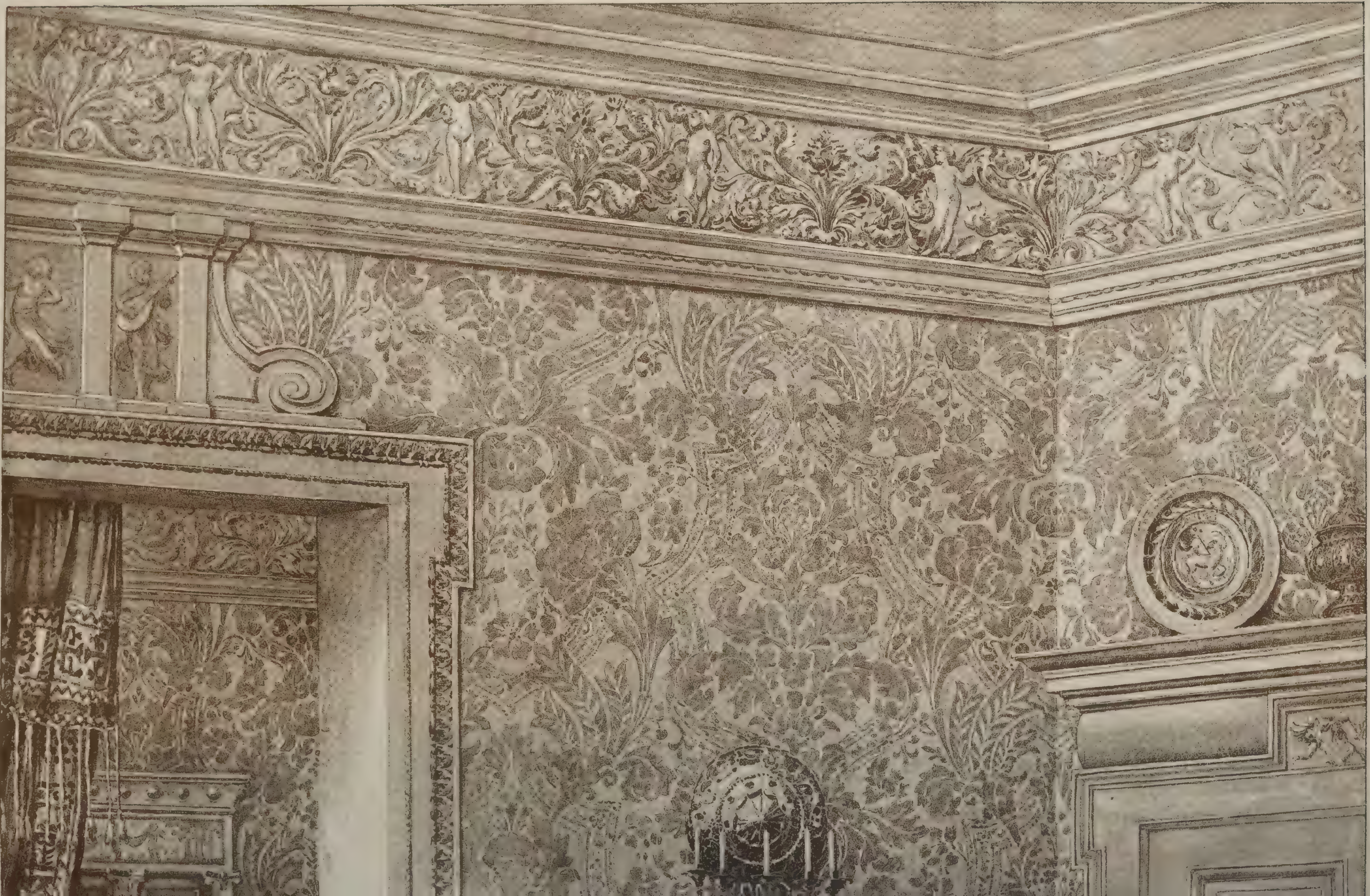

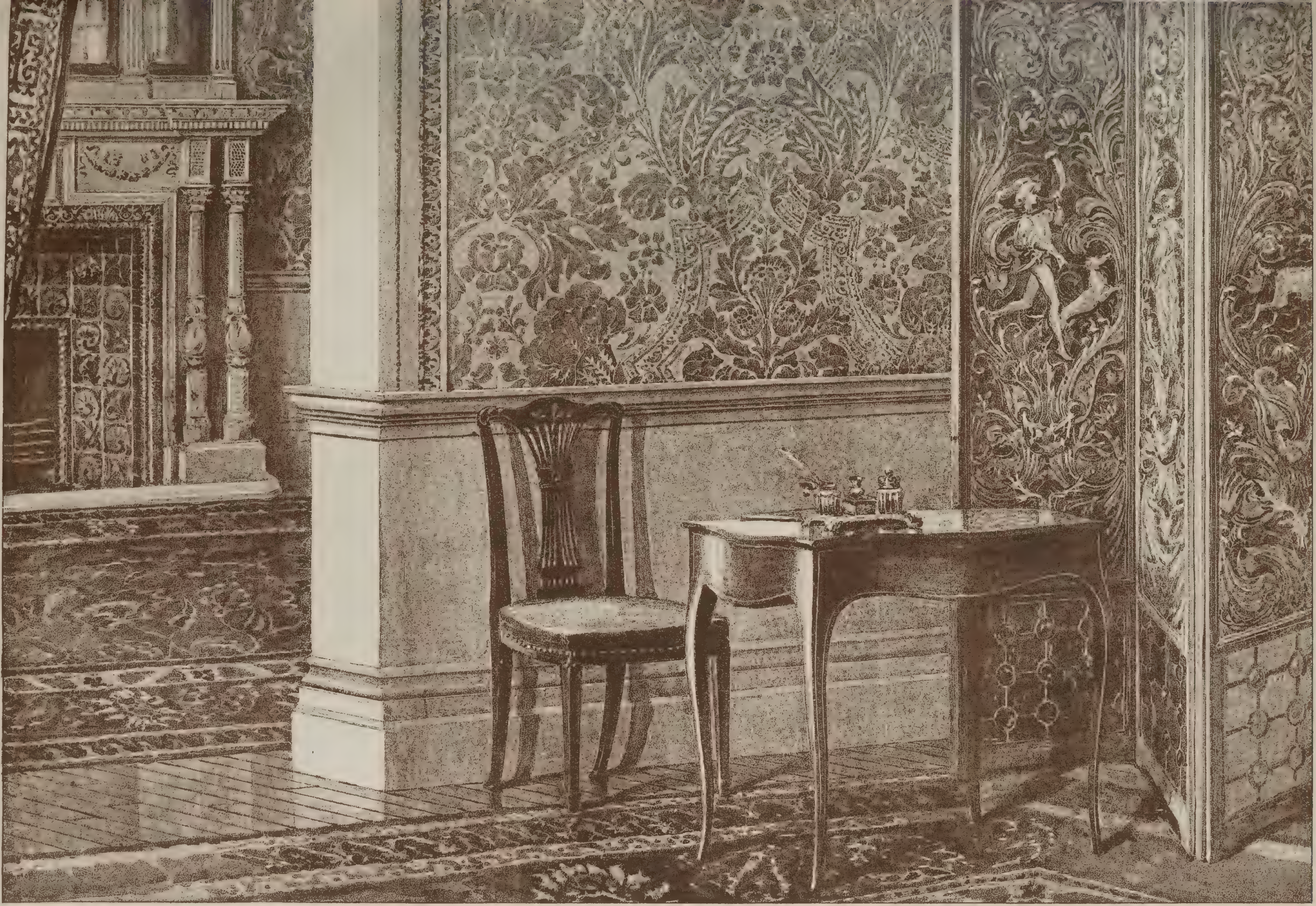

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FRIDAY, OCTOBER 26, 1894.

HOW FAR IS MODERN PROGRESS REAL?

EVERY age and every country has its own special Mumbo Jumbo, before which the common herd are expected to fall flat, "breathless in adoration." Sometimes it is a man, sometimes it is a body of men, and sometimes, again, it is a system of doctrines and practices. And in every age and country, too, rudely inquiring minds arise, who do not take the Mumbo Jumbo of the period at his worshippers' valuation. They want to bring him into the daylight—to see what he is made of—to find out how much of him is real, and how much is mere stuffing and padding. But this would never do. He will not bear too close an inspection, and intruders must beware. At some periods they are disposed of by being burnt at the stake; in others, they are turned over to the hangman. In Africa, it is said, they die mysterious deaths, and in civilised countries like England they are usually deprived of the means of living, so that the same result occurs, without a definite responsibility for it resting on anybody.

Now the Mumbo Jumbo of our land and our century has been called Progress. It has many aspects; but in this place we have chiefly to do with its physical and material aspect. Is this aspect really as noble, as beautiful, as altogether admirable as its votaries represent—in short, is it all real progress, or is it partly a movement which the next or some other century will have to reverse? There is nothing uncommon in such a change of direction. Fifty years ago, the whole tendency of English legislation was to do away with rules and regulations. The popular ideal then was unbounded liberty for all, with a policeman here and there just to keep order. The popular ideal now would leave liberty to no one. Laws and by-laws are accumulating, till the world will soon not be able to contain them; and pains and penalties are multiplying, till there will not be a living man on whom some of them have not been, or might not have been, inflicted. Both these ideals can hardly be right. If unfettered liberty is the proper thing, the present process of turning the world into a sort of model prison must be a mistake; and yet our fathers, who advocated the one, and our contemporaries, who are advocating the other, are alike in the consciousness of their own infallibility. If there is little else they would agree in, they could both sing in chorus, "We are the people, and wisdom will die with us." If there is one thing which both have always been quite sure of, it is that they are promoting Progress. Yet the man who stands a little out of the crowd, and looks at the track left by the movements of the last two or three generations, cannot help thinking at times that much of it has been a progress there and back: an advance like that of the general who, "with thirty thousand men, marched up the hill, and then marched down again."

Let us turn to details. In these, very often, there has not yet been the same grand reversal of policy. A straighter course has so far been steered; but the question is, whether that course has always been the best one, and whether it can or should continue. Take an example from the sanitary work in our cities. Here much good has been done, and also much evil. There is no town now like the Edinburgh of 1750, if we may trust Smollett's description of it. The Edinburgh people then had not got even as far as cesspools. Latrines there were none. The slops were flung into the streets after dark. It was customary for the flinger to caution passengers by previously crying "Gardy loo!" a phrase supposed by some to signify, "Lord have mercy on you," though it was perhaps only a corruption of the French *Gardez lieu*. Even the digging-out of receptacles for sewage was an advance on this primitive state of things—at least, as far as comfort and cleanliness were concerned. Whether it was also an advantage in healthiness is not so certain; here, perhaps, there was little to choose between the two modes of disposal. At any rate, the cesspool system everywhere proved bad enough. It was condemned, and drainage took its place. Then, in all parts of the country, and for many years, it was quite the correct and regular thing to make the drains run into the rivers. This was Progress in one aspect, while Progress in another aspect was busy in supplying the towns with water taken from the very rivers they drained into. A few fastidious people objected to this arrangement. But it might have been long before they gained the public ear, if Nature had not kindly sent the cholera to support their arguments. A great London water company was good enough, while cholera was present, to try the experiment of giving its customers diluted sewage to drink. They died by thousands, while people supplied by other water companies only died by scores; and so at last it has become a recognised fact that house-drainage is unsuitable to general consumption.

So far, no doubt, progress has been real, though slow. Look, however, at another side of the matter. We have got rid of visible filth, like that of 18th-century Edinburgh; but we have done it by establishing under foot an all-pervading circulation of deadly gases which pollute the air at every street-corner, and which, in spite of precautions, continually find their way into our houses, and lay a foundation for all sorts of diseases. By expending millions upon millions of money we have turned the very earth into a hotbed for breeding typhoid, diphtheria, and many other pestilences, and then, as a further advance, we set up what is called "sanitation," which is mainly an attempt to save us from the fruits of our own devices. We have cleaned the outside of the cup and the platter, but have made the inside so foul that it imperils our very lives to touch it. In towns our sewer system poisons the whole atmosphere. True, its vapours are diluted. We do not smell gaseous sewage in every breath we draw, any more than we tasted liquid sewage in every drop we drank; but there it is all the same. And we meet with it in a concentrated and unmistakable form dozens of times every day—sometimes at home, always abroad. Wherever a foot-passenger has to wait at a crossing, there, by the wisdom with which we are governed, he finds a sewer grating to envelop him with reeking stench. Wherever there is a crack or a cranny in the pipes of his house, the same disgusting odour issues out and assails him. If he is a tenant, he is in frequent misery through the necessity for removing stoppages and doing repairs; and if he is a landlord, half his income is thrown away in paying for them. And if, in either case, he complains, he is threatened with being called an enemy to Progress. For this belief in Progress, to its votaries, is a religion, and religions have to be taken as they stand, and swallowed whole. It is not permitted to pick and choose, to take this part and reject that. If, therefore, you would not be counted a heretic, and treated as one, you must stop your nose to sewer gas. You must glorify the advance of "sanitation," and be sure not to hint that nine-tenths of it would never have been needed if Progress had only devised a reasonable, instead of an unreasonable, way of getting rid of domestic refuse; if, in short, it had all been real progress, and not "two-fifths improvement and three-fifths sheer fudge."

This generation, probably, will see no marked advance here. The "sanitators" are too numerous. There must be scores—perhaps hundreds—of thousands of people with a vested interest in sewer gas. Imagine it done away with, and consider the ruinous result to inspectors, surveyors, manufacturers, and workmen—honest people enough, and necessary as things are, but necessary to a large extent only because things are what they ought not to be. A great evil has been set up, and without blame to them a great many people's livelihoods have come to depend on its continuance. Therefore, any lessening of it is likely to be slow. Time was—at its first appearing—when it might have been removed with little trouble and little loss to anybody; but Progress "must be doing." Unlike progress, it does not think twice before it acts once. It is nothing if it cannot make a show and lay out a bit of money, and in doing these two things it has landed us where we are.

Our last example showed a physical good gained, at the cost of a great physical evil. Everybody can understand that such an advance as that is not much to boast of; and the only way of defending it is to pretend that the evil was inevitable. But there are other departments of Progress in which material benefit is being secured, not so much by material as by mental loss. If the things of the mind come into conflict, or even look for a moment as if they were coming into conflict, with the things of the body, modern Progress loses no time in setting its foot on them. The air is full of talk about Christianity and Spirituality, and the elevation of the masses; but when it comes to action, the people who boast of being only a little lower than the angels conduct themselves as if they were barely a little higher than the beasts. To some extent this is a reaction. Centuries ago, the world went to the opposite extreme. They thought to benefit their souls by injuring their bodies. Now they are trying the very reverse of this. In most departments the material counts for everything, and the mental for nothing. Instead of the mortification of the flesh, we have taken up with the mortification of the spirit; and there is a terrible outcry if the smallest material advantage is given up to secure mental satisfaction.

Compare, for instance, our modern streets with those of any picturesque old town. How very convenient they are—and how unutterably wearisome! What wonderful Progress they exhibit, as they run on for mile after mile without change or break. For it is only we—as it would seem—who have discovered that a straight line is the shortest distance between two points. This truth, hidden from ages and generations, has lately been revealed to us, and we look back with scorn on our benighted predecessors, who hardly seem to have had a suspicion of it. And yet it is possible that these benighted people knew very well what they were about. They lived in their cities, and tried to make them worth living in. Monotony was abhorrent to them—as it is to everybody with healthy tastes—and they got rid of it at the price of walking a thousand yards in a beautiful street instead of nine hundred and fifty yards in an ugly one. We are wiser. There is not a vestryman in London who would vote for the extra fifty yards, even if they made Oxford-street a match for the High-street of Oxford. "I believe in utility," says this practical person. Very good; but what is utility? Is there any utility in forcing men to do their work in hateful places, amongst depressing surroundings? Does any man do more work, or better work, under such conditions? Is anyone at his best, even as a machine, when the dreary mechanicalism with which he is shut in makes him instinctively ask whether life is worth living?

The very Londoner who has helped to make London what it is has to run away from it, or die of dreariness. Like Macbeth, he seems to say, "I am afraid to think of what I have done; look on't again I dare not."

What is true of modern streets is true—with a percentage of exceptions—of modern buildings. Our real architects, indeed, however they may differ in other ways, are all free enough at present from any leaning to monotony. Not for centuries has there been so much freshness, so much variety, in the real architecture of the period. But the misfortune is that there is so little of this. The pseudo-architecture of the time is what fills our towns, the work of the speculative builder, and the machine-like surveyor. Their only aim is to produce the maximum of show with the minimum of trouble. What they call a "design" is a mere stock pattern, which they have used a hundred times before, and mean to use a hundred times again. But whereas, in former times, it was a plain pattern, and so far inoffensive, it now aims at being a decorated one, and becomes aggressively vulgar. They cannot leave it in its native homeliness; they stick it all over with ill-copied and misplaced details of some fashionable style, which improve it as much as the barrister's wig and the Wellington boots improved the African chief in the story. Yet here, again, we are commanded to fall down and worship Progress, who is doing these wonderful things for us; and if we do not, we are told that it is all jealousy, and that architects can never see any good in each other's work.

Once in a lifetime we get a new Building Act. And once in every year or two we get some Act, or part of an Act, which more or less bears on building. The object of all this legislation is to make buildings safer and sounder and healthier to live in: three excellent purposes to aim at, unless, as Burns says, we "buy the joys too dear." These columns are hardly the place in which to show how ruinously such regulations may affect perfectly blameless persons. The public are learning how much easier it is to sacrifice an individual here and there, than to pay for what it wants; and people who read with horror how some savage tribe has offered up a child to stay a pestilence or end a drought, will cheerfully join in destroying a widow or an orphan whose whole income arises from property which an awkward national conscience has suddenly decided to do away with. So slums are pulled down, and artisans' dwellings built: both good works, if honestly done, though it is unfortunate that the people who lived in the slums do not move into the dwellings, and that one result is often to overcrowd still more the slums which remain. The slum problem, like the sewage problem, is surely not past the wit of man to solve; but neither have been solved yet, and till they are, some of us will find our worship of Progress impeded by sad suspicions.

There is nothing, assuredly, in the widening of our thoroughfares, the structural improvement of our houses, or the throwing open of crowded areas, which should make our towns less fit to live in. These changes themselves should act in the very opposite direction, and would do if they were carried out by free men. It is the machinery which strangles us. On all sides we are met by "Thou shalt not," till it becomes our main business to find what is still left that we may do. The spring and spontaneity is being ground out of our lives: we all spend our days in working a vast machine which threatens to crush each man who neglects it for an instant. In a complex state of society like ours, rules and regulations are, of course, inevitable. But they should be so framed as to leave all possible liberty in non-essential matters; and they should not have the effect of setting up a multitude of petty tyrants amongst us. Something was said on this matter at the recent Public Health Congress; and much more is likely to be said, if the present abuses continue.

If mechanicalism thus has us in its grip throughout our work-a-day life, there is the more reason why, on Sundays at least, we should get away from it. There might be one day in the week on which it retired into the background, and left us to the natural, the beautiful, and the free. But, alas! it haunts our churches as well as our streets. Mr. Richmond, A.R.A., in his paper at the late Church Congress did not say a word too much about its frequent intrusions. Stained glass, carving, sculpture, church furniture of every kind are turned out wholesale in the spirit of the pushing tradesman—partly by machines, and partly by machine-like workmen. We architects know very well in whose buildings this lifeless, worthless trash will be found, and from whose it will be rigidly excluded. But the public do not know. They cannot be made to understand that there are architects *and* architects. Pugin and Street, whom Mr. Richmond mentioned, have had worthy successors; and better church decoration has been produced in recent times than ever before during the Gothic revival. But a large part of the world cannot appreciate it, and another part scarcely knows where to go for it; and so the shoddy-decoration manufacturer drives a roaring trade in the very temple itself. And the people who prophesy smooth things say that it is all well: the churches used to be shabby, and now they are smart; and if this is not Progress, they would like to know what can be!

TWO PHASES OF ARCHITECTURE.

WE believe it was Emerson who said, "There is properly no history, only biography." What he meant was that every man must know the whole lesson for himself and go over the whole ground. Probably such a dictum will explain why it is that in the course of thirty or forty years our architectural development has gone through a cycle of change corresponding with the evolution of a man's experience, and, as every youth is a copyist, more or less, so the earlier years of the epoch are noted for the design and execution of buildings bearing the traces of archæological research and minute literal reproduction. These buildings possess many marks of merit and of careful attention to detail; but they bear the stamp of men, Greek and Gothicist, who had not perceived the practical adaptation of structures to their several wants. They seem only to be passing the first stage.

A comparison of our recent building with those erected, say, a quarter of a century ago, cannot fail to be instructive, if not edifying. Many changes have been wrought. Looking back 25 or 30 years, we seemed to be entering on a new phase of art. An enterprising school of architects were then rising into notice, inspired with a new mission. The Gothicist was beginning to lose ground, and his place was threatened by the disciples of another revival, equally enthusiastic, who declared that Gothic, like its predecessor, had been played out, and that our own vernacular 17th-century style supplied us with a more common-sense mode of building than either Classic or Gothic. The battle between Gothicists and Neo-Classicists, or "Queen Anneists," as some of the new school were called, waxed hot and strong for some time. It was never believed by many that the taste of the Dutch, with all its vagaries, would or could ever supplant the purer and more dignified styles that had been in vogue for so many years, or that the "Queen Anne" style, with its innumerable conceits and grotesque quaintness, could possibly succeed. Time has shown what a fickle thing public taste is: that what one generation regards to be the truth, a successive one disputes; even such a matter as religious belief itself, unless fixed by dogmas that are repudiated by many, is constantly changing; and customs regarded and esteemed by many in the 18th century are now held up to reproach and ridicule. Has not that whirligig of Time shown us so many strange things, both in our domestic and religious customs, that when we come to think of them we cannot be surprised at anything? We have only to compare our churches and chapels now with what they were a few decades ago, the change in form of building and ritual, in the use of organs and choirs, in monumental art, in epitaphs, in matters of decoration and detail, to see how completely we have accepted what our forefathers abjured and despised. After these whimsical changes in ecclesiastical matters, we can no longer be surprised at the reappearance of quaintness and drollery in other directions, as in our secular and domestic buildings, once so repugnant to our tastes. We had our purists, no doubt, who tried to bring back the styles of the 13th and 16th centuries, the Classic architecture of Greece and Rome; but there were others who had sedulously been trying to winnow out the wheat from the chaff, and endeavouring to point to principles that underlay those styles, and to them the change was regarded as rank heresy.

One of the salient notes distinguishing the age of which we speak from the present was the greater attention to style and purity of detail. Comparing buildings, like many designed by the late Sir Gilbert Scott, as St. Giles's, Camberwell; Doncaster Church, the Broad Sanctuary, Westminster; the St. Pancras Hotel, or those of Mr. Butterfield—All Saints', Margaret-street; St. Alban's, Holborn—with those of our present ecclesiastical and semi-ecclesiastical buildings, we are obliged to notice the fact that their authors studied the best and purest models of mediæval times, that they gave special attention to the forms and details of their edifices. In opposite directions, the late W. Burges and Mr. Norman Shaw exhibit the quainter aspects of Gothic and Queen Anne. All students know Burges's grotesque but artistic house at Melbury-road, Kensington, with its quaint fireplace; and Norman Shaw's New Zealand Chambers, Leadenhall-street, and his Lowther Lodge, Kensington; both were sticklers for style, though they managed to infuse into their work an individuality of their own. The latter type has outbid the Gothic in popular preference. Burges's style was a little too Mediæval and archaic for popular tastes. "Queen Anne," on the other hand, appealed to the homely feelings of Englishman, and was a pleasing reversion from the cold and formal Classic o the preceding age. Gothic, as we know, was ill suited to domestic or business purposes, and every attempt to secularise it, in the hands of the purists, was more or less a failure. It seldom accommodated itself t interior wants at that time, because the architect endeavoured to make the plan and the features suit some model or conform t a precedent.

The chief note of our modern architectur is greater attention to plan and interio detail. The principle of accommodation t requirements is the chief concern with th architect of to-day; his craving for style for the correctness of his mouldings, i secondary to providing good arrangement and to seeing that his buildings are fitte with the most approved details and appli ances. His attention is turned from follow ing styles to seeking those artistic principle of which the styles were the product. W do not say he has done so everywhere or ha succeeded always, but the general aim is th right one if pursued without any selfis desire. The architectural literature of th period we are discussing points in the sam direction. Papers and addresses on sty are now rare; in their place we have practical subjects connected with professional practice, craftsmanship, building legislation, school building, and educational questions. Books on special branches of planning and construction are much more numerous than they were formerly, and the professional mind is confining its attention mainly to particular details and branches, not to periods; not so much to the facts of history as to principles and types. At no former period has so much attention been given to the theory and practice of construction, technical matters, sanitary and hygienic questions, heating and ventilation, to materials, notably iron and concrete, new processes and appliances, principles of design and decoration. These have had a considerable influence over modern buildings.

The public have demanded essentials, well-planned and healthy buildings; and if we look at our principal edifices built within the last few years, it will be seen that they possess those qualifications to a degree unknown to buildings of a similar kind erected a quarter of a century ago. Comparing them with those, we cannot fail to observe that the intention of the designer has been different. Attention has been turned to a very different set of conditions, to plans devised not to make elevations Greek, or Roman, or Gothic, but to satisfy actual wants; to the use of materials dictated not by desire to follow a style, but to be suitable to their position; to ornament, not imitative of any past period, but appropriate to its destination. The spirit of copyism has disappeared with the advent of a truer method.

One other thing we observe. In the earlier days of the period to which we have gone back, literalism and purism completely stifled independent thought. At the present day there is the "personal equation." We are not quite sure whether this "personal factor" has been a gain or not; many, at least, think it has. It has encouraged invention, and has certainly, in the hands of a few eminent men in the profession, stamped our architecture with a character of its own. It has given us our New Courts of Justice, the Manchester Town Hall, the Birmingham Assize Courts, the Imperial Institute, and a score of other edifices, Gothic and Renaissance in their details, but infused with the artist's own individuality. Under the older order we had buildings like the Houses of Parliament, historically accurate in their details (whose architect, by the way, was also equally known for his Travellers' and Reform Club Houses), an edifice clothed with the most faultless 16th-century style an expert Gothicist could reproduce. Personality has given a new impulse to design. The author discloses himself while keeping within the guiding lines of a particular style; he thinks out for himself certain details, or introduces diverse features. He can take a gable or an arcade from Hatfield or Holland House, a window from Bramshill or Longleat, or he can blend the Gothic spirit with the severer details of a Classic building, and thereby he can widen the scope of his art, as some of the more enthusiastic followers of Norman Shaw have done, so that we can sometimes scarcely say whether the design is more of the one than the other style. This "leave and license" was foreign to the earlier period. Whether we can say that architecture has benefited by these admixtures or not is a rather difficult question just now. But the spirit has broadened art, and has permitted it to accommodate itself to a larger variety of uses and materials.

The freer use of materials is another thing which distinguishes our present architecture from that of the past. We not only employ more materials, but treat them in a manner unknown a few years ago. Brickwork, for example, was chiefly used as a wall-facing with stone dressings; it is now, in combination with terracotta, employed decoratively. We now design in these materials, whereas we formerly only built with them. Iron is more extensively employed, and in a manner that suggests its further development as an architectural material, whereas not long ago it was confined to girders and columns. Clay products and ceramic decoration have created new industries. In those branches of building construction which contribute to comfort, sanitary and hygienic objects, as in lifts, warming and ventilation, the modern building is far in advance of its predecessors. We can make our walls damp-proof, our roofs and floors weather-proof and sound-proof, by the use of materials like asphalte and slag-wool. The electric light has been applied in a variety of forms. We do not pretend to say all these applications of modern science have been utilised with a corresponding degree of success; we merely point to them to show the development that has been made in the direction of making our buildings convenient and comfortable, instead of merely representative of a past age.

ALTERATION AND READAPTATION OF BUILDINGS.

THE very common practice of making one building serve for a purpose quite different to that for which it was designed and built, is carried on to a large extent in London. A street is altered in its character in the course of a few years, and those houses which formerly let as dwellings are converted into shops, or the trade may go into another channel, and the shops may give place to offices of different kinds. By such-like alterations the buildings are useless for their original purpose, and it becomes necessary to pull down and rebuild, or to alter them. The latter is the more inexpensive operation, and it is often undertaken without the slightest suspicion that the structure is radically and structurally unsuited for the purpose it is intended to change it to. Fortunately the Building Act prohibits any ill-adapted change of this kind, and there are two sections which expressly provide for both uniting buildings and the conversion of houses into public buildings. Notwithstanding these provisions, there are many possible alterations which can be made to evade the law. The joining of several private houses into one shop is a process seen every day in London. If there were as many separate risks, entrances and exits to the united block as there were before the separate houses were joined, there would be little to object to; but uniting several dwelling-houses means often one entrance and one stairs and the reduction of conveniences generally. The chief object is to make room for one large shop on the ground floor. It is evident the process can be carried too far and at imminent risk to the health and safety of those who inhabit the building, as there have been abundant examples to prove. The necessary alterations can be carried on piecemeal, one house at a time, till a large block is converted, in which the statutory cubical space is exceeded and we have a dangerous form of structure with upper floors cut off from ready access to the lower. In the near future this kind of reconstruction will be rendered almost impossible. There is a clause in the present Act which says that "No buildings shall be united unless they are wholly in the same occupation,"—a clause which by itself does not prevent one man from buying several dilapidated houses and turning them into one. It does not much matter whether a large united building is in one occupation or not, as far as danger is concerned—indeed, we may even suppose it would be safer in two or more occupations. The next clause is much more useful in preventing these alterations. It says: "No buildings shall be united if, when so united, they will, considered as one building only, be in contravention of any of the provisions of this Act" (18 and 19 Vict. cap. 122, sect. 28).

According to the new London Building Act, these clauses are retained, but slightly altered in wording. The first reads (sect. 77): "Buildings shall not be united except where they are wholly in one occupation, or are *constructed or adapted to be so.*" The additional words italicised make the clause more complete and more reasonable. By the existing section of the Act it does not matter whether the joined houses are adapted structurally for the purpose of single occupation or not, so long as they belong to one owner; it does not matter whether the staircases are removed or not; whether there are proper entrances made for the united buildings, or whether the sanitary conveniences are suitable for the purpose. At present the structural condition of the several houses that are united can be almost left as it is; the party-walls can be pierced with openings, and the old floors made to answer; but the words "constructed or adapted" will make it harder to convert in this easy fashion, and will impose the duty upon the owner of making his premises perfect and complete as a single building. The walls must be rendered thicker if necessary, the floors strengthened, and the means of access and egress made suitable for the premises.

There are, however, a few additions made to the old Act which defines how the openings in party-walls are to be made, and their dimensions and construction. According to these new provisions, except under certain conditions, no opening is to be made in a "party-wall or in two external walls dividing buildings which, if taken together, would extend to more than 250,000c.ft." This space is the maximum for buildings without openings in party-walls. We have here a limit set, large enough in all conscience. The present limit of cubic space is, as our readers know, 216,000c.ft., and is practically sufficient for most purposes. Why it has been increased by 34,000ft. is not very clear, except in the interests of owners. But even this large space may be exceeded under certain conditions which are now in force. One important addition made in the new Act to the size of openings in party-walls, which are not to exceed 7ft. in width by 8ft. in height, is to the effect that such openings taken together are not to exceed one-half the length of the party-wall on each floor of the building. That is, in a building, say, of 50ft. in depth from front to back wall, any openings in any floor must not exceed 25ft. This will insure that there shall be an area of party-wall between the united houses which will stiffen the external walls, and in case of a fire prevent the passage of flames from one house to the next; there will be brickwork, in fact, to stop its passage from floor to floor, even should the sliding-doors or shutters be open or burnt through. In the next clause, referring to the wrought-iron doors on each side of the wall, it is added "or wrought-iron sliding-doors or shutters, properly constructed, fitted into grooved or rebated iron frames." A new sub-clause provides that if the wall be not less than 24in. thick, the opening may be 9ft. 6in. in height. These conditions are required if the 250,000c.ft. are exceeded in the space thrown into one. Sometimes these united buildings change ownership, and cease to be in one occupation. When this is the case the openings made in party-walls are to be stopped up with brick or stone.

The conversion of houses into public buildings is of very common occurrence, as when assembly rooms and club-houses are formed out of old premises intended for private use. At the present time all such alterations or

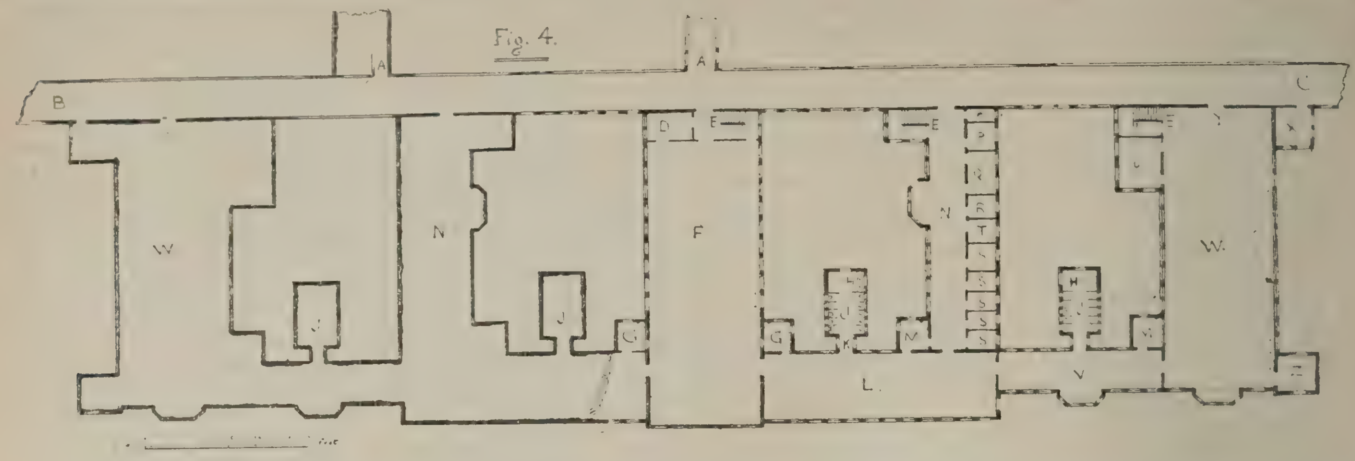
Fig. 4.

conversions are to be carried out under the direction of the district surveyor, or, if disagreed to, of the Council, but to what extent appears rather doubtful. These alterations are supposed to be carried out within the meaning of the Building Acts and amendments as applicable to public buildings. The walls, roofs, floors, galleries, and staircases are to be constructed as approved by the surveyor, and in such manner as though the alteration were the construction of a public building. In the new Act (79 sect.) it is enacted that, in the event of disagreement between the owner and district surveyor, the Tribunal of Appeal is to determine the question. The conversion of houses and other premises into public halls and assembly rooms is a matter requiring strict supervision. The new Building Act provides for such buildings, including churches and chapels. It lays down the rule that staircases for the public are to be inclosed by 9in. brick walls; that every staircase, corridor, or passage for public use shall not be less than 4ft. 6in. wide and 3ft. 6in. wide where not more than 200 persons are to be accommodated, and that every such staircase or corridor leading to a hall for any larger number than 400 is to be increased in width by 6in. for every additional 100 persons until a maximum width of 9ft. be obtained. The rules for exits from galleries to the street direct, and for doors and barriers to open outside, are important provisions to which we can only refer in passing. Under these rules it will seldom be possible to make alterations to buildings erected for dwelling-houses, that will adapt them to public uses, without considerable reconstruction and cost.

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COUNTY LUNATIC ASYLUMS.—V.

By George H. Bibby, F.R.I.B.A.

WARDS FOR WORKING, QUIET, AND CHRONIC PATIENTS.

ONE of the leading conditions of success in the treatment of the insane is the sufficient separation of curable and incurable patients, for it is obvious that a close association of patients with very bad types of mental incapacity would delay or prejudice the possibilities of cure of those of whom there may be reasonable hopes of recovery.

It has long been recognised that the organisation of asylum-homes for incurables should be very different from hospitals for the management of recent and curable patients.

In the earlier attempts to reform the asylum system, new asylums were erected for the supposed curable cases, and the old institutions (which had been found, even then, wholly insufficient for the therapeutics of the day) were, with some alterations, converted into asylums for incurables. At the present time, however, all the various classes of the insane are usually to be found in one institution. Perhaps one of the reasons for this is the fact that the boundary between curability and incurability is very undefined; further, the transference of patients from a curable to a chronic asylum is said to have been not only inconvenient, but expensive.

On the other hand, it is not desirable that an asylum for chronic patients should be considered too strictly as being for those whose malady is hopeless; the wards must be fitted up and designed for the reception of old or chronic cases, who (though not frequently) may yet be occasionally relieved or even wholly cured. There is the further consideration that physicians might to some extent neglect the supposed incurables in the greater attraction offered by curable cases.

The chronic wards of an asylum must, therefore, be large in proportion to those for other classes, and it is to these that the management must be able to promptly dismiss all found to be (probably) past all cure, but only after every possible effort has been made to prevent the disease from assuming a chronic type.

The Commissioners in Lunacy suggest that the proportions of the various classes of patients may be arranged thus (with modifications in the cases of very large asylums and those for not exceeding 300 patients):—

Working quiet and chronic cases	40
Epileptic	20
Recent and acute cases	20
Sick and infirm	20
	100

The proportion of chronic patients is, however, often much greater than above indicated; for instance, in the proposed asylum at Warrington, for the Lancashire Asylums Board, the buildings are required to accommodate 2,000 patients—namely, 1,000 males and 1,000 females. This asylum is intended mainly for the reception of chronic lunatics and imbeciles, and will occupy the same position with regard to the Lancashire asylums that the asylum at Caterham does to those administered by the Metropolitan Asylums Board. It was, however, necessary in this case, in order to meet the requirements of the Commissioners in Lunacy, that provision should be made for receiving wards to accommodate 50 excited patients of either sex, and 200 sick and infirm of either sex, the total number of chronic patients being, therefore, 1,500. The promoters of this scheme directed attention to the fact that asylums of this kind "have been built at a cost of £100 per bed"; but this cannot have been anything near to the cost of recently erected asylums, and is probably much below that likely to be incurred, for such an asylum for chronics probably £130 or £140 per bed (even with economy) would be the cost per patient.

In arranging the plans of chronic wards, and those for working and quiet patients, the words of an eminent physician may be usefully borne in recollection: "Of moral remedies, proper employment of the patient seems to us the most important. In healthy work the innate desire of expressing and giving vent to its energies finds fullest satisfaction; by constant occupation in forming materials, the thoughts and efforts engross the mind and withdraw it from the empty longings and illusions of the imagination; the feeling of success again prepares the way for expansive sensations, and therewith self-esteem and confidence return. Therefore a steady employment of the patient, especially when voluntary, is rightly considered a decided indication of improvement, and is frequently the commencement of recovery."

The buildings for the working patients should be of a simple character, consisting chiefly of associated day-rooms and dormitories; these must be placed in connection with the washhouse and the laundry, and the sewing-rooms on the female side, and conveniently situated in reference to the workshops and farm buildings on the male side. These buildings may wholly or in part be of three stories; but the Commissioners in Lunacy require (or at all events suggest) that the uppermost story be devoted to associated sleeping accommodation for quiet cases, and that, as far as possible, each ward shall contain sufficient sleeping accommodation for all the patients for whom it is designed. As female patients usually preponderate, the plan should provide more accommodation for that sex than for males, and should be so designed as readily to admit of extension on either side. No ward should be arranged for a less number of patients than would, as a rule, require the services of more than one attendant.

County asylums occasionally afford some accommodation for paying patients, generally in detached wards or blocks within the precincts of the institution; but as the buildings are chiefly for the reception of pauper lunatics, all superfluous decoration should be avoided, both in the exterior and interior of the building, which, however, should be rendered as cheerful and attractive as due considerations of economy will permit.

In all county asylums it is necessary that there should be arranged for each class of patients a small ward in which newly-admitted patients may be placed under special observation, and in all asylums, dormitories, with a sufficient number of single rooms communicating, should be set apart and arranged for the care and supervision, during the night, by special night attendants of those patients requiring special treatment or care.

The Commissioners in Lunacy do not require that the proportion of single rooms throughout the asylum shall exceed accommodation for more than one-fourth of the patients. These would be chiefly in the wards for the excited and sick; but a few should be provided for special cases in the chronic wards, as well as for epileptics, &c. No *associated* bedrooms should be arranged for less than three beds, and the general height of each story should not be less than, but need not be more than, 12ft.

For clean and healthy patients the associated dormitories should provide a floor-space of not less than 50ft. superficial to each bed or patient, and the single rooms not less than 63 superficial feet. These are the suggestions of the Commissioners in Lunacy, who, however, state that "the space in the dormitories and single rooms of infirmary wards should be one-third greater than these dimensions. Doors of communication between two single rooms are found useful in a few special cases."

The day-rooms for chronic patients, of which there must be one attached to each ward, should provide for not less than 40ft. superficial for each patient, not including corridors of less width than 10ft. Where corridors of that or any greater width exist, the day-rooms may afford only 20ft. superficial for each patient, it being understood that a space equal to 40 superficial feet be provided for each patient in the day-rooms and such corridors combined. The day-rooms should be so arranged as to afford ready communication with the grounds and airing courts, and suitably near to water-closet and lavatory accommodation.

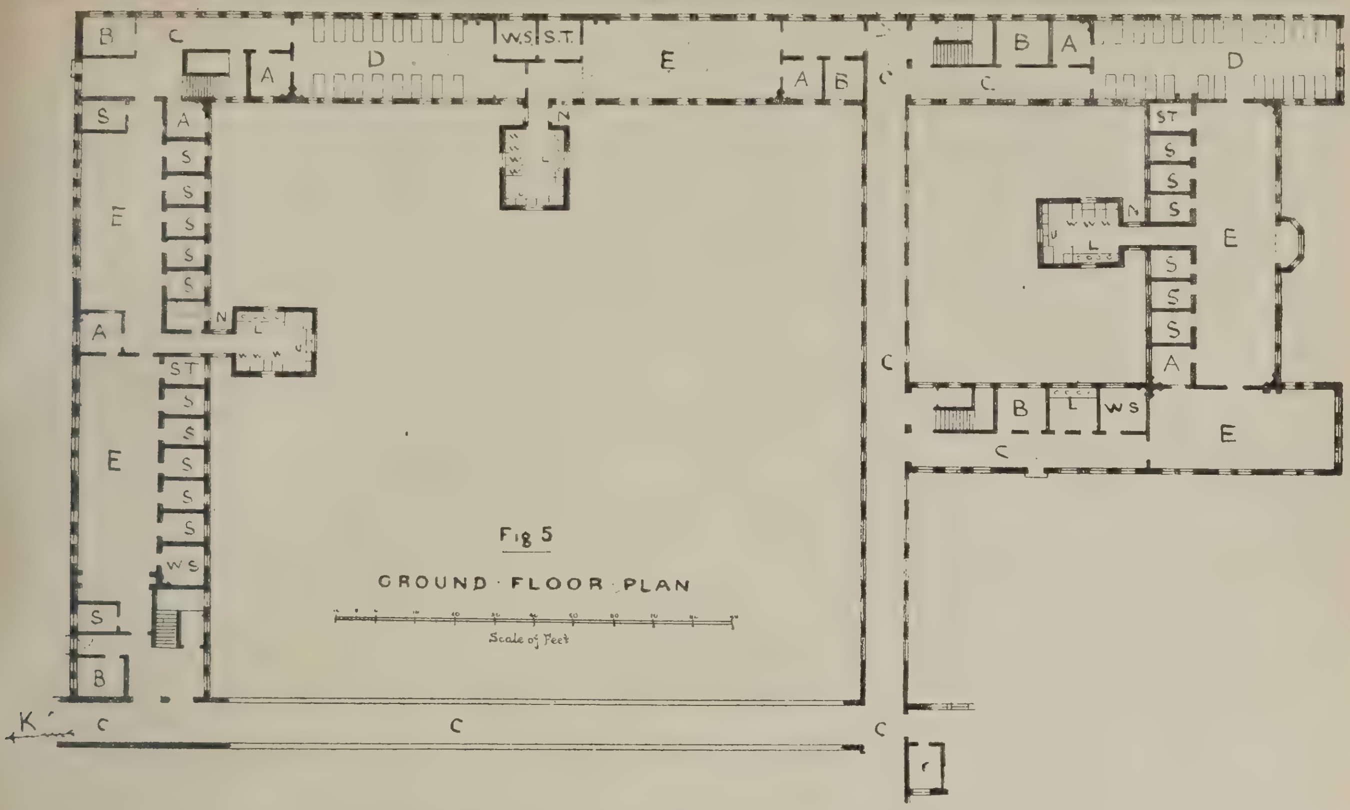

Fig 5

GROUND FLOOR PLAN

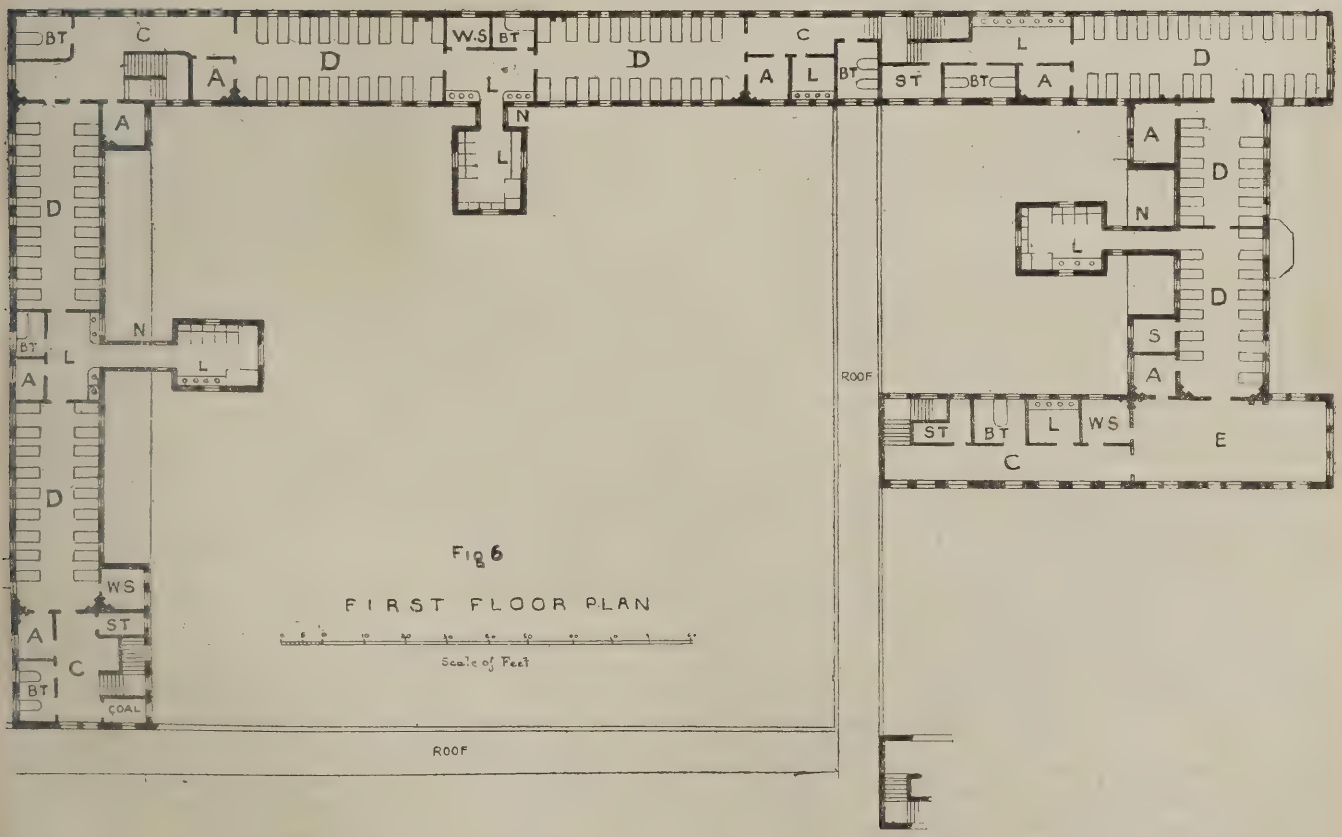

Fig 6

FIRST FLOOR PLAN

Whenever practicable, the bedrooms (for two or more attendants to each ward) should be placed *between* two associated dormitories, with glazed doors of communication with *each* (*vide* Figs. 4, 5, and 6); single attendant's rooms must have an area of not less than 100ft. superficial, while larger rooms are sometimes provided in some of the male wards for the use of married men and their wives.

The windows of the day-rooms and corridors should be large (with small panes, so as to reduce the cost of repairs occasioned by destructive patients), and not more than 3ft. 6in. from the floor. They should have wood sashes, double-hung, and be made to open easily so as to allow a free circulation of air, but so arranged as not to expose the patients to danger. The wall below the sills of windows in dormitories may be splayed, but in day-rooms and corridors may be recessed to admit of a seat, if desirable. In the dormitories and single rooms the windows should, as a rule, not be placed more than 4ft. from the floor; but in padded rooms the windows should be placed as high as possible, and when practicable, perhaps skylights would be desirable. The windows in all parts occupied by patients may be stopped so as to allow of being opened top and bottom 5in.

Many of the single rooms should be provided with strong, solid shutters, so constructed as not to admit of being forced open, or to afford opportunities of committing suicide by hanging.

The single-room doors should in all cases open outwards, and be arranged so that they may fold back close to the wall. Some of the doors should have an open panel 5in. wide in the centre of the door above the middle rail.

There should be a very ample arrangement of lavatory conveniences; these should be placed in the annexe for water-closets, slop-sinks, &c. It is most desirable that all water-closets, lavatories, &c., should be placed in these projecting buildings (*vide* Fig. 1), with a lobby about 5ft. wide, with cross ventilation separating the wards from the water-closets (*vide* Fig. 4, J J J J).

Each ward should also be provided with one or more bathrooms, either in the ward annexe or in a special room for the purpose, as it is often convenient to make use of these rather than take some patients to the general bath-house, before described. For these baths, the same rule must be observed of providing sufficient space for two attendants, one on each side of the patient, who, it must be remembered, may be either too weakly to assist in his ablutions, or otherwise disposed to be refractory or violent. For the majority of the patients, however, a general bath-room, conveniently placed, is found most desirable for the bathing of the patients. It is of considerable importance that there should be ample means for *quickly* bringing into action the hot, cold, and waste taps. These should be of large size therefore. The arrangements should be such as to preclude any danger of scalding patients, and the taps should show when the hot and cold water is flowing.

Each ward should be provided with ample convenience for stores, clothing, bedding, crockery, and all other things required in *that* ward, these being obtained, as a rule, from the general store-house of the asylum, as required, in moderate quantities. There should also be boot (and bonnet) rooms *near the patients' doors* leading to the grounds or airing-courts, so as to prevent the inmates from bringing in dirt from outside the building.

A more costly arrangement of a plan for working quiet and chronic patients is shown upon the plans, Figs. 5 and 6. In this case the dormitories have only two rows of beds, and there is a liberal provision of single rooms. A plan of this kind occupies a greater area of land, but it is in many respects a very desirable one, and there are ample opportunities for the sub-classification of patients.

The staircases are so placed that there would be two exits to all the principal rooms on the upper floors, and on both floors the arrangements are such as to entirely shut off a ward for any special purposes that may be required, and the occupants of any section may easily gain access to the airing-courts and gardens without intruding upon adjoining day-rooms or dormitories. In arranging a plan of this kind the day-rooms should be well-lighted rather than the dormitories, the reverse being sometimes admissible for wards for sick and bed-ridden patients.

The following are amongst the official regulations for corridors and staircases in asylums in this country :—

"As a *general rule*, corridors or passages ought to be no wider than necessary to connect the several parts of the building. On the upper stories corridors, and in particular wide corridors, should, so far as possible, be avoided. It would, however, be of advantage to have on each side of the building, on the ground floor, one good corridor, or two, to the south, with a large bay window; and these corridors should not be less than 12ft. or 14ft. in width, the corresponding space on the upper floors being made available for dormitories."

"The stairs should be built of stone, without winders or long straight flights. The well should be built up, and handrails should be provided on each side of the stairs."

"The staircases should be of such number, and be so placed, that the medical officers, attendants, and others may pass through from one part to another, without unnecessarily retracing their steps, and as to afford ready egress to patients in case of fire. Every dormitory must have two exits, one at each end, and (in the case of rooms not on the ground floor) leading to separate staircases."

"All the corridors and day and sleeping-rooms should have boarded floors, and it is desirable that the boards should be narrow and tongued. Oak floors, capable of being cleaned by dry rubbing, are preferable for the corridors and day-rooms, and for the single rooms occupied by dirty patients. Where oak is not used it is indispensable that the boards should be of the best yellow deal, of narrow width, and thoroughly well-seasoned. At each end of a corridor the continuity of the timber floor should be broken by fireproof construction, so as to prevent the spread of fire beyond the corridor in which it may occur. The floors of the sculleries, lavatories, urinals, and water-closets should be of cement or tiles. Wherever practical, horizontal and lateral fireproof construction is adopted. The ceilings next below the roof in all parts of the asylum occupied by patients should be constructed throughout of imcombustible materials. Hydrants connected with the cisterns in the roof (or, which is preferable, in a water-tower of considerable height) should be placed in convenient positions on all floors, and an external main provided, by which water could be thrown over the building. The walls of the galleries and rooms generally should be plastered or cemented, unless lined with pressed bricks. Dados of pitch-pine may with advantage be used in day-rooms and corridors."

In Fig. 4 is shown a sketch arrangement for a ward for chronic and working patients, the general position of which, with regard to the administrative buildings, is shown in Fig. 1. The medical officers and attendants could pass through the whole or sections of this ward without having to unnecessarily retrace their route, entering and leaving the block by the doors Y Y, Fig. 4, or through the corridor doors of the intermediate wings, inspecting, as may be necessary, the occupants of the dormitories, day-rooms, and single rooms.

The dormitories are so arranged that there would be cross-currents of air for ventilation. The day-rooms would have the great advantage of a southern aspect, except the day corridors marked N, Fig. 4, with which the single rooms would be connected, and which would be suitable for patients for whom an excess of light might be undesirable.

The attendants' rooms are generally arranged (*vide* plan shown on Fig. 4) so that the officials may have views of two apartments by glazed doors or windows communicating with each.

The boot-room at X, Fig. 4, is arranged in a position so that persons coming from the airing-courts and gardens, &c., may not tread dirt in through to the corridors. The annexes, with water-closets, &c., are placed so that they may be approached from the day-rooms and dormitories, without any disturbance of the patients of other wards either by day or night. These annexes should also provide for a bath and some additional lavatory accommodation beyond what is elsewhere arranged for, and there should also be a slop-sink included. A coal store is provided at O, and linen and other stores at R T (*vide* Fig. 4).

The arrangement shown on Fig. 4 allows of considerable sub-classification of the chronic patients. The first floor above would correspond generally; but the second floor would be arranged for associated dormitories only, no day-rooms or single sleeping-rooms being allowable above the first floor.

In arranging the plans of water-closets, passages, staircases, &c., it is well to bear in mind that many of the patients require to be constantly in view of an attendant for a variety of reasons; therefore there should be as few opportunities for concealment as practicable—no recesses or dark corners. All day-rooms and dormitories must have entrances at each end, that there may be means of escape during panic or fire, or other occasion, during excitement of a dangerous patient, &c.

Two head attendants—a male and a female—should take charge of the lower staff. Only persons of considerable bodily strength should be engaged as attendants. They should also be intelligent and good-natured. Each attendant is generally intrusted with not more than 10 patients; but some patients require the entire services of an attendant.

It is difficult to provide for all that is necessary for the advantage of the patients unless the buildings for their occupation are very carefully planned, and in order that the arrangements in connection with an asylum may go on with order and without confusion, there is always a written set of rules for the guidance of the officials. The precise duties of each servant are definitely stated. The discipline of an asylum should be stringent, and all the operations so conducted that everyone, whether healthy or insane, who visits or resides in the establishment may be impressed with the idea that it is conducted on rational principles; a sense of tranquility and ease should pervade the whole, and the desire for activity on the part of the patients, which precedes and accompanies every case of recovery, should be quietly and moderately indulged. Every gloomy, ascetic, barrack-like idea should be avoided, and the great object should be to diffuse a spirit of cheerfulness. To attain full success, therefore, the officials must be provided with apartments arranged by an architect who shall have acquired an intimate knowledge of the habits of insane patients, and the means adopted for their relief or cure.

Here it may be noted that there have been other systems than those formed by confinement in asylums, whereby the insane have been maintained and employed. A colony of insane, for instance, was formed in the village of Gheel, in Belgium, in which (it is said for several hundreds of years) lunatics have lived together with the inhabitants, and even resided in their families. (In former times, it is stated that people frequently resorted thither to supplicate the aid of Dymphne, the patron saint for the insane.) Here the lunatics enjoyed an amount of pleasure and freedom which could never be permitted them in an asylum. Owing to the peculiar position of Gheel, escape by the patients would be difficult; it is inclosed by moors, and is at a distance of many miles from other villages. With all its advantages, it is said to have had undoubted drawbacks; but the arrangements at Gheel proved that the greater number of insane do not require the confinement of an asylum, that many of them can safely be trusted with more liberty than these institutions allow; hence there is further evidence of the desirability of architects planning asylums which shall be hospital homes rather than prisons.

The case of Gheel suggests the question whether similar colonies might not be established in other places—say in one of the poverty-stricken country districts of Essex or other counties, where the land is falling out of cultivation; some suitable spot might be found, and the evils resulting from overcrowding of lunatic asylums thereby removed. An expert stated years ago that "in England and Germany an exact imitation of Gheel has been recommended. It was proposed to assemble a number of lunatics within a village in the immediate vicinity of a Government asylum, so that it might maintain a certain relation to them. The difficulties in the way of adopting this plan, which have been collected and clearly set down, have not been yet surmounted. Still, however, I continue in the belief that the day will come when the means and method will be discovered by which the problem of a lunatic colony, and thus the question of the care and treatment of all classes of the insane, will be finally solved."

Thus it will be observed that architects may, in course of time (for certain descriptions of the insane), be called upon to design some asylums which would be more in the nature of small villages, suitably inclosed, rather than institutions arranged as at present.

References to Fig. 4.—A A, corridors leading to workshops; B C, main corridor (see Fig. 1); D H Q U, lavatories; E E, staircases; W W F, associated dormitories; G G M M P Z, attendants' rooms; L N V, day-rooms; H H, bath-rooms; R, stores; T, linen; S S S S S, single rooms; J, water-closets; X, boot-room; Y Y, main entrances to chronic wards.

References to Figs. 5 *and* 6.—A, attendants' rooms; B, boot-rooms; C, corridors; D, dormitories; E, day-rooms; S, single rooms; L, lavatories; W S, ward sculleries; W, water-closets; U, urinals; S T, stores; N, isolation of w.c. annexes; K, corridor leading to the central administration buildings; B T, baths.

(*To be continued.*)

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THEATRES.—XLIII.

By Ernest A. E. Woodrow, A.R.I.B.A.

THE nature and arrangement of the gas-fittings must, of course, play a very important part in the theatre's safety. We find this recognised in all English and foreign theatre regulations. Jointed brackets, telescopic pendants, and swinging pendants are in no case admissible; all brackets must be stiff brackets fixed without joints, and all gas-burners within 3ft. of the ceiling must have metal consumers hung over them to distribute the heat. Wire basket globes should protect all gas-jets; these, especially in the dressing-rooms and the parts of the house frequented by the rough element, should be fixed to the brackets. In the dressing-rooms the globes are frequently removed by the actors in order that they may heat their curling-irons and "make up" in the gas-flame; this can only be prevented by fixing the wire basket. To avoid this removal of the globes, I have seen them made with a small square left open near the bottom for the admission of the irons; this is a thoughtful precaution. Wire globes, especially in the supers dressing-rooms, are often battered down flat at the top and made to hold a small saucepan or vesse for heating water in. This should never b allowed by the management, as the carbo from the gas-flame collects, becomes incan

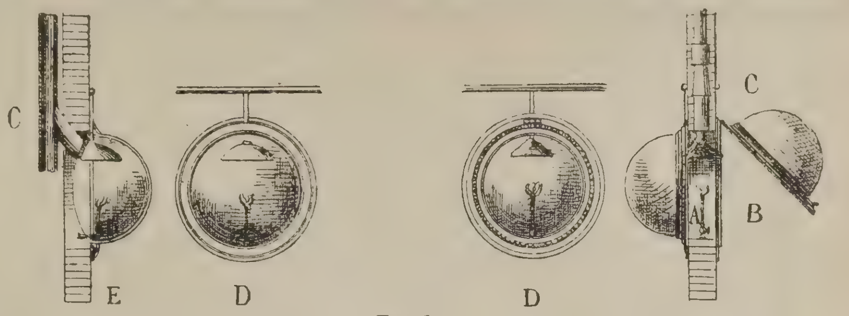

Fig. 1.

descent, and may fall in the form of soot heated to a red heat on the dressing-table, on some muslin, or fine drapery. To avoid the danger from falling soot, the wire baskets, under all circumstances, require constantly cleaning. Where a gas-jet is placed in some unfrequented part of the house, and dust collects on the wires of the basket, the same danger arises. Wire globes made with metal consumers attached also, on account of the collection of soot in the consumers, require careful watching. Speaking on the subject of guarding lights by wire, Sir Eyre M. Shaw, in his work on Theatres, points out the necessity of placing these wire protectors at such a distance that any material coming in contact with the guard would be out of reach of the flame. "It is better," he says, "to have nothing at all over or around the lights than to have guards placed, as is too commonly the case, in such a way that they serve to hold falling materials within reach of the flame, as where there are no guards, there is, at least, the possibility that the falling materials may extinguish the light." The same authority advises that where there is glass round or over lights there should be a metal grating underneath to prevent broken fragments of glass falling and injuring persons, or setting fire to the place.

No person should be allowed to light up or turn out the gas, other than the authorised gasman or fireman attached to the theatre. To prevent the general public, performers, or staff turning on the gas, or turning it out, every bracket throughout the whole of the building should be fitted with what is specified in the London County Council regulations as a "secret tap"—that is, a tap so arranged that it cannot be turned by the fingers, but only by a key made to fit the cock. This precaution serves two purposes: it prevents mischief-makers putting any staircase or landing in darkness by extinguishing the light, and it also prevents the general staff using matches to light the gas. To any part of the building where a light is required the gas-man has to be fetched, and the only means by which he should be permitted to light up should be a metal spirit-torch or electric spark. In this way, by the observance of a very small detail indeed, the architect will enforce the abolition of a continuing risk. This is another example of the deep study of minute detail required in planning, constructing, fitting-up, and furnishing a theatre.

It would be a great advantage where gas is used as the chief illuminant for a theatre if all the wall brackets were placed in recesses made in the wall and closed in by a glazed door, and a flue made in the wall to carry off the product of combustion; then the air would be purer, and the light protected from the mischief-maker. This is done in some cases at the Criterion Theatre, and in Fig. 1 will be seen how it is arranged at the Théâtre du Châtelet Paris in the corridors. This illustration is taken from M. Gorset's work. A is the gas-jet; B the glass cover open; C the escape-shaft; D the glass cover closed; E the section. Where a second system of lighting by oil or candle-lamps is provided (a part of this subject on which I must speak hereafter) it would also be a benefit to place them in similar recesses shut in by glass doors, and ventilated into flues, for then in cases of fire the smoke would not extinguish the lamp, a risk which all "safety" lamps in theatres at present run at the very time they are most needed.

The placing of dressing-room gas brackets must be governed by the arrangement of the looking-glasses. This is well illustrated in the diagrams (Fig. 2) from M. Gosset's book, of the dressing-rooms at the Paris Opera House, where lamps are placed on either side of each looking-glass. The spacing-out of staircase lights must be such as to leave no shadow on landings or on the steps, that would cause anyone to stumble in the uncertainty of finding the steps. Indeed, it goes without saying that all parts used by the public must be well lighted up.

The auditorium lighting, as a rule, receives great attention at the hands of the architect; but the placing of gas-jets round the circle fronts, as shown in the illustrations of the Carl Theatre in my last article, calls for condemnation, as paper programmes or handkerchiefs may be dropped from the tier above and lodge in the flames. The vitiated air rising from immediately below the people leaning forward to view the stage is fatal to such an arrangement, which is both unhealthy and dangerous. The old Astley's Theatre in the Westminster Bridge-road, which has lately been pulled down, was lit up in this unsatisfactory manner.

The glass chandelier, which used to be so often used, depending from the centre of the auditorium ceiling, we are all glad to be able to say is a thing of the past. Heavy it was, and dangerous, besides obstructing the view of many occupants in the gallery. The sun-burner, both as a means of lighting up the ceiling and as a powerful extractor of foul air, was a welcome change, and its usefulness is strongly marked by the fact that even in theatres lighted by the electric light it is still to be found in use as a ventilator.

The sun-burner should be encased with iron, where it passes through the roof of the auditorium, especially if that roof be a wooden one; although we know wooden roofs to theatres should never be permitted, yet some still exist. Access must be made through the roof to the sun-burner, to enable the gas man to periodically attend to and clean it, as the risk of incandescent carbon falling on the occupants of the pit and stalls is, to say the least, unpleasant, and might be somewhat surprising and annoying to the audience, quite apart from the danger of setting fire to a lady's dress.

I must now try and give a rough description of what the gas arrangements on the stage are like, and in this I am very much assisted by the sheet of details, Fig. 3, specially prepared for me by Messrs. Strode and Co., the theatrical gasfitters, for the purposes of this paper. On the prompt side of the stage fixed to the proscenium wall must be placed the gas-plate or stage regulator. On this plate must be fitted cocks which govern the whole of the lighting of the building, and each cock must be distinctly and clearly labelled by words engraved upon the plate. The diagram clearly shows this arrangement. The necessity of placing the plate on the prompt side is in order that the gas man may be near the stage manager, and obey his direction for the turning up and down of the lights in the auditorium and on the stage, for the various stage effects. Again, it is necessary that the whole gas system should be under the control of one experienced and reliable man, and that he should be located in such a position as to command a view of the whole building; therefore all mains must be brought up to the gas-plate, and have stop-cocks thereon governing the supply. In case of accident the gas man must judge whether to turn off or turn on the lights.

The sun-burner, and nearly all the fixed stage lights, are now arranged with a pilot light, which is never turned off. This avoids the spirit wad on a long cane being wabbled about among the inflammable scenery. The hanging gas battens, which depend from the gridiron, are fitted with the pilot light, and a row of spreading fish-tail burners which are technically called the "flash" light. When the flash light is turned on at the gas-plate, the pilot ignites the gas, and the flame spreads from burner to burner, the entire length of the "batten" or "float"; then the gas man turns on the ordinary jets in the batten, and the flame from the flash immediately lights these up, the flash being at once turned out. The battens are, of course, each fitted with two sets of pipes, from which the burners project, one pipe for the flash light, and one for the ordinary jets.

The gas battens must be hung by at least three wire ropes, and be protected at the back by a metal shield, fixed to a stiff iron frame (see diagram) which acts as a reflector, and they must be protected in the front by a stout wire guard. The gas battens are often much knocked about, being frequently used by the stage hands as a means of access from the flies on the one side to the flies on the other—in fact, acting as a kind of bridge. They must, therefore, be very substantial; and especially so must be the front guards of wire. In olden days, when coloured lights were required from above the stage, mediums of some cotton material like calico were drawn tightly over the front of the battens. A more dangerous custom could scarcely be conceived. From frequent use the mediums became rotten, torn, and singed by close proximity to the gas, ending in the ragged and frayed edges, more often than not, becoming ignited right up among the hanging canvases over the stage. One of the immense improvements in stage gas-lighting of modern times was the abolition of these dreadful calico mediums, and the substitution of glass mediums. The introduction of the flash-light was also a great step towards securing safety.

Mr. Buckle, when writing on the subject of gas illumination in theatres, advises the desirability of inverted Argand burners in place of the usual footlights, which he describes as a terrible source of contamination to the atmosphere, stifling to the performers, and irritating to the audience—more particularly to that portion occupying the pit and stalls. The inverted Argand burner he would have arranged so as to discharge their products of combustion downwards into flues connected with an extract shaft, and he states that there would be no practical difficulty against this innovation beyond the reluctance shown by managers to depart from stereotyped methods. The arrangement suggested, he points out, has already been for some time in practical use at the Grand Opera House, Paris, where an artificial draught is produced by a vertical shaft at one side of the stage, in which are fixed two or three rings of gas-burners. This shaft communicates with a horizontal draught tube below the foot-light burners on the stage. The horizontal gas supply-pipe passes below the draught tube, supporting a series of small vertical branch pipes, which are arched over the draught tube, and terminate in reversed burners, by which means the flames turn downwards from the top to the bottom of the glasses, and pass into the draught tube. Mr. Buckle goes on to show how, by this arrangement, the entire products of combustion are drawn to the outside air, leaving the stage agreeably cool, so that the artists and *danseuses* can approach close up to the footlights without the danger of their costumes igniting, and can breathe much purer air than the vitiated atmosphere given off from the ordinary footlights. In Fig. 2 is given an illustration of the method adopted to supply air to the footlights by a trunk below the burners at the Lyrique Theatre in Paris.

The most dangerous part of the stage lighting is undoubtedly the temporary lights which have to be shifted from one part of the stage to another, being changed in position for each succeeding scene. The difficulty experienced in past times was how to avoid an escape in making and disconnecting so many unions between the mains and the flexible pipes to be carried across the stage or up the sides of screens, to the rows of lights known as "ground rows" and "lines." This difficulty has been overcome to a very great extent—indeed, I think I may say entirely—by the introduction of an automatic water-joint, a detail of which is given in Messrs. Strode's drawing herewith, Fig. 3, which, as the temporary length of piping is connected with the main by inserting the dip, makes a gas-tight joint, and as it is placed in or withdrawn, turns the gas on or off. The movable lengths and wing-lights on a stage must be efficiently protected by stout wire guards, and mounted upon a metal frame, with sheet metal at the back of the light, whether the "lengths" be for ground-rows, to light up the scenes near the ground, wing-lights for the sides, or hanging

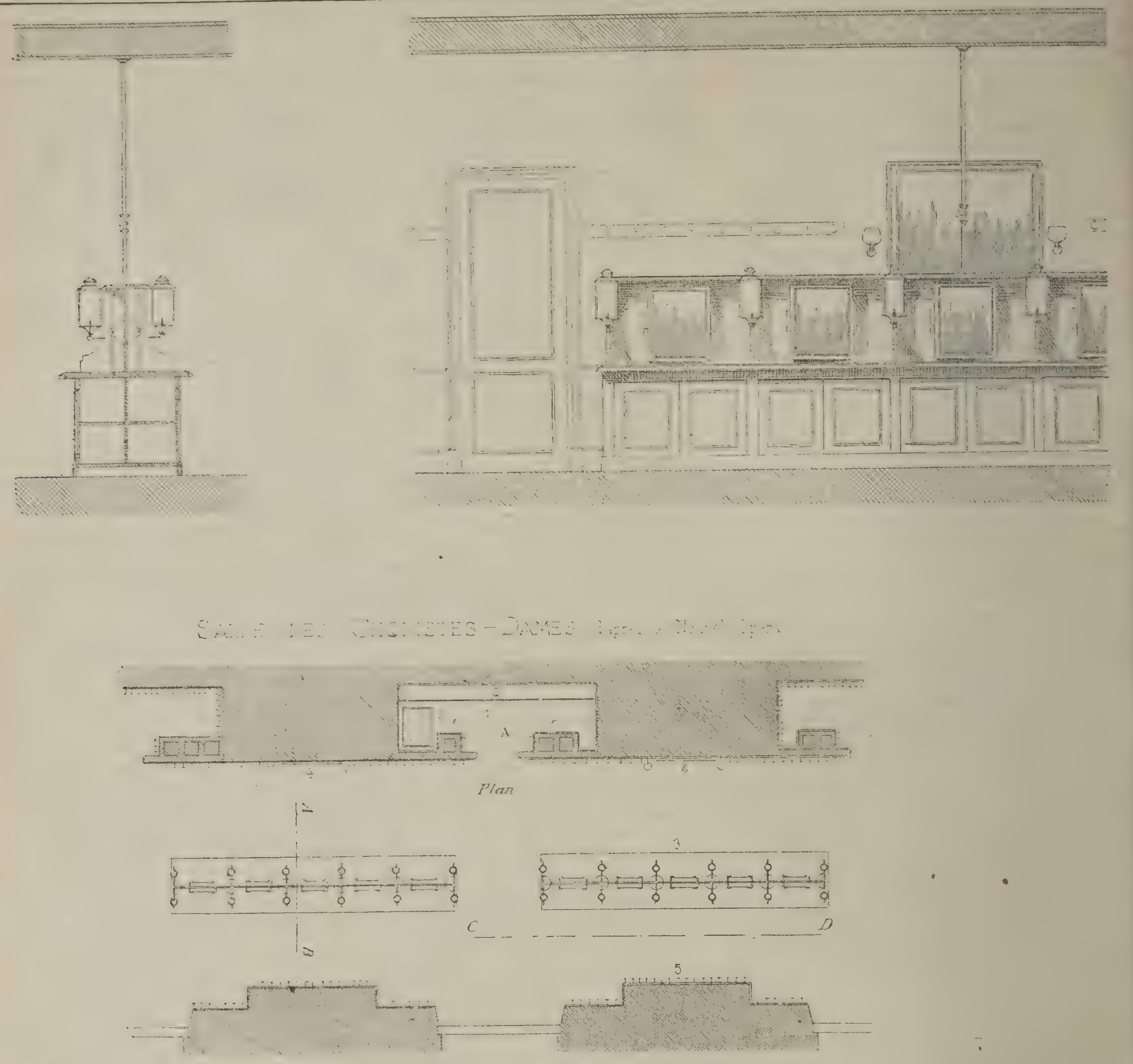

Fig. 2.

lengths. On this point of movable and stage-lights the London County Council's regulations enforce that—

"Where there is a stage or wings with scenery, the footlights or floats shall be protected by fixed iron-wire guards, and the burners shall be provided with glass chimneys.

"The rows and lines, and gas-burners in the wings (which must commence 4ft. at least from the level of the stage) shall be protected by fixed iron-wire guards.

"All battens shall be hung by at least three wire ropes, and be protected at the back by a solid metal guard and wire fixed to a stiff iron frame at such a distance from the gas-jets that no part of the scenery or decoration can become heated.

"All movable lights shall be fitted with flexible tubes, and the gas in every case shall be turned off by the tap on the stage, as well as by that on the flexible tube.

"All flexible tubes shall be of sufficient strength to resist pressure from without.

"An indicating gas-plate shall be provided at a convenient place at the side of the stage."

The other rules of the L.C.C. as to gasfittings read as follows:—

"All such premises, when lighted by gas, shall have separate and distinct gas-services and meters, as follows:—

"(*a*) To the stage;
"(*b*) To the auditorium;
"(*c*) To the staircases, corridors, and exits.

"Such meters shall be placed in properly ventilated chambers of fireproof construction.

"All gas-brackets shall be fixed without joints; and all burners within reach of the audience shall be fitted with secret taps, and be efficiently protected by glass or wire globes.

"All gas-burners within 3ft. of the ceiling shall have hanging shades of uninflammable material to distribute the heat.

"All gaspipes shall be made of iron or brass."

Most of these points I have already enlarged upon. Some other notes which I have collected from foreign regulations may not be out of place here; but I will only briefly mention those which are not included in the London rules. In New York, the gas-burners have to be provided with metal ducts or shafts to carry off the vitiated air. Provision is also made in this city for shutting off the gas from the outside in case of accident. In Berlin, the only means of lighting-up allowed is by inclosed and safe lighters, the use of lucifer matches, naked wax lights, &c., being prohibited. Here is a useful rule peculiar to Berlin: once in three months an examination must be made of every gaspipe, by recording the escape of gas when the main supply cock is turned on and all other taps turned off. This brings me to speak of the necessity of laying all gaspipes in positions so that they can at all times be got at and examined.

The regulations as to supporting and protecting glass chandeliers in the auditorium in Paris need no comment here, glass chandeliers being things of the past. All lights at a less distance than 7ft. from the floor are needed by the Austrian regulations to be placed in recesses or niches, and protected by glass or wire globes. In St. Petersburg, where there are movable lights on the stage, they must be at least 3ft. vertically and 2ft. horizontally distant from any inflammable material: footlights in this city must be lighted from below.

The lights in the staircases and passages of a Paris theatre must, in addition to having glazed fittings (*appliques vitrés*), be furnished with wire globes. There are other minor details which I will briefly note, such as the supply-pipes of the battens and floats being at a higher elevation than the wings (*châssis*); the footlights constructed with reversed jets, as I have referred to above, described by Mr. Buckle; the ground lines covered with basket-like coverings of close mesh wire; and the necessity of keeping the instruments, cloths, &c., for trimming oil-lamps in a metal box.

Brussels provides that the lighting of theatres shall be so arranged that in case of an accident the lighting of the auditorium, corridors, staircases, and public exits will remain intact, notwithstanding the gas is cut off from the stage. The gas-plate on the stage must, according to these rules, only extinguish the gas on the stage, in the dressing-rooms, property-rooms, and a portion of the auditorium. For this purpose there must be provided separate supplies, with a sufficient number of by-passes from the main.

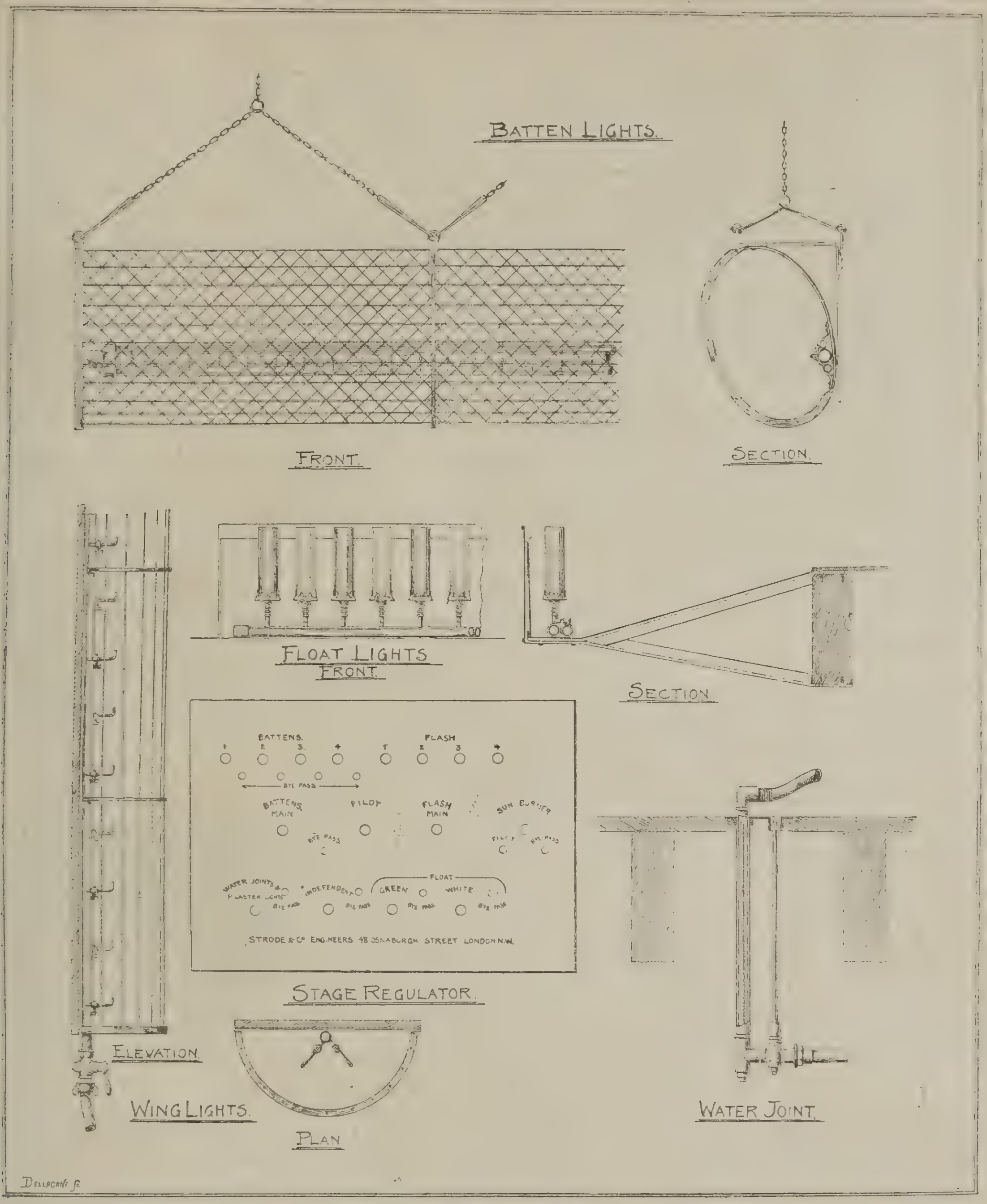

Fig. 3.

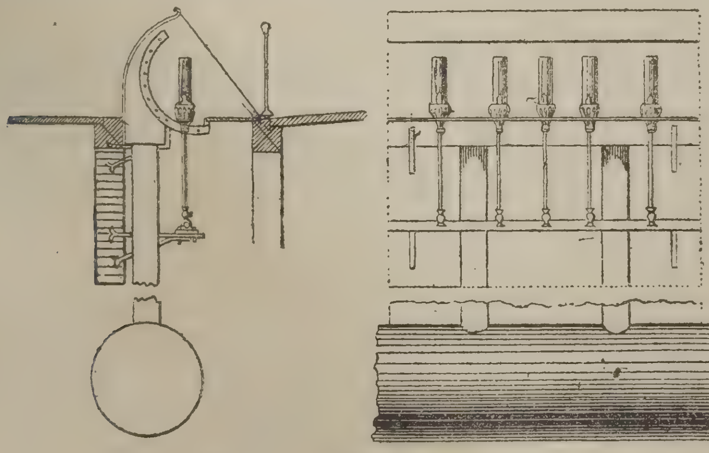

Fig. 4.

The wing-lights in Brussels (*becs des portants*) must have glass chimneys furnished with smoke-consumers, and arranged in such a manner that the breaking of a chimney will extinguish the jet. Gas-jets with chimneys must have regulators, smoke-consumers, and fixed wire trellis; those without chimneys, metal protectors; and those isolated, fitted with regulators and placed in fixed lanterns, and fixed at no less distance than 8in. from a ceiling, unless protected with iron. Where lights are on wood supports, the woodwork must be protected with iron sheeting to a height of 8in. above the flame.

I have already mentioned that the most recent German regulations entirely prohibit the use of gas in a theatre.

Some very interesting remarks are made by Mr. Buckle upon the almost incredible amount of gas consumed in an ordinary theatre. He gives these figures as taken at the Princess's Theatre, London, when Mr. Wilson Barrett was lessee, as the average nightly consumption: — Stage, 9,000ft.; auditorium, 8,000ft.; offices and corridor, 4,000ft. This writer also calls attention to the difference of consumption according to the nature of the performance, and attributes many accidents to the insufficiency of the gas-meters, which are frequently overtaxed when on special occasions many extra stage-lights are used without any regard to the capacity of the meters. The remedy he suggests is that arrangements should be made whereby the supply could be diverted from one section of pipes to another, and a switch be provided to obtain the gas direct from the main on emergency.

* * *

CITY AND GUILDS INSTITUTE.

THE annual report of the City and Guilds of London Institute states that last year 853 classes were registered with 25,718 students in attendance, against 734 classes and 24,374 students the previous year. The number of candidates examined during the year was 11,631, being 1,377 in excess of the number examined the previous year, and the largest increase in students since the foundation of the Institute.

Whilst the number of candidates' papers for the technological examinations has increased from 9,179 to 9,907, the number of passes has increased from 4,847 to 5,481, the percentage of failures having fallen from 46·4 to 44·6, a result stated to be in no way due to any lowering of the standard for passing. There has been no break in the steady and continuous increase in the number of candidates in plumbers' work. The numbers during the past few years have been successively 569, 684, 825, 988, and this year the number has risen to 1,253, showing an increase 265, the largest yet reached. Of these 1,253 candidates 652 have passed, 192 in the Honours Grade. At the practical examination—an optional one—450 candidates presented themselves, as against 293 in the previous year, and of these 202 satisfied the examiner. Of these 202, 168 also succeeded in the written examination, and will receive the certificate of the Institute.

In plasterers' work there was a marked increase in the number of candidates, although the quality of work sent up for examination is not yet of a high order. An examination in cabinet making was held this year for the first time; four classes were registered, with 77 students, of whom 43 came up for examination. Besides the classes in technology, attended mainly by artisans, 152 classes in manual training were registered by the Institute during the past session. These classes are intended exclusively for elementary school teachers.

BOOKS RECEIVED.

The Slide Rule, by Charles N. Pickworth, Wh.Sc. (London: Emmott and Co., Ltd., Fleet-street), is a small and useful manual on the Slide Rule. The author says, of the several works on the Slide Rule, none, as far as he knows, relate to the rules of the Gravêt or Mannheim type, which design of instrument possesses many advantages over the older forms. The examples given show how many and diverse are the uses of this instrument when properly understood. The civil, mechanical, and electrical engineer will find many of their calculations simplified by the intelligent use of the instrument. The general theory of the slide-rule is explained. Examples of computations on mensuration, weights of metals, falling bodies, steam-engines, steam-boilers, belts, ropes, strength of shafting, moments of inertia, horse-power of water wheels, electrical engineering, and various general commercial and trigonometrical applications are given, which cannot fail to be of value.——*Indian Engineering* for Sept. 29th contains an interesting summary of a valuable paper by Professor Mansfield Merriman, which appeared in *Engineering News*, on "Column Formulæ." The diagrams explaining Professor Merriman's theory of computation are interesting. As an approximate guide for ordinary practice, we recommend the paper to the notice of our readers.——*Tramways: their Construction and Working*, by D. Kinnear Clark, C.E., M.Inst.C.E., &c. Second edition, rewritten and enlarged (London: Crosby Lockwood and Son) is a bulky volume of over 700 pages, containing a history of the tramway system, with descriptions, illustrated in every case, of the various modes of traction, horse-power, steam, heated water, compressed air, cable, and electric traction, and particulars and sections of the rails and rolling-stock in use in the United Kingdom. This edition has been greatly enlarged. Mechanical traction, such as cable and steam-power, has compelled the employment of improved tramways in which girder-rails are used. The chief English tramways—as those of London, Liverpool, Glasgow, Edinburgh, Manchester, &c.—are described and illustrated, with their cost and working expenditure. Cable traction has been mentioned, and the plans used at San Francisco, Chicago, Highgate-hill, Edinburgh, Birmingham, and Brixton are referred to in Chapter VI., the latter being illustrated by plans and sections of the works at Streatham. Electric traction, as employed on the Liverpool Overhead Railway, at Leeds, the City and South London Railway, &c., also receives attention. The various plans of laying tramways and the sections of rails patented occupy a large portion of Mr. Clark's volume. It is up to date, and the illustrations are numerous. A few more details of the Streatham cable tramway would have been useful. On the whole, however, Mr. Clark's work gives a valuable epitome of the modern tramway system. —— The *Engineering Magazine* for October (London: G. Tucker, Salisbury-court, Fleet-street), comprises several readable articles, including "Evidences of a Revival of Business," as shown in the New York markets—a series of interviews; "The Cost of Living in Great Britain and the United States," by Andrew Carnegie; the "Industrial Development of Chile," by Courtenay De Kala, illustrated by several beautiful photo. prints. Professor W. F. Laird writes an appreciative and critical paper on "Recent Architecture in Philadelphia," illustrated by some typical designs of town houses on photo.-blocks. Some of these show picturesqueness and a quietness and restraint of treatment that are commendable when we compare the designs with the poor class of work of recent years. Dr. Oliver J. Lodge writes on "Lightning and Lightning Conductors," and points out the absurdity of speaking of "areas of protection," or to think that one easy path protects all others in its vicinity. To make an easy path is impossible, as all paths offer a great resistance to sudden currents. Many paths are necessary. "Plenty of iron wire instead of a single copper rod" seems to be the conclusion of Dr. Lodge as to the protection of ordinary buildings. The article is worth reading, and is a summary of his work on "Lightning Conductors," which we have already noticed.

"A DANGER TO THE PUBLIC HEALTH."*

THE evils of mechanical ventilation on the down-draught principle on the plenum system have been pointed out many times in these pages. Medical testimony, to a large extent, is against a system which allows the vitiated respired air of patients in hospital wards to be retained above or around the beds and be re-breathed, and it is opportune to hear what sanitarians, speaking in conclave and with authority, have to say upon the question. The recent proceedings of the Congress of the British Institute of Public Health have recalled attention to the subject of ventilation by these means, and we now refer to a small pamphlet containing the remarks made in the *Local Government Journal* lately. Natural ventilation was strongly advocated at the congress, and Mr. T. B. Hall, F.R.I.B.A., referring to the ventilation of hospitals, remarked that: "It said much for natural ventilation that the duration of a scarlet-fever case could be shortened by its employment some six or seven days." The writer refers also to the reports from several hospitals to the same effect. Many of these reports refer to the unsuccessful trials of mechanical systems on the plenum principle of forcing the air in by fans and other means. The Local Government Board approves of the natural system of ventilation by automatic extraction of the vitiated air at the ceiling, and admission of fresh air below, and this plan has been adopted in the best hospitals of the Metropolitan Asylums Board under the advice of experts, including Sir Douglas Galton, F.R.S. The "hospital smell" is by this system eliminated; the fresh air is screened and warmed, so that all impurities are removed. Abundant evidence is adduced by the author to show that the "mechanical" or plenum system, by propelling the air through ducts along the ceiling and extracting it through foul-air exits at the head of each bed, really operates most prejudicially on the patients, who are compelled to re-breathe the vitiated air as it passes over their faces to the exits. An apt illustration of this fact is given by a coloured sectional diagram, showing the descending currents of fresh air keeping down the products of respiration above the patient. The fresh air, being heavier, prevents the heated respired air from ascending, while the position of the exits at the head of each bed causes the vitiated products of respiration to travel over the patient, and thus, according to the principle of downward ventilation, the patient is actually compelled to re-breathe the poisoned air of the ward. We have no space to examine other facts which are here summarised in a readable form; but we recommend all architects and others interested in the subject to obtain the first instalment of this reprint.

Sir J. Whittaker Ellis has consented to serve as president of the recently-formed House Property Owners' Defence Association.

ARCHÆOLOGICAL.

Excavations at Jerusalem.—Dr. Bliss, who is conducting excavations for the Palestine Exploration Fund in Jerusalem, sends home a report of recent work, in which he says that he has found, at a depth of a few feet, the foundations of a wall, which may be those of the actual first wall of the city, and are certainly on the site of that wall. In the course of the work he had uncovered three large square towers. He had also found a gateway, the door-sill of which was still *in situ*, with the holes of the door-posts and the holes for the bolts. This sill was 4ft. above the ancient paved road which passed through the wall at this point; but on digging deeper he found, 4ft. below—and therefore on a level with the ancient road—the sill of an older gateway. Herr Schick has found a postern in the north wall, on the exact spot where the Lepers' Gate is placed by writers in the 12th century—a fact which seems to show that the present position of the wall is what it has always been, and that the city never extended further north than this wall.

The Condition of the Parthenon.—Shortly after the recent earthquakes in Greece a commission of experts, composed of native and foreign architects and archæologists, was appointed to ascertain what amount of damage, if any, had been sustained by the Parthenon during the successive shocks. The commission has now sent in a report to the Greek Minister of Instruction, in which it states that the building has not suffered in any appreciable degree. At the same time it advises that, as a measure of precaution against future accident, the architraves should be strengthened with iron girders, and that protection should be afforded against rain, and, in particular, against the falling of small stones, which has gone on uninterruptedly since the Acropolis was destroyed by the Venetians.

CHIPS.

A new Roman Catholic school-chapel has just been opened at Longton Bridge, near Preston. It consists of a school for 60 children, a central chapel to seat 100, and a teacher's house, all in one block of uniform height and width. The building is of brick, with stone dressings, and style is plain Gothic. Mr. E. Kirby, Liverpool, is the architect, and Mr. Thomas Cottam, Preston, has been the sole contractor.

A committee of the local College of Physicians have issued a report recommending the Edinburgh Town Council to secure as a site for a new fever hospital either an area at South Grange, including Craigmount cricket field, Grange-terrace, &c., or an area on the eastern slope of Blackford Hill to the south of the road leading from the Harrison Arch to the hill.

The name of Mr. Joseph Gardner, of Seacroft, near Blundellsands, timber merchant, has been placed on the commission of the peace for the County Palatine of Lancaster.

A new police-station is being built at Aberaman. The contractors are Messrs. Williams and Williams, Cardiff and Mountain Ash.

The dedication of the new reredos in the Yeadon parish church took place on Sunday. The reredos is of Caen stone with marble columns, and is in the Decorated style. Messrs. Jones and Willis, of Birmingham and London, have carried out the work.

A rearing supper was given on Tuesday week at Winchester to celebrate the completion of new offices for the proprietors of the *Hampshire Chronicle*. The buildings have been erected from designs by the Mayor of Winchester, Mr. T. Stopher, and Mr. Shearman, of the same city, was the contractor.

The new Panama Canal Company, which has been formed to proceed with the construction of the Canal, was formally constituted at a meeting held in Paris on Saturday, and it was announced that 800 men would, on Monday, resume work on the abandoned cutting.

On Saturday the foundation stones were laid of the new public library at West Hartlepool. The site is the fourth portion of a square of which the municipal buildings and the police-court and station form the other parts, and the building will be erected from plans by the borough engineer, Mr. J. W. Browne. A newsroom, lending library, reference library, committee-room, librarian's room, and librarian's private office are provided. The newsroom will be 54ft. long, 30ft. wide, and 19ft. high; the lending library 47ft. long, 25ft. wide, and 13ft. high; and the reference room 47ft. long by 25ft. wide, and 13ft. high. The buildings will be of Grosmont bricks with terracotta dressings, to harmonise with the rest of the municipal buildings. The cost of the buildings and fittings is estimated at £3,500.

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* Reprinted from the *Local Government Journal*.—No. I.

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ILLUSTRATIONS.

ELTHAM COLLEGE CHAPEL.—CHISHOLME TRUST BUILDING, MERCHISTON, N.B.—ROYAL ACADEMY GOLD MEDAL: DESIGN FOR A PROVINCIAL TOWN HALL.—DETAILS OF CARDIFF POST OFFICE.—ARCHITECTURAL PHOTOGRAPHS BY HAROLD BAKER.—BEAUPRE, GLAMORGANSHIRE.—NATIONAL PRIZE DESIGN FOR WROUGHT-IRON CANDELABRA.

Our Illustrations.

ELTHAM COLLEGE CHAPEL (THE ROYAL NAVAL SCHOOL).

This chapel is to be erected on the picturesque site to which the Royal Naval School moved a few years ago. The building is designed to form the S.E. corner of the proposed quadrangle, which it is expected the exigencies of the college will require in no distant future. The internal length of the chapel is 97ft. by 25ft. in breadth, and it is of lofty proportions. Accommodation is provided for 200, and all the stalls and panelling will be of oak. Internally, the walls will be faced with Bath-stone ashlar; externally, the building will be of red brick with Box Ground dressings, and a Broseley tiled roof. The architect is Mr. Edwin T. Hall, F.R.I.B.A., of 57, Moorgate-street, E.C.

PREMISES FOR THE CHISHOLME TRUST, EDINBURGH.

These buildings cost £7,000. The fronts are built of scabbled stone from Prudham, Northumberland. The slates used on the roof are Coniston green peggies. The premises are erected at Merchiston, Edinburgh, on ground belonging to the Chisholme Trust, and provide accommodation for superior flatted houses, with rentals varying from £40 to £60 per annum. The corner premises are occupied as a branch post-office for the district. Messrs. Dunn and Findley, of Edinburgh, are the architects.

ROYAL ACADEMY GOLD MEDAL COMPETITION DESIGN FOR A TOWN HALL.

The merits of this design, which we illustrate to-day by these plans and perspective view, have already been referred to in our pages, at the time of the exhibition of all the designs submitted in the same contest at Burlington House. Its suggestive treatment and breadth of handling impart an interest sufficient to warrant the present illustration. The arrangements proposed by the designer are clearly shown by his plans, which we leave to speak for themselves without further comment. Mr. A. Dunbar Smith is the author of the design.

CARDIFF POST-OFFICE.

This concluding sheet finishes our present series of illustrations of this important block of Post-office buildings now in progress of erection at Cardiff from the plans of Mr. Henry Tanner, F.R.I.B.A., of H.M. Office of Works. The plate furnishes a working detail to scale of the central gable of the façade towards Westgate-street, with sections fully explaining the construction adopted. Our previous drawings were issued in the Building News for Sept. 21st and 28th last.

ARCHITECTURAL PHOTOGRAPHS BY HAROLD BAKER.

This sheet of views, illustrating some eminently picturesque studies of old English houses, together with an ancient bridge, is composed, by permission, from a selection made by Mr. Harold Baker, a well-known artistic photographer in Birmingham, who has taken a large number of similar photographs in various parts of the country. The bridge at Tewkesbury calls for little special remark, and the same may be said of the delightfully quaint old shop, with its coved pentice, from the little town of Berkeley in Gloucestershire. Compton Winyates, in Warwickshire, is, of course, a very famous and beautiful house, rich in exquisite colour and admirable in its architectural detail, the notable mansion of the Marquis of Northampton. We gave a sketch and plan of the house in the Building News for Feb. 12th, 1892. Somershall Herbert, in Derbyshire, is another capital example of timbered work—an uncommon type of building in that part of the Midlands. It belongs to the FitzHerbert family, and is kept just as it should be, in good repair and structurally secure, without abominable applications of tar on the framings, which are left in their time-matured beauty of silvery-grey. Inside the house is simply furnished in the best of taste, harmonising with the outside.

BEAUPRE, GLAMORGANSHIRE.

Beaupre stands in a position justifying its name. It was originally the seat of the Cecil family (then spelt Cecwilth, the ancestors of Lord Salisbury), who built the greater portion of it. It has, however, been for many centuries in the possession of the Bassetts, and the beautiful Renaissance porch was built, as the inscription states, by "Rycharde Bassett, having to wyf Katherine, dovghter to Sir Thomas Johns Knight, Bwvilt this Porche and the Tourres Ano 1600." The majority of the building dates from the latter part of the 16th century. The walls are standing and those of the entrance court, and a portion of the buildings, consisting of some half-dozen rooms, is in the occupation of a farmer. The direct descendants of the Bassetts live about a mile away, in New Beaupré. R. Morton.

NATIONAL PRIZE DESIGN FOR CANDELABRA.

In this design an attempt has been made to deviate from the usual form of candelabra, in which the candle-sockets are generally poised on separate arms springing from a central stem—a form beautiful enough with proper treatment, but apt to be hackneyed. This has been done without any violence to construction or the material employed. The base is firm and consistently plain, gradually merging into more complex detail in the band, and when carried out, as intended, in half-brightened iron, should be very effective, especially so when in use, from the reflections in the shields that fill the angles of the geometric band. The illustration is reduced from the full-sized drawing, and therefore is not to any particular scale; but the height, 26½in., will give an idea of the other dimensions.

◆

The new church of St. Magnus, Bessingby, near Bridlington, was consecrated on Thursday in last week by the Archbishop of York. The church is in the Decorated Gothic style, the exterior is of Whitby stone, and the interior of Ancaster and Dumfries stone. The pews, pulpit, reading desk, and lectern are of carved oak. The special gifts include an organ, a peal of eight tubular bells, heating apparatus, and lamps and chandeliers.

A portion of the premises of Mr. J. B. Delany, cabinet maker, Birkenhead, was destroyed by fire on Saturday, damage to the amount of from £7,000 to £8,000 being caused. The floors are fitted with double ceilings, and to this circumstances is due the fact that the fire did not spread downwards, as a vast quantity of water lodged in the ceiling of the second story, forming a reservoir which effectually cut off the flames from the lower part of the premises.

The borough of Weymouth is seeking to extend its borders, and proposes a scheme by which its area will be three times increased (from 453 to 1,346 acres), and raising its rating-power by £12,000. General Carey, R.E., held a lengthy inquiry on Wednesday week at the Guildhall, on the memorial of the Weymouth Corporation. The extension was opposed by the inhabitants of the parish of Wyke, and also by the inhabitants of Radipole, to the number of 3,000 people; but the application was principally based on the fact that an extended scheme of sewerage was contemplated by the borough, and that Westham and a portion of Wyke would be benefited.

COMPETITION.

Halifax.—The competition which is being held for the Haxlifax and Huddersfield Union Banking Co.'s new premises has attracted a good many competitors, as forty sets of designs have been received.

◆

CHIPS.

Mr. Alma-Tadema's painting, "Fredegunde," which was purchased at the late Vienna Exhibition by the Reigning Prince Liechtenstein, has just been presented by the owner to the Vienna Academy of Arts.

At a meeting of Burntisland Harbour Commissioners on Friday, plans were submitted for new deep-water docks at Burntisland, prepared jointly by Messrs. Meik and the harbour engineer. The probable cost of alternative schemes ranged from £200,000 to £300,000. After discussion, it was agreed to postpone further proceedings in the matter till another year.

An Exeter architect, Charles Pinn, was allowed to pass his public examination at the Bankruptcy Court in that city on the 18th inst. His liabilities were said to be £850, and the assets £63; but the greater portion of the deficit was owing to Mrs. Pinn and members of the family. Failure was attributed to the taking over of certain property left by debtor's father, and paying off certain legatees under the will. The depreciation of the property had meant very great loss to him.

A block of sanitary chambers three stories in height, and costing £17,500, are about to be erected at the corner of Montrose-street and Cochrane-street, Glasgow, by the police commissioners of that city.

The foundations are being prepared for the erection, in York Minster, of the memorial monument to the late Archbishop Thomson. The situation is beneath the stilted arch adjoining the entrance to the choir aisle, in the south transept, hitherto occupied in part by the vergers' bench. Messrs. Farmer and Brindley, of London, are the sculptors.

The opening of the 2nd Hants Volunteer new drill hall in the Leigh-road, Eastleigh, took place on Wednesday week. The hall, the main front of which was illustrated in the Building News for June 8, 1894, is 72ft. by 40ft. in the clear, and has attached at the platform end officers' room, lavatories, and servery, and at the opposite end are dressing rooms. Mr. R. M. D. Lucas, of Southampton, is the architect, and Messrs. H. Stevens and Co., were the builders.

A stained-glass east window has been recently placed in St. Mary's Church, Stanford, Worcestershire, to the memory of Lord Alfred Spencer Churchill, by his four daughters. The subject is a replica of the well-known altar painting, "Easter Morn," in the church at Moldë, Norway. A cross of white marble has also been put up to Lord Alfred's memory.

An hotel is about to be built in Hans-place, Belgravia, at a cost of about £40,000, from plans by Messrs. Reed and Macdonald, of Oxford-street, W. The builders are Messrs. Stephens, Bastow, and Co., of Bristol.

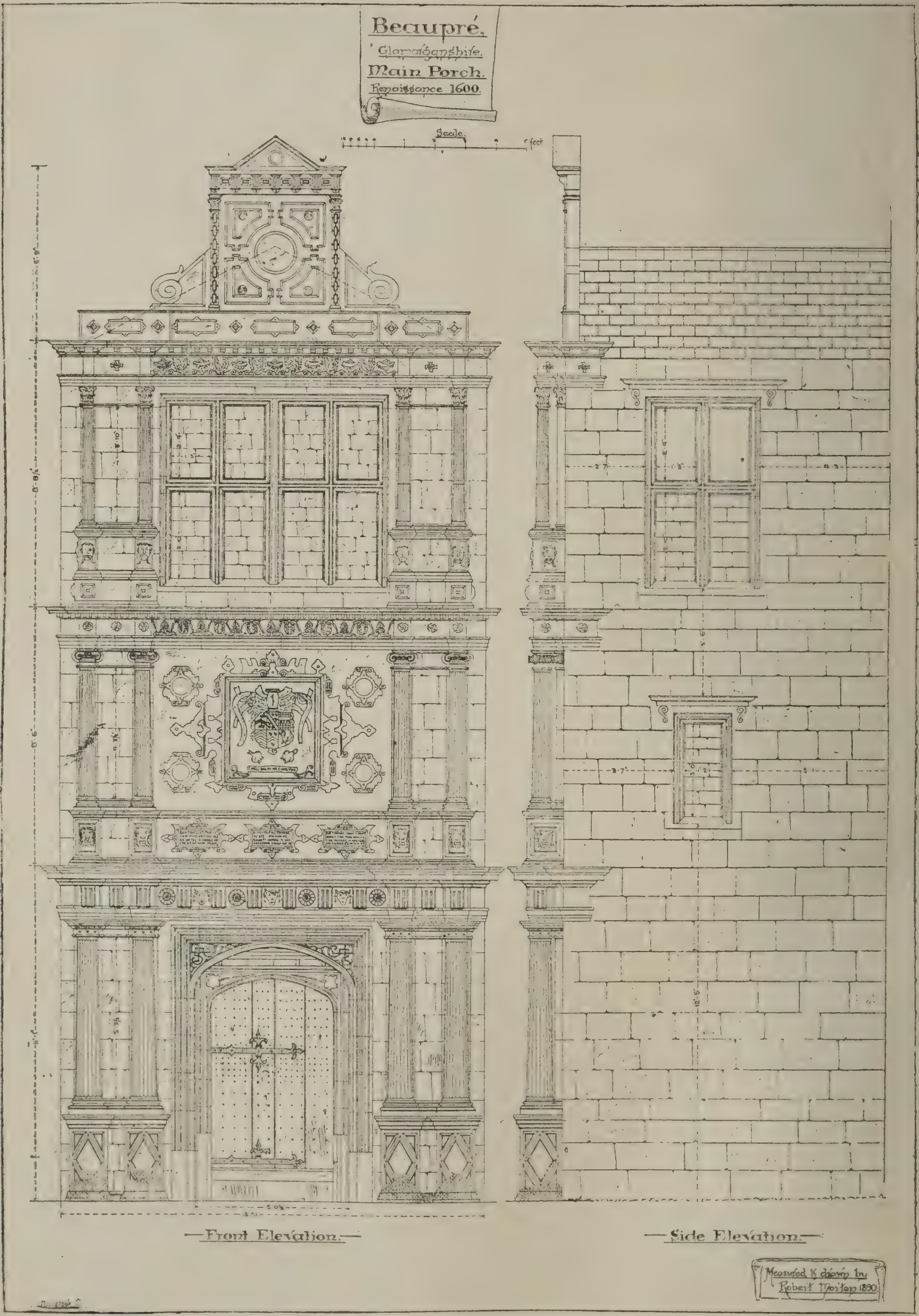
Miles Eccles, foreman of works under the Beverley Corporation, dropped down dead on Tuesday week, in the Stoneway of that town, whilst superintending the workmen. Deceased, who was between 60 and 70 years of age, had been in the service of the Corporation nearly 30 years.

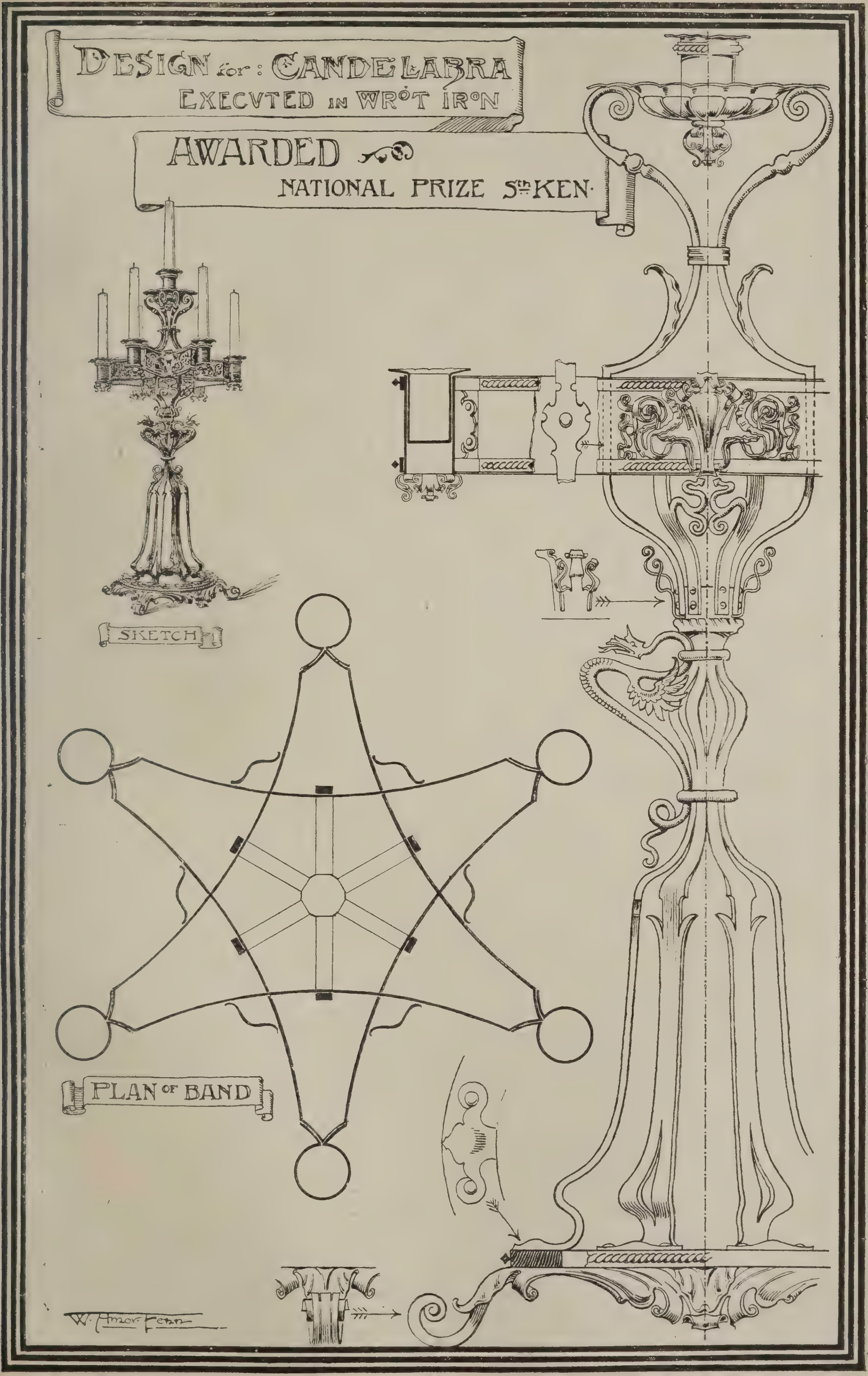
The extensive additions recently made to the buildings of Somerville College, Oxford, were inaugurated on Saturday afternoon.

Berkeley Chapel, Mayfair, which has been closed for the decoration of the chancel, was reopened on Sunday. The paintings have been executed by Mr. Hemmings, at a cost of £300. The altar-piece represents Christ enthroned in glory. On each side is a panel, one representing Christ with the Bread of Life, the other as the True Vine. Beneath is a triptych of the Crucifixion.

The first ordinary general meeting for the session 1894-95 of the Surveyors' Institute will be held on Monday, November 12th, 1894, when the president, Mr. Thos. Chatfeild Clarke, will deliver an opening address.

At the parish church of St. Hilda, at Ampleforth, on Thursday in last week, the dedication took place of new bells and a restored tower, and the unveiling of a memorial tablet in memory of the late Rev. J. T. F. Hicks, vicar of the parish for 36 years, and also the dedication of a new organ. The late vicar had restored the church and erected new schools, but the weather-beaten tower and the dilapidated belfry and bells remained unrestored. The present vicar undertook the duty as a memorial to his predecessor, and also had a new organ erected, the latter being built by Messrs. T. Hopkins and Sons, of Heworth, York.


Beaupré,
Glamorganshire.
Main Porch.
Renaissance 1600.
Scale.
feet
—Front Elevation.—
—Side Elevation.—
Measured & drawn by
Robert Morton 1890.


DESIGN for: CANDELABRA
EXECUTED IN WRᵒT IRON
AWARDED
NATIONAL PRIZE Sth KEN.
SKETCH
PLAN OF BAND
W. Amor Fenn

WAYSIDE NOTES.

I quite agree with others who are indignant at the scandalous and incredibly unpatriotic way in which the Nelson Column is being made the means of advertisement of some vendor of "patent foods." Every night an advertisement, some 20ft. high, is made to pass backwards and forwards by means of an electric search-light. Where is this mania for advertisement to stop? Our streets and public buildings, and even the rivers and fields, are desecrated and made hideous by boards of all colours, and yet, not content with these means, the advertiser of to-day attacks our monuments, which should be as sacred as the walls of Westminster Abbey. I fully expect to find a dozen tablets recommending somebody's soap on the backs of the chairs in St. Paul's one of these days, or a comic slide introduced at the end of Mr. Carlile's little show at Fish-street Hill one Sunday night, setting forth the virtues of Spratt's dog biscuits. It pays, and there seems to be no one to prevent it.

St. Paul's, according to Mr. Haweis, wants a thorough "wash and brush up." Another correspondent fears all the fire-engines in London will not remove the coat of filth which has been allowed to incrust its walls during the last two centuries, and declares that a *thorough scraping* will alone effect this. That the towers have escaped the pollution is, it is suggested, due to the fact that they are fully exposed to the cleansing influence of wind and rain storms, from which the lower parts of the building, now as black as Erebus, are protected by surrounding buildings. I trust the Dean and Chapter will have nothing to do with the suggested "scraping." Once during the past thirty years the building has been cleaned with fairly good results, exteriorily by the means of the Metropolitan fire-engines, and doubtless might be again. But we may safely trust Mr. Penrose to save us from the man with the chisel, who has long ago spoiled more than one cathedral exterior where there was no smoke or soot to furnish an excuse. Mr. Sydney Vacher very sensibly points out that sooner or later damage would be done by any washing experiments with hose and engine to the weathered skin of the Portland stone, and further shows that it would be impracticable to bring the surface up to a uniform tone, as the material weathers differently according to the amount of rain and sunshine it is exposed to.

I hear that the Science and Art Department will shortly issue a circular which will practically revolutionise the present means and method of support to organised science and art schools. It is stated that it is the intention of the Department henceforward to make grants very much upon the same basis as that already adopted by the Education Department proper. I don't quite grasp the nature or extent of the wonderful changes; but I have no doubt that any "revolutions" have first of all the object in view of making things better for the Science and Art Department itself, and any fresh additions to its ranks that it has become necessary to provide for. It always has been so, and probably always will.

I wonder what the Queen will do should any foreign potentate having peculiar habits and customs honour this country by visiting it while "Claridge's," the famous hotel in Brook-street, where so many princes, pashas, ambassadors, and foreign notabilities of all sorts have made their home during scores of past seasons, is in the hands of the "housebreakers"? Its site has been acquired by a syndicate, and a vast new hotel, built on modern principles, will soon be erected upon it. Meantime, the whole of the contents of the labyrinthine building are to be sold by auction during the next three weeks. Although there is nothing of exceptional value, there are numbers of old chairs, tables, cabinets, clocks, &c., French and English, with quantities of china services, Sheffield plated ware, &c., that have been in use very many years.

Why should Knightsbridge wait for at least three more years before the intolerable obstruction to traffic caused by the narrowness of the roadway near Albert-gate is removed by the London County Council? The owners of the obstructive houses are said to be willing, but the County Council is not, and thus a much-needed London improvement is made to stand aside to await that indefinite future when London's Parliament will attend to London's most pressing wants. The Council need have no fear that by widening Knightsbridge they will be benefiting the rich, because owners of private carriages can escape the crush by driving through the Park. It is the omnibus and commercial traffic that suffers. But the London County Council appears to have its favourite localities for spending money, just as it appears to have favoured papers that get early intelligence and the lion's share of its advertisements. I fancy sometimes, as Mr. J. C. Kenworthy said some time since in the *Weekly Times and Echo*, that there are already signs that in another five years the L.C.C. will have become every whit as corrupt a body as was the old Metropolitan Board of Works.

Moorgate-street Station, on the Metropolitan Railway, is undergoing a complete transformation, which will make it one of the best-appointed underground stations in the metropolis. Not only is the entire front to be rebuilt, but the platforms will be provided with covered ways, and there is to be a joint booking-office for the chief railway companies having running powers to the station. This last improvement will be of great service to passengers crossing from one line to another, as, hitherto, the process of rebooking has been decidedly inconvenient. The Metropolitan Railway Company will bear the entire expense of the alterations, the other companies being only tenants, and paying, it is said, half a crown for every train that enters the station. There was a conference of managers on Monday and a tour of inspection, the result being that it was practically decided that the contract for the whole work should be signed next week.

The members of the London County Council have not yet made up their minds as to whether they shall expend £6,000 in commemorating Queen Boadicea, by placing a group of statuary on the tumulus, at the top of Parliament-hill Fields, which the very dubious tradition declares to be the burial-place of the ill-used British warrior queen. The late Mr. Thomas Thornycroft devoted fifteen years of his life to a gigantic group of statuary representing the queen, supported by her two daughters, on a chariot drawn by two horses, preparing for battle, and his son, Mr. J. I. Thornycroft, has offered to present the work for erection on Parliament-hill Fields. As a gift, the model is very well; but £6,000 is a good round sum for casting a work which might fail to meet with popular appreciation.

A Bill will be introduced next session for carrying out a railway scheme providing communication, through the Dee Valley, between South Wales and Manchester. The projected line will start from Wrexham, forming a junction with the existing Wrexham, Mold, and Connah's Quay Railway, and the line now in course of construction between that town and Ellesmere. It will pass through Isycoed, Holt, Farndon, the Waverton district, and Tarvin, and join the existing Cheshire Lines Railway near Mouldsworth Junction. It will cross the Dee at a bend of that river near Deeside Farm, where there is a natural sandstone cliff on the Farndon side. The engineer of the scheme is Sir James Szlumper, Mayor of Richmond.

A hitch has, the *Birmingham Post* states, occurred in the arrangements for erecting the new meat market and slaughter-houses in Bradford-street in that city. When the tenders for the buildings, ten in number, were opened, by the Markets and Fairs Committee, in every case the amount of the tender was in access of the amount (£45,000) authorised by the City Council as the expenditure on this portion of the scheme. The tenders were referred to a sub-committee, with a view to see whether any modifications of the scheme could be made to bring the work within the estimate. The lowest tender was that of Mr. John Bowen, which, subject to the modifications in question, the committee will recommend the council to adopt.

At the recent Civil Service examination for Irish county surveyorships, Mr. A. M. Burden, B.A., B.E., A.M.I.C.E., assistant surveyor R.E. Civil Staff, obtained first place, being the third gentleman in succession of the department who has achieved this distinction.

The Bishop of Lincoln reopened on Monday the parish church at Bicker, South Lincolnshire, after undergoing restoration. The chief alterations and improvements have been effected in the Lady-chapel, south aisle, and clerestory, and the south transept and porch, and the work has cost £1,450. The vicar is stated to have acted as his own architect, and Mr. S. Sherwin, of Boston, was the contractor.

OBITUARY.

Mr. Edwin Clark, J.P., M.I.C.E., a well-known railway engineer, who died at Cromwell House, Great Marlow, on Monday night, was born in that town just 80 years ago. He worked under Robert Stephenson, and as resident engineer had control of the construction of the Britannia Tubular Bridge, his brother, Mr. Latimer Clark, F.R.S., being appointed his assistant. For many years he was chief engineer to the Electric Telegraph Company. He patented the hydraulic graving dock and the hydraulic canal lift, and was inventor of the block system of railway signalling. He constructed the famous harbour of Callao, in Peru, and carried out engineering works in various parts of the world. Retiring in 1876, he settled down in his native town. He was one of the senior subscribers to the Institution of Civil Engineers, having joined that body as an Associate in December, 1850, becoming a Member in April, 1852.

CHIPS.

The city council of Chester have decided to adopt the Hoppole Paddocks, near the cathedral and the wall, as the site for the proposed public baths, on which from £5,000 to £6,000 is intended to be expended. The portion of the grounds not built upon will be laid out as public gardens. A much larger undertaking just decided upon by the same city council is the purchase for £27,000 of 418½ acres of land at Sealand, for refuse and sewage disposal purposes.

Dorchester Town Council have decided to erect an infectious diseases hospital on the outskirts of the town, and to take steps with a view to the formation of an ornamental public garden near the Great Western Railway Station.

The work of restoring the roof of St. Michael's Church, Sopley, Hampshire, which was destroyed in a gale a few weeks since, is being well advanced. Practically the roof is being rebuilt, the damage having been so great. Mr. Burton, of Bournemouth, is the architect, and Mr. Alexander, of Ringwood, the builder. The Bishop of Winchester will reopen the church, after renovation, on All Saints' Day, Thursday in next week.

The marble bust of the late Duke of Devonshire, which is to be placed in the New Pump Room of Buxton as a town memorial, is from the chisel of Mr. W. D. Keyworth, jun., and represents the seventh Duke in his robes as Chancellor of Cambridge University.

A new institute connected with the Young Women's Christian Association was opened on Friday, in Muslin-street, Bridgeton, for the east end of Glasgow. The new building is constructed of red sandstone, and has been built, furnished, and equipped, and the site secured at a total cost of £4,800.

At Tonbridge, on Friday, the Archbishop of Canterbury formally opened the new buildings which have lately been added to the grammar school. The buildings, which were designed by Mr. Campbell Jones, include a long range of workshops, classrooms, &c., together with a hall. They are lighted by electricity, and their cost, some £26,000, has been defrayed out of the property belonging to the school. Messrs. Strange and Sons, of Tunbridge Wells, were the contractors.

Messrs. Harry Hems and Sons, of Exeter, are completing for a church at St. Leonard's-on-Sea a reproduction, in white Castellino marble, of the Santo Volto or Crucifix of Lucca, said by tradition to be the work of Nicodemus himself, and certainly the oldest representation of our Lord's Passion in existence. On a background of veined alabaster is a cross of grey Dove marble. Before this stands (not nailed on to) a clothed and crowned figure of our Lord, shown as King of Kings. He holds out his hands, marked by the stigma, and at His feet sculptured angels bend with a chalice. Above and about the head are other angelic forms. On the north side is a life-sized statue of the Blessed Virgin, and on the south another of St. John the Divine.

Some time since the vestry of Fulham, with the help of the London County Council, laid out some 12 acres of ground adjoining Fulham Palace as a public recreation ground, and at the same time constructed a substantial embankment and wall on the river front at a total cost of £19,580. An opportunity has now occurred for the acquisition of two properties known as Thames Bank and Prior's Bank, adjoining Bishop's meadow, with the view of adding the land to the recreation ground. The market value of the two properties is estimated at £5,740, but the Ecclesiastical Commissioners offer it for £4,000, on condition that the land is used as an open space. The estimated cost of acquiring and laying out the ground, continuing the river wall along the front, and constructing an approach from Putney-bridge, is £10,000, towards which the Council will contribute £7,500.

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL.—X.

WE may now proceed to take out the weights of the different parts of our bridge, so as to arrive at the total number of tons of steel required for its construction. Steel is rather heavier than wrought iron; but the difference is so small that, unless in very large girders, it may be either altogether neglected, or when the lump weight has been ascertained, a percentage may be added to equalise the slight difference, which may be thus obtained:—

Weight of a cubic foot of steel in pounds ..	499
Ditto ditto wrought iron ditto	486
Difference	13lb.
Weight of a cubic inch of steel in pounds	0·288
Ditto ditto wrought iron ditto	0·280
Difference	0·008lb.

Taking the average of these differences, it will be found that if 1½ or 2 per cent. be added to the total weight of steel estimated as if wrought iron, the calculation will be correct. This method, moreover, will allow of the use of one or other of the numerous tables which give the weights of plates, bars, angle and tee-irons, and other sections of wrought iron, which are not equally available for the same forms of steel. Although these useful and reliable aids to the estimation of quantities and weights save a very large amount of labour and unnecessary trouble, the architect and engineer should not accustom himself to rely altogether upon their assistance. It not unfrequently occurs, especially in foreign countries, that tables are not always to hand. Again, a professional man is often called upon for an approximate estimate of an iron or steel girder, roof truss, or other description of metallic framework, when he is away from his library and books of technical reference, and ought not to be at a total loss without them. There a few leading principles, and a few particular applications of them, which should be retained in the memory, and which will render the designer independent of tables and pocket-books when from one cause or another they are out of the way.

Let W equal the weight required for any unit of length L, in pounds, of any plate or bar, or, as will be subsequently seen, of any section of steel. Put c for the number of cubic inches in the section multiplied by the required length L, and in the case of plates and flat sections of steel make b equal the breadth and t the thickness, both of which, as well as the value of L, must be in inches. It will simplify future calculations, and will be on the safe side, since it will add very slightly to the actual total weight, to take the constant or weight per cubic inch of the ordinary quality used in the structures treated of equal to 0·288lb. A very good constant multiplier for converting weights of wrought iron into their equivalent values in steel is 1·02. According to the notation we have adopted, the value of W is—

$$W = C \times 0·288 \ldots\ldots (1)$$

but with a given length L—

$$C = L \times b \times t \ldots\ldots (2)$$

from which, eliminating C, we obtain—

$$W = L \times b \times t \times 0·288 \ldots\ldots (3)$$

Sometimes the unit of length adopted is yards, but as the foot is more generally employed, it will be retained in all future calculations. Inserting this value in (3) it gives—

$$W = 12 \times b \times t \times 0·288 \ldots\ldots (4)$$

Put A equal to the sectional area, in this case of course the gross sectional area, so that $A = b \times t$, and—

$$W = A \times 12 \times 0·288 = 3·45\,A \ldots (5)$$

Whatever may be the form of the section, this value for W will hold good. In estimating the weight of round iron, it must be remembered that

$$A = 0·7854 \times d^2.$$

The following memoranda will be of service in assisting calculation:—

Weight of cubic feet of steel in lbs.	499
,, ,, inches ,, ...	0·288
Weight of one lineal foot of any form of section of the area A	A × 3·45
Number of cubic feet of steel in 1 ton	4·48

Similarly for angle, tee, channel, *fer tubulaire*, or the Zores section, the rule is the same. The methods of ascertaining the sectional areas of these different forms of steel have been previously demonstrated, and we shall not, therefore, recapitulate. One word of advice we give. In estimating quantities and weights, always, while retaining a proper regard for accuracy and fidelity, estimate in a fair and generous manner. There is nothing so detrimental to the cause of good materials and good workmanship as a niggardly, cheeseparing system of estimating, which is, unfortunately, a great deal too often practised at the present day. While, on the one hand, there is no necessity for being either lavish or wasteful in either of these two details, on the other, it shows a lamentable lack of good sense and *savoir faire* when a specification is so stringent and an estimate so clipped as to render it literally impossible that good work could be done at the price and under the conditions stipulated for.

Estimates of quantities and weights are usually made on printed sheets of foolscap, which vary in the headings of the columns, and also in the degrees of minuteness with which the different descriptions of materials and workmanship are enumerated. Some architects and engineers prefer one kind of schedule or "form," and some another. The practice of each particular office regulates this, as well as numerous other details of a similar character. In the example before us, the number of the different materials used is very limited, which will greatly simplify the "form" in question. It should be borne in mind that all descriptions, dimensions, scantlings, weights, and other necessary items cannot be entered too fully or two clearly under their respective heads. There is nothing so annoying and so frequently the cause of trouble between the professional man and the contractor than to find, after the works are in progress, that a certain class of material and workmanship has been insufficiently and carelessly described, and estimated at too low a price. Such instances are by no means uncommon, and there are very few principals or heads of departments who have had the good fortune to be perfectly free of them.

ESTIMATE OF WEIGHT OF STEEL IN TONS FOR BRIDGE 60FT. IN SPAN.

Description.	Length in ft.	Scantlings in inches.	Weight per ft. in lb.	Total weight in lb.	Remarks.
One main girder.					
Upper flange—					
One plate	35	18 × ½	31	1,085	
,, ,, ...	45	18 × ½	31	1,395	
,, ,, ...	73	18 × ½	31	2,263	Over ends of girder.
Two angle-irons ...	73	4 × 3½ × ½	12	1,752	Ditto.
Four cover-plates..	5	18 × ½	31	620	
Two end ditto	2	18 × ½	31	124	
Two angle-wrappers	1½	3½ × 3 × ½	11	66	
Weight of one upper flange	......	....	......	7,305	3·261 tons.
Lower flange—					
One plate	63	18 × ½	31	1,953	
,, ,, ...	45	18 × ⅜	22¼	1,001	
,, ,, ...	35	18 × ⅜	22¼	779	
Two angle-irons ...	63	4 × 3½ × ½	12	1,512	
Four cover plates ..	—	—	—	620	
Two end ditto	3	18 × ⅜	22¼	137	Over bearings.
Two angle wrappers	—	—	—	66	
Weight of one lower flange	......	....	......	6,068	2·708 tons.
Web—					
One plate	63	56 × 5-16	60½	3,812	
Sixty vertical strips	5	5 × ⅜	6½	1,950	
Four angle irons over bearings ...	5	4 × 3½ × ½	12	240	
Weight of one web	......	....	......	6,002	2·68 tons.
One cross girder					
Upper flange—					
One plate	41	15 × ½	26	1,086	Over ends of girder.
,, ,, ...	16	15 × ⅜	19½	307	Plate at centre.
Two angle-irons ...	41	3½ × 3½ × ½	11¼	922	Over ends of girder.
Weight of one upper flange......	......	....	......	2,315	1·033 tons.
Lower flange					
One plate	36	15 × ½	26	936	
,, ,, ...	16	—	—	307	Plate at centre.
Two angle-irons ...	36	—	11¼	810	
Weight of one lower flange	......	....	....	2,053	0·916 tons.
Web—					
One plate	36	28 × 5-16	30¼	1,089	
Twenty vertical strips	2½	—	6½	303	
Weight of one web	.....	....	......	1,392	
Four connecting L-irons to main girder	3¼	3½ × 3½ × ½	11¼	146	
Weight of one web and connections		....	......	1,438	0·642 tons.
Eight steel joists...	60	5 × 4 × ¼	10¾	5,160	
Buckled plates......	...	—	...	16,320	
Parapet screens ...	...	—	...	4,460	
Weight of steel platform	....	....	....	26,940	12 tons

In the preceding estimate, although we have not yet published the elevation of the main girder, the separate items can all be obtained from the illustrations to previous articles, and the information given in the text. With respect to the total lengths of one of the plates in the upper flange, and of the horizontal angle iron, which are put equal to 73ft. each, it must be borne in mind that they are all carried over the ends of the girder and riveted together there, as shown in Fig. 15. It will be seen that the total weight of one main girder is alone taken out in detail, and then doubled for the pair. In the same manner the estimate for the weight of the cross girders is arrived at by using the proper multipliers.

FIG.15.

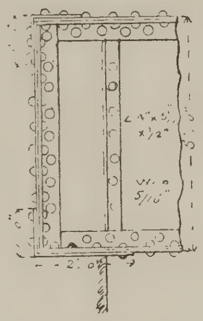
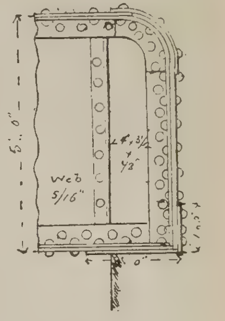


FIG.16.



Before proceeding further with such explanations as may be necessary to enable our younger readers, for whose especial interest these articles are written, to thoroughly understand the "Estimate," it will be as well to explain Figs. 15 and 16, which will account for the apparent extra length given to the third plate in the upper and lower flanges. The former figure shows a right-angled termination to the girder, and the lengths of the separate vertical plate and the angle-iron of the flange at the back of the girder are added to the length of the regular flange-plate. A strip of plate, bent as shown in Fig. 15, covers the junction of the horizontal and the vertical plates, and may be riveted to it by the ordinary number of the rivets in the flange. The arrangement for the lower flange is somewhat different, as the similar strip of plate which has the same scantlings 18in. by ½in. is prolonged for a length of 2ft. under the lower flange. This extension is for insuring a uniform bearing on the bed-plate. It will be seen that the heads of the rivets on the under side of the plate are countersunk, and therefore do not show in the drawing. Another method frequently adopted for finishing off the ends of a plate girder is represented in Fig. 16, where the vertical piece of plate and angle-irons are rounded off with an easy curve. A strip of plate bent to the same radius as the angle-iron will suffice to cover the joint, and in some instances an angle-iron is used instead. Over the bearings the joint is arranged in the same manner as in Fig. 15. So far as strength is concerned, there is little or no stress on any of these parts of the girders; neither need appearance be considered, for the ends are invariably hidden in road bridges, by the parapets terminating the approaches.

If to the weight of one main girder in the estimate seven per cent. be added for rivets and small packing strips, the total weight amounts to 9·25 tons, as against 9 tons assumed for the trial weight. A similar calculation with respect to the weight of one cross girder and angle-iron attachment to the main girder, as shown in the cross section of the bridge in our last article, makes the total weight amount to 2·77 tons, as against 3 tons taken for the trial weight, which leaves a sufficient margin which will more than cover the small deficiency incurred with regard to the main girders. Summing up the weights of the several items, we have the following abstract:—

Two main girders at 9·25 tons	18·50
Nine cross girders at 2·77 tons	24·93
Weight of steel platform	12·00
Total weight of steel in bridge in tons ..	55·43

In point of absolute weight, the platform of a road bridge frequently compares very unfavourably with that of a railway bridge, since in the former it must be continuous over the whole area, but not necessarily so in the case of the latter structure. If the rails be carried on heavy balks of timber—that is, on continuous or longitudial sleepers, instead of on transverse sleepers—there is no need for any ballast, and all that is required is to provide some sort of a footway or a gangway for the platelayers to move about on. Even this scanty accommodation is often not available on railway bridges, and scarcely ever when they are erected in foreign countries and in out-of-the-way places at home. Owing to the exceedingly heavy loads—in some instances ridiculously ponderous—insisted upon by local authorities, even for structures which for size and traffic scarcely deserve the name of bridges, there is not so much difference between the absolute quantity of material, and consequently the weight, in a road or railway bridge as might at first be reasonably assumed. In fact, beyond the weight of the superstructure itself, there is very little additional dead load, and there is no necessity for making provision for the loading of the whole flooring of the bridge with a weight of so many pounds per square foot. In estimating the effect of a rolling load upon a bridge, it is not so much the actual amount of the load that has to be considered, as the ratio between it and the absolute or insistent weight of the structure itself. The greater the latter amount, the greater the resulting *vis inertiæ* of the entire structure, and the greater the antagonistic force which it opposes to the momentum or *vis viva* of a heavy passenger or goods train running at a high velocity.

CHIPS.

Lord Houghton has given a site for the erection of technical and art schools for Sandbach. The buildings to be erected are to be provided by voluntary effort.

The Duchess of Rutland opened a new building at Derby on Thursday for the Midland Deaf and Dumb Institution. The new structure is an extension of the old buildings, and has an elevation to Friars-gate. The buildings are three stories in height, and in the rear are schoolrooms and girls' and boys' indoor and outdoor gymnasiums. They have been constructed at a cost of over £13,000.

On Tuesday week Mr. Arnold Taylor, Local Government Board inspector, held an inquiry at Shepton Mallet with respect to the application for borrowing £1,350 by the local board for work at the sewage farm, and £1,000 for the completion of the public offices and rooms for technical education. Among those who took part in the proceedings were Mr. C. Hale, surveyor; Mr. Santo Crimp, sanitary engineer; Mr. G. J. Skipper, of Norwich, architect of the new public offices; and Mr. J. Jones, builder and contractor.

The Chelsea Vestry summoned the rent receiver of the house 32, Francis-street, Chelsea, to the Westminster Police-court, on Friday, for having allowed the property to become filthy and dilapidated. Mr. Sheil dismissed the summons so far as it related to whitewashing, painting, and similar renovations, the Act not empowering him to make an order for such repairs. The power for which the Vestry contended would enable them to enter a house and order it to be cleaned and whitewashed—really an enormous power. He made an order for the removal of stagnant water from the back yard.

The Marquis of Bute is carrying out some works of partial renovation at the ruined chapel of St. Blane, at the southern extremity of the Isle of Bute. The building has been measured and sketched by Mr. Schultz, architect, of Falkirk, and various repairs are being executed by the estate workmen. The ancient well near by has been excavated and cleared out.

The tracery of the east window of the parish church, Clifton, Tamworth, has recently been filled in with stained glass from the studios of Messrs. Jones and Willis, 43, Great Russell-street, London. The subjects thus illustrated are the Creation, Adam and Eve in the Garden, the Temptation, the Fall and the Expulsion from Eden, together with five other subjects, all from early Bible history.

The memorial-stones of a cottage hospital for Porth and district, in the Rhondda, were laid on Thursday in last week. The hospital is being erected on Cemetery-road, on an elevated position overlooking the Rhondda Valley. The building consists of two wards, each containing four beds, matron's room, doctor's room, nurses' day room, operating room, kitchen, and scullery on the ground floor, and private wards and bedrooms on the first floor. The building is to be of local stone, with red brick dressings for the front, the remainder of the external walls being cemented. The contract is being carried out by Messrs. Charles Jenkins and Sons, of Porth (the contract price being £2,529 10s.), under the superintendence of Mr. F. Gibson, architect, Midland Bank-buildings, Pontypridd.

Building Intelligence.

Ellesmere College.—The corner-stone of the new schoolroom was laid on Thursday in last week. The schoolroom is designed on the central-hall principle, with classrooms opening out on both sides. There will be ten of these, five on either side, each plastered with cement above, and having a dado of buff-coloured glazed tiles. The schoolroom will in length be 120ft., and in breadth 36ft. The height will be 33ft. 6in. to the wall-plate, and 45ft. to the apex of the panelling of the roof inside. This panelling will be of fir, and the roofing material to be used is green slate. The type of roof is of the hammer-beam style, with open tracery panels. The materials to be used are red brick and stone. Internally the room will be lined with brick, having its lower portion panelled with wood up to a height of 12ft. At the north end will be a gallery, capable of accommodating 100 people. There will be 18 windows along the sides, besides a large one of five lights at the south end. The heating will be by means of hot-water pipes. Externally, the schoolroom will be of brick, with stone dressings in the same style as the other college buildings. These already consist of a centre block with masters' rooms and dormitories, a wing containing further dormitory accommodation, classrooms, and the head-master's lodgings, and a dining-hall holding four hundred persons. The infirmary is isolated. When the schoolroom is built, there will still remain one wing (to complete the quadrangle, on one side of which is the dining-hall), the schoolrooms, and the chapel. Thirty thousand pounds have already been spent, and it is estimated that twenty thousand pounds more is required to complete the work. The school will then accommodate four hundred boys. Messrs. Carpenter and Ingelow are the architects.

Slindon, Staffs.—The Bishop of Lichfield dedicated on Friday a new church that has been erected at Slindon, near Eccleshall, at the cost of Mr. J. C. Salt. In dimensions the church is 62ft. 9in. from east to west, 16ft. in width across the nave, and 36ft. in width across the transepts. The church is cruciform in plan, consisting of nave, choir, sanctuary, and two transepts. The south transept contains seats for about 40 children; the north transept is to be used as organ-chamber and vestry. A low battlemented tower surmounts the space over the choir, which, as well as the sanctuary and porch, are covered by stone vaulting. The nave is covered by a queen-post roof, with large carved pateræ at intersections of the principal timbers. The material used is a mottled stone from Walford quarry. The style is that of the 14th century, and the windows are nearly all of different design in tracery. In the porch over the main entrance is a panel, with sculpture representing the Annunciation. In the south side of the sanctuary (externally) is a tracery-headed niche containing a figure of St. Chad, to whom the church is dedicated. The seats, choir-stalls, altar, pulpit, and litany-desk are all of oak. The local stone is used for the steps and pavement of the sanctuary. The work has been carried out by Mr. R. Bridgeman, of Lichfield, from designs by Mr. Basil Champneys, of 19, Buckingham-street, Strand, London. The cost has been £2,500. The east window is fitted with stained-glass by Mr. C. E. Kempe, and contains figures of Our Lord in the centre, and of the Virgin Mary, the Apostles St. John and St. James, and of St. Chad.

Stafford.—The foundation stone of the electric-light station was laid, on Friday, at Stafford, by the Mayor (Councillor G. Wormal). The contract for the main buildings was let to Mr. H. Lovatt, Wolverhampton, who is also the contractor for the county hall and the county technical buildings now in course of erection. The main buildings will be of red pressed bricks with Hollington stone facings, the interior of the dynamo-house being lined with glazed bricks. The dynamo-house is to be 82ft. by 45ft., and there will be three 120-horse-power condensing horizontal steam-engines, each to drive a dynamo, calculated to produce 300 ampères at 200 volts potential with a speed of 600 revolutions per minute. Adjoining the dynamo-house will be a boiler-house, in which there will be erected three Lancashire steel boilers, 7ft. 6in. diameter and 28ft. long. The chimney-stack will be 135ft. high, with capacity to accommodate eight boilers. The cables will be laid on the parapets, and inclosed in earthenware pipes. The supply will be on the three-wire system patented by Dr. Hopkinson, F.R.S., the adviser to the corporation; the outlay will be £15,000.

Starcross, Devon.—The parish church of St. Paul, Starcross, a Romanesque structure, was reopened on Saturday after renovation of the interior and re-seating. The high pews have been replaced by benches of pitch-pine, the passages being laid with wood block paving. At the western doorway an entrance lobby has been formed with pitch-pine framing, and swing doors. The roof-timbers have been painted, and the plaster ceiling between them tinted and divided into panels with stencilled border. The walls have been coloured. Pitch-pine stalls are provided for the clergy and choir westward of the chancel arch, the space occupied by the stalls being raised above the level of the nave floor, and laid with encaustic tiles. The organ has been rebuilt and a carved oak pulpit and lectern are in course of preparation by Messrs. Hems and Sons. Messrs. J. W. Rowell and Son, of Newton Abbot, were the architects.

The London County Council agreed on Tuesday to accept the offer of Mr. C. H. Read, of the British Museum, to superintend gratuitously the opening of the Tumulus on Parliament Hill. Mr. Read has recently been engaged in opening up the Anglo-Saxon cemetery near Worthing. It was reported that the preliminary steps have been taken towards widening Wood-lane, Hammersmith, at its junction with the Uxbridge-road, and the formation of a new street from Evelyn-street to Creek-road, Deptford, under the powers granted by the London County Council (General Powers) Acts, 1891 and 1894. A long discussion occurred with reference to the proposal to instruct the Public Health and Housing Committee to report "whether in certain cases the open gratings to the sewers in the highways constitute such a danger to the public health as to render it desirable that the Council should consider the question of whether a remedy can be provided." The resolution was ultimately adopted, but the Main Drainage Committee was substituted for the Public Health and Housing Committee.

The Corporations of Manchester and Salford have at present under consideration the question of deepening the river Irwell. It is proposed to deepen the river from the Ship Canal to Broughton Bridge. This will make it increasingly useful for the purposes of navigation, and the greater depth will also be the means of helping to carry off flood water, by the overflow of which much damage has been done to property on the river banks from time to time during past years.

The organ in St. Augustine's church, Edinburgh, one of the first introduced into the churches in Scotland other than Episcopal, was built by the firm of Messrs. Hamilton and Muller, in October, 1863. It was damaged by fire a few years ago, and has just been rebuilt and had extensive additions to it. The tubular pneumatic principle has been introduced, the whole mechanism has been modernised, and the pipes have been revoiced. The organ contains in all 1,228 pipes, of which 276 are newly added. The work has been carried out by Mr. Herbert King, organ builder, Edinburgh.

The Welsh Calvinistic Methodist Chapel at Prestatyn, built in 1864, having become inadequate for present needs, a larger structure is to take its place, the foundation stones of which were laid on Friday. The new structure will be in the Romanesque style. Provision has been made for the future introduction of a gallery, which would increase the number now to be provided for, 360, by 60 sittings. The front of the chapel will be faced with stone from Carreg Llwyd Quarry, Prestatyn, with terra-cotta dressings. Mr. Hugh Jones, of Morley-road, Rhyl, is the contractor for the work, which will be carried out under the supervision of, and from designs by, Mr. T. G. Williams, M.S.A., 3, Cable-street, Liverpool.

The historic mansion of Christchurch, Ipswich, has been purchased by Mr. Felix T. Cobbold, with the object of presenting it to the town of Ipswich, in the event of the purchase of Christchurch Park, which consists of 51 acres, being completed by the corporation, who are awaiting the sanction of the Local Government Board to give £16,000 for the property. Until Mr. Cobbold came forward, it was intended by the syndicate who have acquired the estate to demolish the mansion, and lay out the site and grounds for building purposes. We illustrated the mansion by a ground-plan and general perspective, and a sketch of the guests' bed-chamber, from drawings by Mr. J. Shewell Corder, of Ipswich, in the Building News for Aug. 25, 1893.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Glasgow Architectural Association.—At a meeting of this association, held in the Rooms, 114, West Campbell-street, on Tuesday week, Mr. A. N. Paterson in the chair, Mr. P. McGregor Chalmers, F.S.A.Scot., read a paper on "The Abbeys and Cathedrals of Scotland." He pointed out that local tradition is often interesting; but as a fabric reared by memory and imagination it can aid us but little where scientific accuracy is required. It might be thought that in the mass of literature published since Scott revived the interest of Scotchmen in the beauty of their own country and its history there would be found all the material necessary for the history of our abbeys and cathedrals. Closer acquaintance, however, convinces one that it is seldom more than a local tradition. The writers generally have been men of culture, but with few exceptions had no knowledge of art. When we turn to ancient charters we may think we have at last found some foundation; but the writings of past ages have been a most prolific source of error. An illustration in point occurs in the charters relating to the building of the central tower of Glasgow Cathedral, a part of the erection which is commonly attributed to Bishop Wishart. The lecturer proved, however, that this is erroneous, and that the tower really erected by Wishart, and restored by Lauder, was the north-western tower, so foolishly removed 60 years ago. It was a favourite practice for a local magnate or chief prelate to have his arms carved on the building erected or restored by him, and in this connection he argued that the arms of Archbishop Blackader, which appear on the remarkable aisle of Car Fergus, are not a record of building, but only of restoration. The presence of names or arms is not an infallible guide to us in our study—that infallible guide must be found in the art itself. Mr. Chalmers afterwards exhibited a series of views by limelight, covering the country from Kirkwall to Durham, and from St. Andrew's to Iona, arranged in chronological order.

Liverpool Master Builders' Association.—The members held their annual meeting on the 4th inst., at their offices, 6, Lord-street, Liverpool. Mr. J. Sirett Brown presiding. The report and accounts for the past 12 months were read and adopted, and the officers for the ensuing year were appointed, with Mr. Wm. Hall as president. The report states that the notices received from the various branches of the building trade for advances in wages, reduction in working hours, and alterations in trade rules have all been amicably settled, and that all the trades (with the exception of the masons) are now working to a uniform code of rules. Last autumn notices were received for a reduction of the working hours and an advance of wages from the bricklayers, plasterers, slaters, plumbers, and painters, and also from the bricklayers' and plasterers' labourers, and the committee considered this a good opportunity for endeavouring to effect such alterations in the general rules as to make them applicable to all the various branches of the trade. The masons and carpenters and joiners were working virtually the hours the other trades desired—viz., what is popularly called the nine hours' system—but to effect a uniform code of rules it was necessary to serve them with a notice of the proposed new rules, which was done. These rules were drafted by the committee and submitted to a special meeting of the association and approved of. The association has considerably increased the number of its members during the past year.

It has been resolved to establish a Society of Lady Artists for Wales. The first exhibition will be held next summer, in the Round Room, Conway, noted successively as a cockpit, Baptist Chapel, bandroom, and the studio of the late Mr. J. D. Dawson, R.W.S.

The city council of Coventry on Thursday adopted a report and plans by Mr. James Mansergh, C.E., for the disposal of the sewage by an extension of the present precipitation works and the filtration of the effluent on land in the Avon valley; the estimated cost of the scheme is £44,500, exclusive of purchase of land. At the same meeting a memorial from the Coventry and District Master Builders' Association was presented, asking for a revision of the building by-laws, with a view to render them more reasonable and workable, as at present they were obnoxious and irksome, and tended to discourage building enterprise. The memorial was referred to the general works committee.

Correspondence.

LOCAL BUILDING REGULATIONS.

To the Editor of the Building News.

Sir,—The case stated in my letter in your issue of Sept. 7, 1894 (p. 342), has, through your courtesy, been dealt with in your Legal column of Oct. 12, 1894 (p. 522), and is therein described as "an important and interesting question." I will, with your permission, therefore, continue the discussion.

Your solicitor (Mr. Fred. Wetherfield) considered that nothing can be done at law, on the assumption that the house mentioned was isolated, and 500 yards from the public sewer.

I must explain that this house is situated on the principal suburban road, and that between the point where the sewer ends and the house in question there is a row of detached and semi-detached houses; so that there is not a vacant building plot intervening, and, therefore, the house in question is simply the furthest of some 19 houses from the last house served by the public sewer. I may add that the rentals vary from £50 to £100, and that they are served by both the gas and water companies.

Now, your solicitor says that: "If there were a row or a street of houses . . . . the local authorities might probably be called upon to extend their scheme of drainage." Cannot my case be included in that category on the above explanation?

But I venture to push the question farther. Authority involves responsibility. Urban authorities may obtain the power to include large agricultural districts within their rateable areas. On doing so they become responsible for the sanitary condition of those districts. And, as property is rated *inter alia* to meet the expense incurred in removing sewage, the local authorities are *morally*—I will not say legally—bound to remove the sewage from every house in their rateable areas, whether by a public sewer or by the emptying of its cesspool. The former alternative applies to my case; the latter to an isolated house erected at such a distance off as to make the laying of a public sewer thereto an unreasonable expense to the ratepaying community.

This is my argument from the payment of sewer rates—an argument which does not postulate that each occupier pays rates in proportion to the sanitary service rendered to his occupation.—I am, &c., Surveyor

ARCHITECTURAL PHOTOGRAPHS.

Sir,—We have read with much interest the correspondence which has appeared in your journal *re* architectural photographs. As there seems to be a desire on the part of many to form a club of those who are interested in this subject, we may say that our committee suggest that there should be an amalgamation of forces.

The Central Photographic Club has been established about twelve months, mainly for the purpose of encouraging social intercourse between all classes of photographers.

Should the amalgamation take place, we think we could promise that the architectural section would have the exclusive use of one or two rooms, with a hearty welcome to the general club rooms.

Our committee will be pleased to meet any gentlemen interested in the question to discuss the matter further.—We are, &c.,

John H. Avery, } Joint Hon. Secs.
C. W. Gamble, }

The Central Photographic Club, Ashley's
Hotel, Henrietta-street.

Sir,—I was very glad to see the letter from Mr. Taylor in your last issue. We all know the energy of the A.A. when it sets its shoulder to the wheel, and I venture to think that, if the A.A. Camera Club were to throw open membership of the Exchange Society to *every* amateur photographer in the United Kingdom, it would prove a far greater success than merely keeping it among architects, photographers among whom must, of necessity, be limited.

My suggestion for working it would be as follows:—Let a scrap album, or albums, circulate, say, once every month among the members, each member, as it passes, pasting in one, or two, as the case may be, specimen prints, the negatives of which he or she must be prepared to lend, or print from, themselves, and at the same time choosing from among the prints already in the book those required in exchange (whether prints or slides), which might vary in size and number, according to each member's subscription.

The negatives of all prints asked for would be sent to the secretary, who would get the necessary prints or slides made therefrom by a professional photographer, at rates previously agreed upon, and return them to their owners.

As the scrap albums get filled with specimen prints from time to time, they would remain in the possession of the A.A. in return for the use of their rooms for meetings, &c., subject only to the inspection of members of the society.

This collection, embracing as it would little-known subjects from all parts of the world (though for postal reasons members would probably require to reside in the United Kingdom), would prove of incalculable benefit to future students of the A.A.

I think also that the exhibition proposed by Mr. Maurice B. Adams would act as a great impetus towards the formation of such a society.—I am, &c.,

A. Whitford Anderson, A.R.I.B.A.

TECHNICAL EDUCATION.

Sir,—We hear on all sides a great outcry on this subject, chiefly, as I believe, in consequence of neglect of the old system of apprenticeship, and various public bodies are indulging in schemes at the expense of the poor middle-class man, who pays for everything; but the strangest thing that I have heard of for a long time is that the governors of the North London Polytechnic think that after a man has acquired sufficient technical knowledge to act as clerk of works for their new building, he is worth £3 per week.—I am, &c., Observer.

CHIPS.

The city council of Bath adopted, by 23 votes to 16, on Tuesday, a resolution requiring that in all contracts over £5,000 contractors shall not sub-let nor pay less than the standard rate of wages. Similar motions have previously been brought forward at Bath and defeated; but many members of the city council stand for re-election on Thursday in next week.

New schools are now being erected at Courtney-road, Hull, and special consideration has been paid to the ventilation, which will be carried out on the Boyle system, the latest patented improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

The opening meeting of the sixty-first session of the Royal Institute of British Architects will be held on the evening of Monday week, November 5th, when an inaugural address will be delivered by the president, Mr. Francis C. Penrose, F.R.S.

A new clergy-house and Church institute, in connection with the parish of St. Mary, Haggerston, was opened on Tuesday last by H.R.H. the Duchess of Teck, attended by Hon. Mrs. Mitford and the Hon. S. Greville. There were present the Bishop of Bedford, General Sir O. Tanner, and a large number of local clergy. Mr. Richard J. Lovell, of 46, Queen Victoria-street, E.C., was the architect.

A large brewery is in course of erection at Blackburn, for the Blackburn Brewery Co., from designs by, and under the supervision of, Mr. James Bertwhistle, F.S I., of Tackett-street, in that town.

Mr. Gladstone, a short time ago, gave sittings for a portrait to the Cavaliere G. de Giovanni, an Italian artist, and a copy of the head in the form of an oval bronze has been accepted by the Trustees of the British Museum.

The second section of the new church of All Saints at Peterborough was opened last week. The building is in the Decorated style, and consists of a nave and south aisle.

Details of the new railway from Bristol to London viâ Bath and Andover, were submitted to a private meeting of influential citizens of Bristol on Wednesday. A committee was formed to further the project, and substantial financial support was promised. The scheme provides for a central station at Bristol, with access to the docks.

In our account of the new buildings at Leeds in our issue of 12th inst., we only mention that Mr. J. F. Ebner laid the mosaic at Yorkshire College for Messrs. A. Waterhouse and Son. Mr. Ebner has also laid all the oak floors at the Medical School on his patent hydrofuge system, and also the Roman marble mosaic, which was specially designed by the architect, Mr. W. H. Thorpe, F.R.I.B.A.

The fine Jubilee statue of the Queen, carried out by Mr. Alfred Gilbert, R.A., has at length been removed from its obscure and ignoble site on Castle Hill, Winchester, to a pedestal in the centre of the Abbey grounds in that city.

Intercommunication.

QUESTIONS.

[11236.]—**Colouring Deed Plans.**—Can any of your readers tell me if there is any chemical to make colour and Indian ink lay evenly on parchment. I have to colour plans on deeds, and owing to the oily nature of their surface, the result is unsatisfactory.—E. H.

REPLIES.

[11227.]—**Soundproof Rooms.**—"Q.'s" architect did not carry his remedy far enough. What is required is to break the connection between the flooring boards and the joists, and between the joists and the ceiling. This may be effected by nailing strips of inodorous hair-felt along the tops and undersides of the joists. It is advisable to chamfer the lower edges of the joists, which also affords a better key to the plastering.—J. T. Rea.

[11227.]—**Soundproof Rooms.**—Possibly the builder may have used some of the imitation "silicate cotton" lately foisted on the market, which, when tightly packed, would, no doubt, have pulverised, and ceased to be a non-conductor. Assuming, however, that the genuine article was employed, there would inevitably be some conduction of sound through the medium of the joists. The remedy, however, is simple. If "Q." fixes to existing ceiling Jones's patent combination slabs—i.e., plaster slabs lined with silicate cotton—he will have a complete insulation, and thus effectually protect himself from the noise overhead. All that the slabs require after being nailed up is a thin finishing coat of fine stuff or Keen's cement.—Clerk of Works.

[11227.]—**Soundproof Rooms.**—If "Q." has the floors perfectly pugged, and the noise is still heard, the only remedy that I can suggest—a very simple one—is that the frisky kitchen-maid be required to wear slippers in the house.—H. L.

[11227.]—**Soundproof Rooms.**—Cork felting is an excellent means of deadening sound. It is composed of pulverised cork, ¼in. thick, laid on a backing of coarse canvas, and used as a floor covering.—R. J. Angel, Birkenhead.

[11228.]—**Bills of Quantities.**—The recognised charge for quantities is 2½ per cent. except for works of a small troublesome nature; then the fee is one of arrangement. See the Royal Institute suggestions as to scale of charges.—R. J. Angel.

[11228.]—**Bills of Quantities.**—For a job of plain character the charge should not exceed 1½ per cent. Very few jobs exceed 2½ per cent. It may interest "Provincial" to know that the London School Board, while providing for a fair wage to the mechanic and labourer, cuts down the surveyor to 1 per cent. for new schools and alterations.—H. Lovegrove.

[11229.]—**Priming Internal Joiner's Work.**—Joiner's work can be knotted, stopped, and primed before it is taken to the building; but "Learner" should ascertain the quality of the material used prior to this operation, as priming, like charity, covers a multitude of sins.—H. L.

[11230.]—**Steel Gutters.**—This question is not very clear; but I should say that steel would last longer in any position.—H. L.

[11231.]—**Wasted Stone.**—The only remedy I know which is permanent, and is not a paint, is the "Fluate" process, sold by the Bath Stone Firms, Ltd., Bath. This process acts chemically upon the stone, does not hide the grain, or paint or varnish it; but leaves its natural appearance unaffected.—Constant Reader.

[11231.]—**Hot-Water Supply.**—The flow and return are usually the same size. The end of blow-off is usually free. Hair-plaster would do for covering, so would felt lagging.—H. L.

[11231.]—**Wasted Stone.**—A good deal of stonework about Liverpool has been treated with chloride of calcium and silicate of soda, and has been found successful in preserving the stone from decay.—R. J. Angel, Birkenhead.

[11232.]—**Domestic Hot-Water Supply.**—Theoretically speaking, the flow-pipe to a hot-water cylinder should be greater in diameter than the return since water expands 4·38 per cent. of its bulk when at its boiling-point—i.e., 212°; but in practice this is never done; both pipes are of an equal diameter, say 1in. or 1¼in. There is a great objection to the blow-off pipe dipping into the cold-water cistern in the roof, for should the water in the cistern freeze during winter-time, the steam outlet would be sealed, and an explosion would occur. The blow-off pipe should discharge outside the building, and be protected from frost by wrapping it round with felt.—R. J. Angel, Birkenhead.

[11234.]—**Staining Timbers.**—The object of priming joiner's work is to render the wood non-absorbent. It is usually done with oil-paint containing a good proportion of red-lead. A coating of this paint will prevent the subsequent coats from sinking into the pores of the wood. Size is sometimes used instead of oil-paint, but should not be allowed.—R. J. Angel.

[11234.]—**Staining Timbers.**—It is very much the custom now to leave the timbers of roof plain in modern churches; but in such a case it is essential that the best materials be used—and if possible, oak. It is many years since I have seen plastering between the common rafters of a new building intended for a church. Boarding has many advantages, and it has been found that if the common rafters shrink, the plaster becomes unsafe, and the necessary whitening spoils the appearance of the timbers.—H. L.

[11235.]—**Ash Vents.**—Questions are asked about these from time to time, and it would be well if "Doubtful" described what they are, their construction, and use.—H. L.

[11235.]—**Ash Vents.**—The old-fashioned ash vents at the back of the fire-grate are not desirable, as they form a conduit for cold air to obtain access to the chimney-flue, thus cooling the smoke and causing it to descend into the room. The modern firegrates have the opening above the fire as small as possible, and by doing away with all superfluous openings, cause the air to pass through the fire before reaching the chimney, which obviates a nuisance.—R. J. Angel, Birkenhead.

CHIPS.

During the hearing, at Birmingham, on Friday, of summonses by the corporation against Sir Alfred Gooch, Bart., requesting magisterial orders for the closing or demolition of a number of houses on his land, Dr. Hill, medical officer for the city, stated that there were in Birmingham at present no fewer than 10,000 houses absolutely unfit for human habitation.

A granite obelisk is about to be erected at Lutterworth, Leicestershire, to the memory of John Wycliffe, "the morning star of the Reformation." The cost will be £1,000.

The Paisley School Board have adopted the plans sent in by Mr. T. G. Abercrombie, of that borough, for the new Barbour Grammar School. The estimated cost of the building is between £18,000 and £19,000. In addition to the academy, a swimming-bath, gymnasium, and workshop will be erected at a cost of £5,000. It is to be erected at Crossflat, on the Glasgow-road.

At the Southwell Diocesan Conference, held at Nottingham last week, the Suffragan Bishop of Derby, on behalf of the clergy and laity of the diocese, presented the bishop with a pastoral staff. The stock was of ivory, with gold head and joints, and on it were two small figures of SS. Chad and Paulinus, representing the two archdeaconries united in the diocese.

Mr. E. E. Oliver has been selected to succeed Colonel Marshall as Chief Engineer and Secretary to the Punjaub Government.

Mr. J. Bowen, A.M.I.C E., borough surveyor of High Wycombe, Bucks, has been recommended by a committee of the Reading town council for the appointment of borough engineer. The other candidates selected and interviewed by the council (out of a total number of 111 applicants) were Mr. Thos. Reader Smith, A.M.I.C.E., of Kettering; Mr. Campbell, A.M.I.C.E., of Stratford-on-Avon; Mr. Witts, of Leeds; Mr. F. W. Howard, of Reading; and Mr. W. Jane, of Reading. Mr. Jane acted as borough engineer during the period of about three months since the appointment of the late borough engineer, Mr. Collins, A.M.I.C.E., to the city engineership of Norwich.

The church schools, Wrangthorn, Leeds, are being warmed and ventilated by means of Shorland's patent Manchester stoves, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The Harwich school board have given instructions to Mr. J. W. Start, F.S.I., architect, of Colchester, Clacton-on-Sea, and Harwich, to prepare plans for an infants' school, to accommodate 150 children, at Lower Dovercourt, this being the second block of buildings undertaken by the board.

It should not be forgotten that to Lord Basing (better known as Mr. Sclater-Booth), who died on Monday, we owe the carrying through Parliament of the important measure for consolidating the sanitary laws, recognised as the Public Health Act of 1875, and also the Rivers' Pollution Act of the same year.

It is proposed to make an additional entrance to Brockwell Park, at the north-eastern corner leading from Arlingford-road. The purchase money for the land, with the legal costs, will amount to between £6,000 and £7,000. The Lambeth Vestry having agreed to contribute one-third of the cost with a maximum contribution of £2,000, the London County Council will be recommended next week to carry out the improvement.

The memorial-stone was laid on Saturday of a new school to be erected in Gorton by the Manchester School Board. The school will have accommodation for about 1,200 children, and is to cost, with the ground, £15,750.

At the Torquay police-court on Saturday, Thomas Cridiford Matthews, a bankrupt builder, of Babbacombe, was charged with setting fire to his house in Fore-street on the previous evening. Prisoner was remanded, in order that his mental condition may be reported upon.

A new gasholder, with a capacity of 5,250,000c.ft., has just been completed at the Meadow-lane Gasworks, Leeds, by Messrs. Clayton, Son, and Co., of Leeds, and its formal opening took place on Monday. The diameter of the holder is 240ft., and when full it will have an elevation of 120ft. exclusive of the base, which is about 15ft. above the ground. The completion of this holder increases the storage capacity of the city to 16,250,000c.ft., and the gas committee hope that they will now be able to dispense with Sunday labour at the gasworks.

Legal.

THE SETTLED LAND ACTS.

ALL who are interested in land and building are more or less concerned with the working of the Settled Land Acts, for it is by means of these statutes that many estates come upon the market and, by falling into the hands of men with money to spend, bring about business. As long as a tenant for life had no method by which he could do anything with the property except at his own expense, there was little hope of its improvement or development. Now that, by reason of the change made in the law, the tenant for life can sell, with the consent of the Court, subject to the due investment of the proceeds for the benefit of those who will come after him, such sales are likely to become more and more common as the existence of this power becomes more widely known. In the general interest, it is, however, most important that there should be no practical difficulties or awkward objections placed in the way of the tenant desiring to sell, because such things are likely to hamper that free transfer of landed property which it is in every way desirable to encourage. From this point of view the decision of the Court of Appeal in the recent case of "Smith v. Lancaster" (*Times*, Aug. 9), seems to us unfortunate.

There, the "tenants for life," as defined by the Settled Land Act of 1882, was found to comprise 25 persons as parties interested in the income, and so together constituting their legal entity. A sale of the settled lands was agreed upon, however, and they all consented to let one solicitor act. This solicitor accordingly conducted the sale on behalf of all these parties, and his name appeared only as vendors' solicitor upon the particulars of sale. But after the sale four of the parties employed separate solicitors of their own, in whom they had confidence, to peruse the defendant conveyance and complete the purchase. When it came to taxing the costs and allowing them out of the proceeds, Mr. Justice Kekewich held that only one set of costs could be permitted, and he disallowed the costs of the four parties who had thus been subsequently represented, on the ground that they were not entitled to do so. They now appealed, and the Lord Chancellor, with Lords Justices Lindley and Davey, allowed the appeal, and reversed the order of the Court below. This was done on the ground that the Act did not compel all the persons who together constituted a legal tenant for life to employ the same solicitor, and therefore each one of them was entitled to be separately represented. In this case, therefore, there might have been twenty-five solicitors. But as all these costs come out of the proceeds, the result must be to seriously hamper the popularity of sales under the Settled Land Acts.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Electric.—Shop-front.—Bylaws.—The Local Board seem to be wrong, upon your statement. You might complain to the Local Government Board by a letter setting out your facts, and you could apply to the Queen's Bench for a *mandamus* against them; but that is expensive and doubtful.

Whilst employed upon the extension of a mineral-water factory at Blackpool, on Tuesday morning, three men were badly injured through the collapse of arches which had been used for the support of concrete flooring between girders. Richard Preston, a bricklayer's labourer; George Perry, foreman of the factory; and William Johnson, another of the firm's employés, were all severely cut about the head and body, while Preston sustained serious internal injuries.

Extensive alterations and improvements are contemplated at the Theatre Royal, Jarrow. At present the whole of the ground floor is occupied by business premises and billiard-rooms; but after the reconstruction the pit will be on the ground floor, and the means of exit will be improved. On the first floor will be the boxes, ladies' and gentlemen's rooms, and the accommodation for the artists will be largely increased. Previously the theatre held 1,100 persons, but in future the number will be 1,400. The interior is to be entirely redecorated. The estimated expenditure is £4,000, and the work will be carried out from the designs and under the supervision of Mr. Albert P. Farthing, architect and surveyor, Pilgrim-street, Newcastle-on-Tyne.

LEGAL INTELLIGENCE.

Frontage Lines on Building Estates.—Stainer v. Masterman.—At the Christchurch (Hants) County Court, on Oct. 16, before Judge Hooper, the case of "Stainer v. Masterman," remitted from the Chancery Division by Mr. Justice Kekewich, was heard. The South Coast Freehold Land Society possessed a piece of freehold land at Christchurch, known as the Fairfield Estate. The estate (consisting of 55 plots) was apportioned by ballot in March last among the members of the society. A moiety of plot No. 1 was sold to Mr. Stainer, the plaintiff, and Mrs. Masterman, the defendant, became the owner of plot No. 3. It was a building estate sold in plots under the same conditions, the allottee of each plot being bound to regard a uniform building line. In June plaintiff observed building operations on defendant's land, a trench being dug out for the footings of the wall, indicating a transgression at one end of the plot of over 3ft., and at the other 4ft. or 5ft. He wrote to defendant, threatening proceedings. The owner of the intermediate plot had given a written consent; but plaintiff was never asked for his written consent. The same day, Mr. Tiller, jun., who was acting as builder and architect for plaintiff, wrote and had a conference with defendant, with a view to a compromise, suggesting that one of defendant's houses should be kept out as proposed, and the other kept back to the proper building line. Defendant, however, emphatically declined to compromise, and the directors of the society decided not to enforce the conditions as to the building line. Plaintiff again wrote to defendant, who said she should go on, as the directors had consented, and the premises were now roofed in. Plaintiff now applied for an injunction and the assessment of damages. Affidavits were read, made on plaintiff's behalf by Mr. Corbin Harris, surveyor, Bournemouth, and by Messrs. Thomas Tiller, senior and junior, builders, as to the damage to plaintiff's property by the want of symmetry in the building line. The defence was that plaintiff had verbally acquiesced in the defendant's proposals, that no other allottee objected, and that he would sustain no damage by the changed building line. The witnesses for defendant included Mr. William Webster Ebrall, surveyor, of Bournemouth, and Mr. William Horsey, the builder of defendant's houses. Plaintiff's counsel quoted "Gascoigne v. Balls"—a strong one, he said, in which there had been five years' acquiescence. The judge said he should make no mandatory injunction in this case. Defendant had proceeded with her building under a misunderstanding; but he could not believe plaintiff had suffered any damage. No allottee had a right to break the covenant regarding the building line, which was binding on all. He should, therefore, give judgment for the plaintiff, without damages. He made no injunction and order as to costs.

Wrongful Conversion of Bricks.—At the Walsall County Court, on Friday, before Judge Griffiths, George Pedley, licensed victualler, Brewood, sued James H. Edwards, formerly of Walsall, now of Bournemouth, for £25 damages for the wrongful conversion of bricks sold by the defendant to the plaintiff. The bricks, numbering about 70,000, were stacked on land belonging to the defendant, in Bentley-lane, at the end of 1892, when the sale and purchase took place, and the plaintiff paid £39 10s. for them. Subsequently the land changed hands, and the plaintiff, who had taken away only 12,000 of the bricks, found that all the others had disappeared. It then came out that defendant had sold about 30,000 of them to Mr. W. Lowndes, brick manufacturer, Bloxwich, for £8 10s., and had got Mr. Jabez Cope to take another lot of 7,000 in payment for rent, to the amount of £3 11s. 3d. The other 21,000 could not be traced. The defence was that the plaintiff had authorised the defendant to sell the bricks for him, and that the money would have been paid over promptly but that the plaintiff had circulated reports prejudicial to the character of the defendant. His Honour gave judgment for plaintiff for £18 10s.—being for 37,000 bricks, at the rate of 10s. per 1,000—and costs; and assumed that those unaccounted for had been stolen by unknown persons.

The Collapse of Scaffolding at Plymouth.—The inquest on Mrs. Rowan, of Plymouth, who died from injuries and shock sustained through the collapse of a "platform" on the occasion of the laying of a memorial stone at a Plymouth Wesleyan Sunday-school on the 3rd inst., was resumed on the 18th inst. Nearly fifty persons were injured by the accident, one lady being still in a critical condition. The contractor for the new school, Mr. Thomas May, of Coburg-street, Plymouth, stated that the so-called platform was merely a scaffold erected for the accommodation of his workmen. On behalf of the chapel trustees, it was alleged that the scaffolding was offered to them by the contractor's foreman for the accommodation of ticket holders. Nothing, it was stated, was said as to its insecurity, or the desirability of limiting the number of people who should use it. This statement was denied by the contractor and his foreman, Mr. William Nancollas; but the latter admitted having stated in conversation with a trustee that twenty people might be put upon the scaffolding. As a matter of fact, any person who chose to pay sixpence for a platform ticket seems to have been allowed to get upon the scaffold, so long as he could find standing room.—The inquiry was adjourned.

Curious Party-Wall Dispute.—At Folkestone County-court, on Tuesday, His Honour Judge Selfe tried the case of "Mackenzie v. Tunbridge," a claim for £11 5s., half the cost of a party-wall. The facts were that Mr. Jenner, a builder, erected a house on a plot of land purchased by him from the Kent and Sussex Land Society. One of the conditions was that he was to build the party-wall half on his own plot and half on the adjoining plot, the purchaser of which would be bound to pay half the cost. When Mr. Jenner had built his house he sold it to Mr. Mackenzie. Mr. Tunbridge purchased the adjoining plot and erected a house on it, using the party-wall, for which he was willing to pay. But there were two claimants for the money. Mr. Mackenzie demanded it, and Mr. Jenner also, the latter contending that he only sold what was on his plot, and not the half-wall on the adjoining plot. His Honour decided that as Mr. Jenner made no reservation of his right to the half party-wall, he conveyed to Mr. Mackenzie all his interest in the building, and therefore Mr. Mackenzie was entitled to receive. Mr. Martyn Mowll, who appeared for the plantiff, asked for a special solicitor's fee of one guinea to be allowed, as it was a case which had involved a good deal of work and a good deal of investigation. His Honour allowed the special fee, remarking that it was a case in which counsel might reasonably have been employed.

In re Young and Buss.—H. W. Young, O. Buss, and C. W. W. Young, recently carrying on an extensive business as wholesale ironmongers in Hill-street, Dorset-square, and Blenheim-street, Bond-street, under the style of "Buss and Young," have furnished accounts showing their liabilities to be £13,180, of which £7,249 are unsecured, with assets £4,691, subject to preferential claims £208. The debtors state that their business was founded fifty years ago by Mr. John Young, the father of the debtors H. W. and C. W. W. Young. About 1864 Mr. John Young was joined by the debtor Buss, an arrangement being made whereby Mr. Young's capital of £7,600 was to remain in the business at 6 per cent. interest during the lifetime of Buss. H. W. Young brought no capital into the business. His partner's share was taken at £1,000, and he also introduced a further sum of £500. The Official Receiver (Mr. A. H. Wildy) says it further appears that in 1887 the debtor C. Young was admitted into the partnership, and contributed nothing to the capital. About 1893 Mr. J. Young died, and the sum left by him in the business became, under the terms of his will, the joint capital of the debtors H. W. and C. Young. The debtors attribute their insolvency to loss on trading arising from (1) bad debts, (2) general shrinkage in trade profits, (3) realisation of stock, and also to depreciation in the value of the present stock as estimated for realisation. Mr. H. W. Figg, metal-trades valuer, is trustee of the estate, with a committee of inspection.

CHIPS.

Mr. Ebenezer Levi Montefiore, the director of the National Art Gallery of New South Wales, died suddenly at Sydney on Monday last, in his 75th year.

The annual conversazione of the Dundee Institute of Architecture will be held in University College in that city on the evening of Saturday, November 10.

The Portsmouth Town Council had brought before them on Tuesday a new scheme of railway development, which is being promoted by certain landowners of Hampshire. The proposed new line will be from Portsmouth to Basingstoke, *viâ* Waterlooville, Meonstoke, and Alton, with a branch from a point near Meonstoke, to join the Didcot and Newbury Railway at Winchester.

Tenders have been received by the town council of Edinburgh for the reconstruction of the well-known North Bridge; but pending inquiries now being made by the engineers, Messrs. Cunningham, Blyth, and Westland, no name has at present been recommended for acceptance. The list has not yet been published, but it is understood that the lowest tender is about £82,000.

Extensive oil-mills are being erected at the south end of Liverpool by the African Oil-Mills Company. The buildings occupy the site of the old Southern Hospital and St. Barnabas' Church, and will cover the ground lying between four thoroughfares—Parliament, Greenland, Flint, and Chaloner-streets. The mill will be of fireproof construction, will cover 85ft. by 56ft., roofed in one span, and will be two stories in height. Separated from the mill are oil-tanks and a warehouse six stories in height. The works will be lighted by electricity. The buildings will be faced with red bricks.

STATUES, MEMORIALS, &c.

Salford.—The Duchess of Buckingham and Chandos unveiled on Saturday two pictures in mosaic which have been placed in the chancel of St. Clement's Church, Salford. The pictures are a second instalment of a scheme for the complete decoration of the chancel with scenes from the life of Christ. Some time ago a large representation of the Crucifixion was placed over the altar, with figures of St. John and St. Clement on either side. The two new designs, which are on the north side of the chancel, represent the Annunciation and the Nativity. It is intended to fill the two panels on the south side with representations of the Burial and the Ascension. The work has been executed by Messrs. Doulton and Co., from designs by Mr. Pearce, one of their own artists, and under the supervision of Lord Egerton and Canon Scott. The painting is on terracotta, and burnt in so as to render the colour indestructible.

WATER SUPPLY AND SANITARY MATTERS.

Leicester.—The water supplies of Leicester, Melton Mobray, and Ashby-de-la-Zouch have been curtailed to eleven hours per day. At Leicester further auxiliary supplies are being arranged for, amounting to about one million gallons, in addition to those already in operation. If these new sources are available at the time, and yield the quantities anticipated, there will not be any further curtailment of supplies till December 1, but if a heavy rainfall does not occur before then, a further curtailment will be necessary, although it is estimated that the auxiliary supplies will have then reached two million gallons per day.

Portishead.—Mr. Arnold Taylor, deputy chief inspector to the Local Government Board, held an inquiry at the Assembly Hall, Portishead, on the 19th inst., the Portishead Local Board having applied for sanction to borrow £14,000 for works of sewerage and sewage disposal. Mr. J. C. Oldye, clerk to the board, said that there was no proper system of drainage at Portishead at the present time; the assessable rateable value is £11,715; the acreage of the district 976 acres, and the number of houses 550. Mr. T. J. Moss Flower, of Carlton-chambers, Bristol, the engineer for the scheme, read a report on the present condition of sewers at Portishead, and pointed out that there were many ill-constructed sewers and drains, and that the drainage was as bad as it could be. He proposed to construct about eight miles of pipe sewers; the sewage from the low-level would be lifted at two points automatically into the high-level gravitating sewers, and the whole of the sewers on the low-level would be made perfectly watertight. The sewage from the high-level and low-level will be taken out to sea, and will be discharged at high-water. The outfall will be constructed of 15in. cast-iron pipes, supported on lines of elm piles, and taken out to a point below lowest water of lowest neap tides. The storm water would pass into the existing system of drains, which were to be repaired, cleansed, and extended where necessary. A large number of ventilating columns and shafts up the side of the houses will be erected throughout the system. The inspector remarked that they might take it there would be a large sum required for private-house drainage in addition to the £14,000. He pointed out to the local board the desirability of enforcing the proper reconstruction of defective house drains under close supervision. Subsequently the inspector, in company with Mr. Moss Flower, inspected the district, and expressed his opinion that without a doubt the district badly required draining, and it appeared to him that the scheme proposed well met the requirements of the case.

In memory of the late Prebendary Roe, Diocesan Inspector of Schools, it is proposed to erect a two-light stained-glass window in Wells Cathedral, with a suitable brass.

A marble portrait bust of the late Dr. Robert Harvey, which has been presented to Aberdeen University, was unveiled on Tuesday, by the Marquis of Huntly, in the Upper Hall of Marischal College. The bust is the work of Mr. Joseph Whitehead, London, and was exhibited at the Royal Academy.

The Lord Mayor visited on Wednesday the Royal Free Hospital, Gray's Inn-road, to inspect the new front which has been erected there at a cost of about £28,500. From time to time considerable sums of money have been expended in endeavouring to maintain the old front erected in 1842; but the structure became so dilapidated that the committee had no alternative but to rebuild it. The work was commenced in June last, and includes new front building and laundry, together with the reconstruction of the drainage, fire-extinguishing appliances, and other improvements. In the new front are isolation wards, casualty-room, a dispensary, board-room, offices, and rooms for the resident medical officers and servants.

Our Office Table.

At Tuesday's meeting of the City Commission of Sewers, the Streets Committee submitted a report by the clerk and solicitor relative to the proceedings of Mr. Power, a district surveyor, under the Sky-Signs Act, in reference to signs which, in the opinion of the committee, were not sky-signs within the meaning of the Statute. They advised that the report should be communicated to the London County Council, with the suggestion that that body should call on the surveyor to refund the fees exacted—illegally, as they held—by him, as, although Mr. Power, as one of the district surveyors of the City, was the statutory officer in regard to sky-signs, the Commission had no control whatever over him or the fees, which were paid to him direct. This was agreed to.

The Norman Castle at Norwich, which for five centuries had served as a prison, was disused for that purpose ten years ago, and has now been fitted up by private munificence as a city museum and fine art gallery. The alterations have been made, and the new buildings erected and fittings provided from plans by Mr. Edward Boardman, F.R.I.B.A., of Norwich. Among the special contents of the institution are an almost perfect collection of raptorial birds, largely the gift of the late John Henry Gurney, a rich collection of fossil mammalian remains from the forest bed of the Norfolk coast, an archæological and geological collection presented by Mr. Fitch, and some interesting examples of the famous Norwich School of Painters, presented by the East Anglian Art Society, Mr. Colman, M.P., and others. The museum was inaugurated by the Duke and Duchess of York on Tuesday.

At Tuesday's meeting of the Police Commissioners of Glasgow, a discussion arose on a proposal of a committee to pay Messrs. Cunningham, Blyth, and Westland, civil engineers, of Edinburgh, £5,000, in full settlement of their charges for preparing plans for rebuilding Glasgow Bridge. Several members objected to pay such a sum for what they characterised as "paper work"; but it was pointed out that, by the customary scale, the engineers were entitled to £7,000, and that the sum agreed upon between them and the committee was a substantial reduction. Eventually the recommendation was adopted.

Lecturing at the Museum, in Manchester, on Saturday afternoon on "Prehistoric Civilisation in Western Europe," Professor Boyd Dawkins described the characteristics of the Neolithic age and people. He showed that the new-comers, travelling from Central Asia, represented an important advance in the arts of life as contrasted with Palæolithic man as evinced by their tools, weapons, and household utensils found in the caves of England and Wales, and in the lakes of Switzerland. In this age attention was given to husbandry and the rearing of cattle; the occupation of weaving, pottery, and mining were practised, and the foundation laid of the civilisation of the present day. The evolution of the axe, saw, pick, knife, and scissors was traced, and also that of the dressing comb from the primitive instrument (with the teeth at one end) originally employed in the art of weaving. The nearest descendants of the Neolithic people, in Mr. Boyd Dawkins's judgment, are the Basques of Spain and Portugal, the names of whose working tools point backwards to the time when they were a stone-using people. The invasion of Western Europe by the Celts, a more physically powerful people, who were provided with instruments of bronze and who had a better idea of social and national life, was also referred to.

Miss Anna Lea Merritt, the well-known artist, describes Adolf Keim's method of decorating mural surfaces, as it has been adopted on the interior walls of St. Martin's Mission Church, in Blackheath, near Chilworth, a small building designed by Mr. C. Harrison Townsend, F.R.I.B.A. The wall surfaces are so prepared as to eliminate lime almost entirely. The painting ground consists of marble dust with a proportion of infusorial earth. This, after being laid on the roughcast, is so treated as to become very porous and firm of texture. The painting is done with colours ground in distilled water, and only chemically pure water may be used. The pigments are of a wide range and fine quality. The colours are finally set by a series of careful applications of a kind of silicate, applied very gradually and with reference to the various absorbent qualities of special colours. When the fixing is complete, the surface is exceedingly hard. It requires great force to break it, and the painting, which has no gloss, but a granulated surface, may be washed freely, or will even resist exposure to rain and open sunlight. The preparation of the walls at St. Martin's, Blackheath, was done by a country builder, following the directions given from Munich.

An inquest was held at Birmingham on Friday last, touching the death of Thomas Smith (49), painter, who was killed by a fall from the scaffolding in Smithfield Market in that city on Wednesday last. Deceased, while with others, engaged in painting the interior of Smithfield Market, was walking along a temporary platform—consisting of two planks resting on scaffold work—when he slipped between the planks and fell to the ground. His fall was broken by a linen net suspended to catch any débris, but the material was not sufficiently strong to bear the man's weight. He dropped head foremost a distance of 41ft., and died instantaneously from a fractured skull. Mr. Breakspear, a member of the firm in whose employ the deceased was, and two or three witnesses stated that the platform was constructed in the usual manner, and one workman added that there was no danger if proper care was taken by the painters. The jury returned a verdict of "Accidental death," and the Foreman added that, while they were of opinion no blame attached to anybody, they strongly recommended the Association of Master Painters and Decorators to ask the trade to provide netting of such strength as to prevent similar accidents. Mr. Breakspear expressed his regret at the accident, and said that, as no provision was made in the estimate of the contract with the Corporation for such a netting as was suggested, perhaps the Corporation would contribute something towards its cost.

The town council of Glasgow discussed at their last meeting the recent policy of the City Improvement Trust, in connection with a recommendation that plans for further house property be approved. It was complained that the trust are building palatial residences for a population that they have not dispossessed, and further that the rents of the new houses thus provided by the trust are too high for the poorer classes of people. It was stated that during the past five years the Improvement Trust had demolished 311 houses rented at or about £5; 255 houses above £5 and not over £10; and 27 houses rented at £10; and they were putting up in their place at the present time single-roomed houses rented at £6 16s. to £8, room-and-kitchen houses at £9 18s. to £11 5s., and two-room houses at £15 to £22 10s. Eventually the plans were approved, and the proposed buildings will consequently be proceeded with.

Under the auspices of the Sanitary Inspectors' Association several courses of lectures to sanitary officials are being given at the rooms of the Society of Architects, St. James's Hall, Piccadilly, S.W. On Monday evening last Professor Vivian B. Lewes gave the second of a series of five lectures on "The Atmosphere — its Sanitary Relations," and the course will be completed in three other addresses to be given the next three Monday evenings at 7. 30p.m. On the evenings of Saturday December 8 and 22, Mr. E. Tidman, M.S.A., will explain the "Details of Modern House Drainage"; and on alternate Monday evening's in the spring of 1895, lectures will be given by Mr. S. G. Fairchild on "Details of Plumbers Work," by Dr. J. J. Piller on "Food and Feeding, Air and Breathing," and also on "Discretion and Disinfection," by Professor E. M. Crookshank on "Microbes."

MEETINGS FOR THE ENSUING WEEK.

Monday.—Sanitary Institute Lectures. "Ventilation, Warming, and Lighting," by Sir Douglas Galton, F.R.S. 8 p m.

Tuesday.—Society of Architects' Annual Meeting. The Report of the Council on the Examination for Membership Question will be submitted and considered. St. James's Hall, Piccadilly. 8 p.m.

Wednesday.—Carpenters' Hall. "Sanitary Building Construction," by Professor Banister Fletcher, F.R.I.B.A. 8 p.m.

Sanitary Institute. "Principles of Calculating Areas," by H. Law, M.I.C.E. 8 p.m.

The Society of Architects.

Founded 1884. Incorporated 1893.

The ANNIVERSARY MEETING of the Society of Architects for the Session 1893-4 will be held at the Society's Rooms at St. James' Hall, Piccadilly, W., on TUESDAY, OCTOBER 30th, at Eight o'clock p.m., when the Election of the Officers and Council for the year 1894-5 will take place; and the Report of the Council on the Examination for Membership will be laid before the Members.

ELLIS MARSLAND, Hon. Sec.
A. MONTEFIORE, Secretary.

By a majority of two in a thinly attended court, the City Commissioners of Sewers adopted, on Tuesday, a report recommending that a Bill be promoted next session to give powers to erect a crematorium in the City of London Cemetery at Ilford.

— 1894. —
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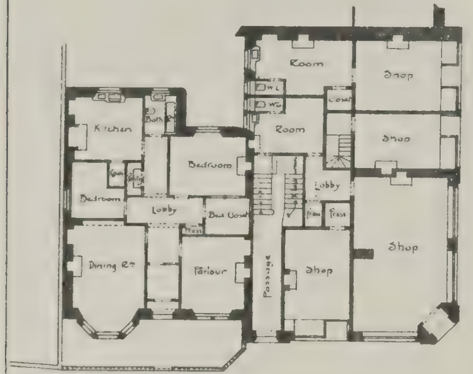
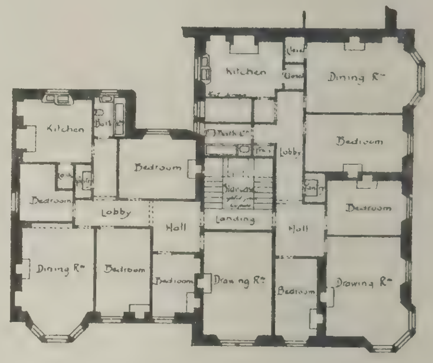
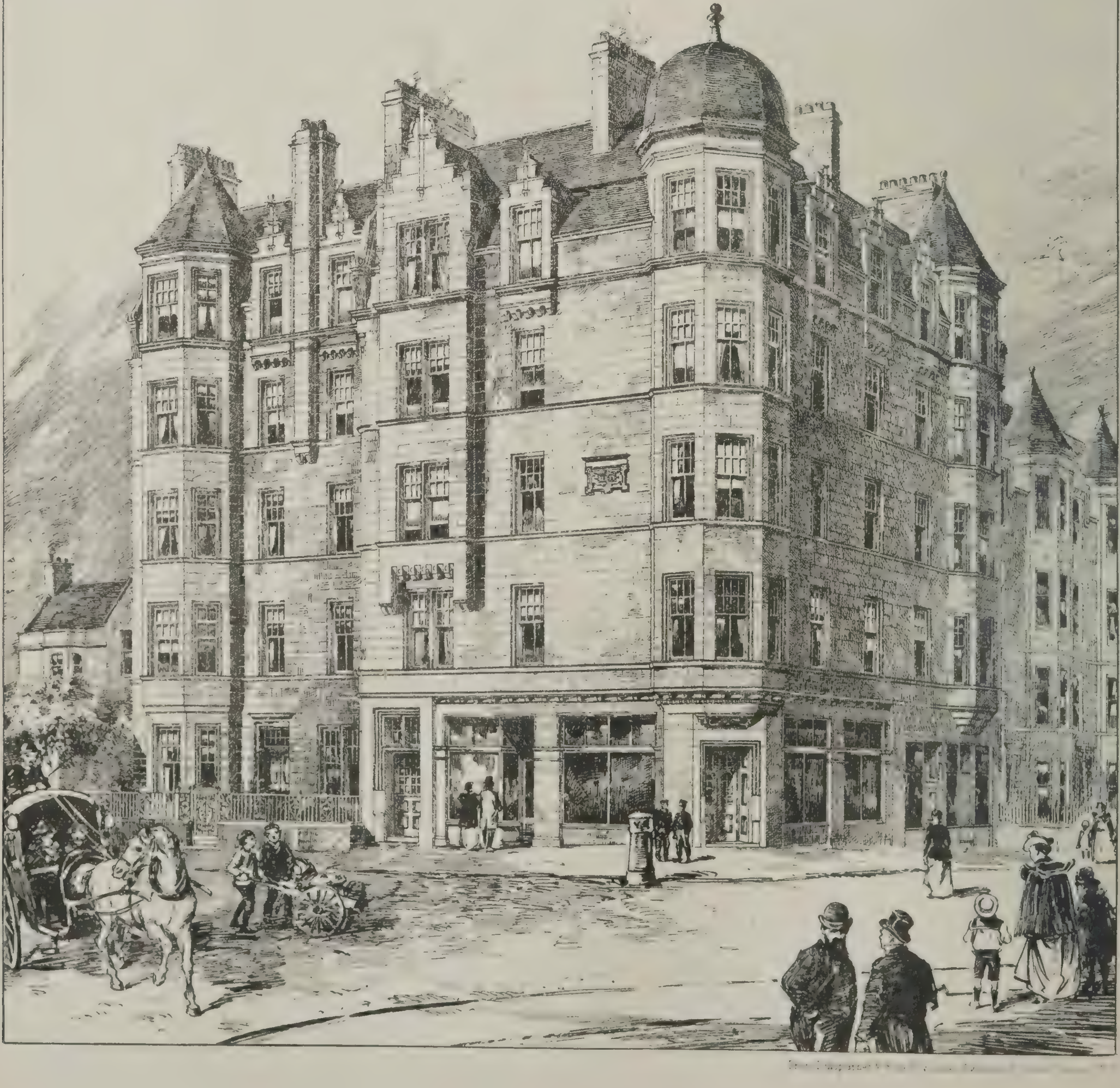


Plan of Ground Floor



Plan of Upper Floors.



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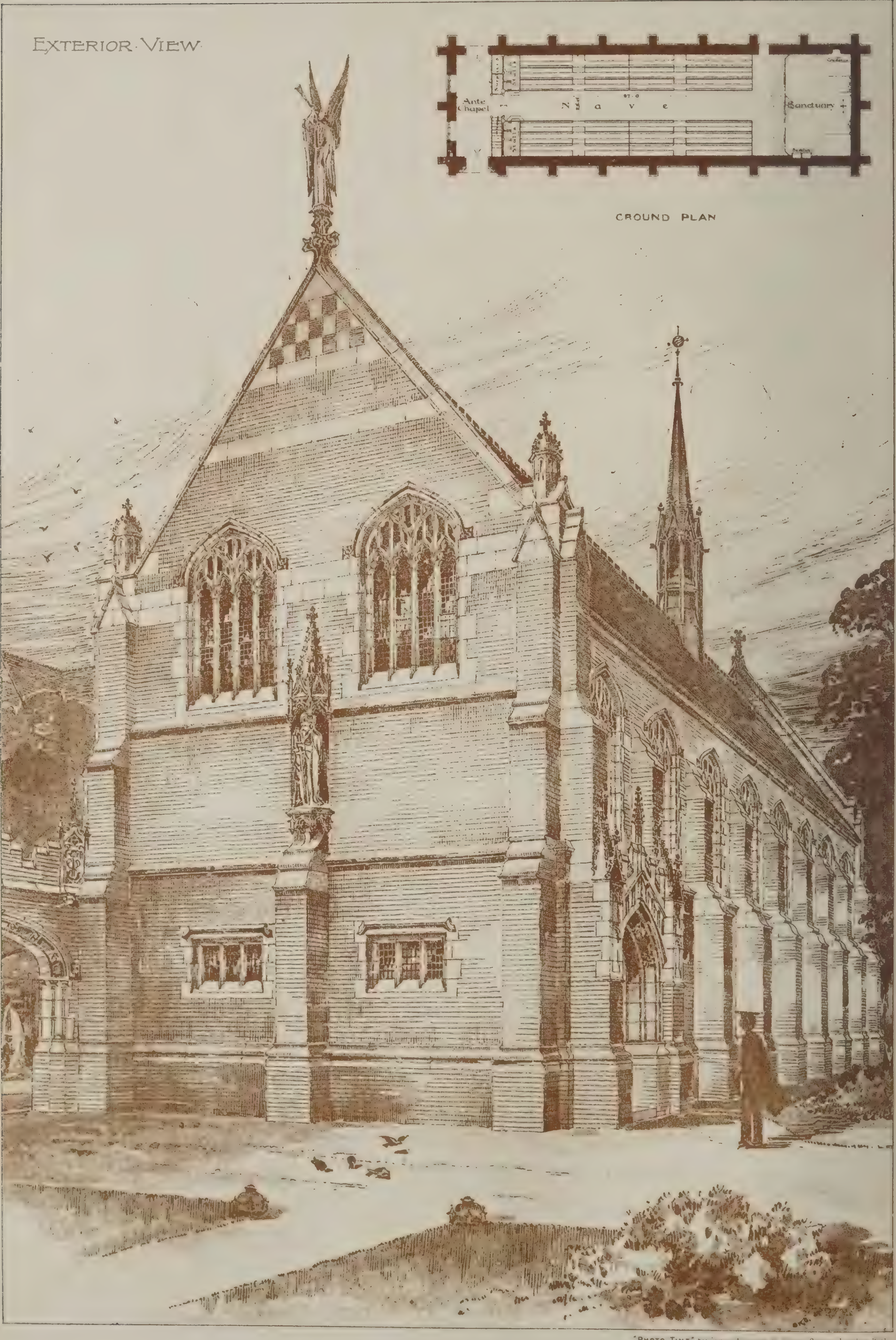

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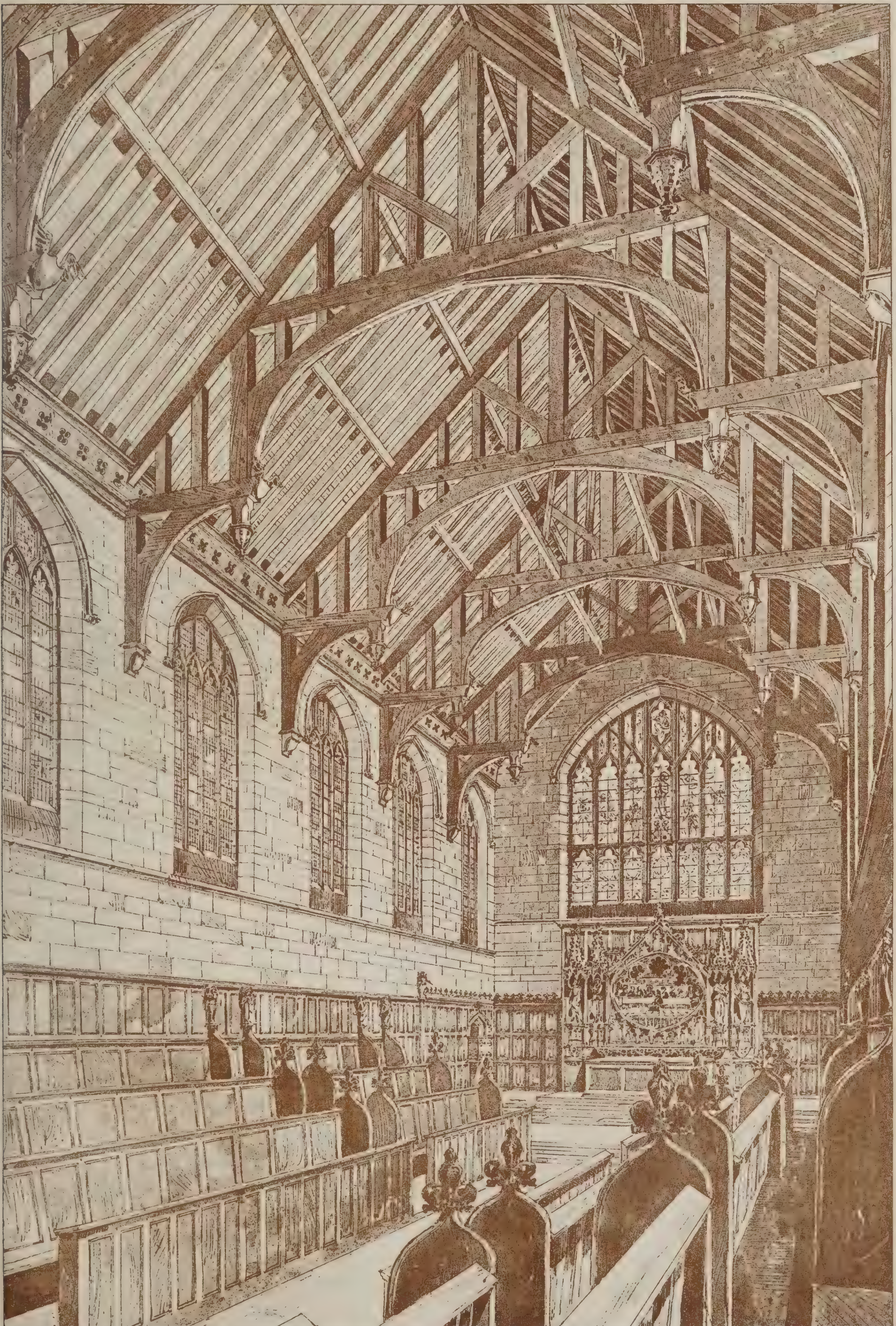

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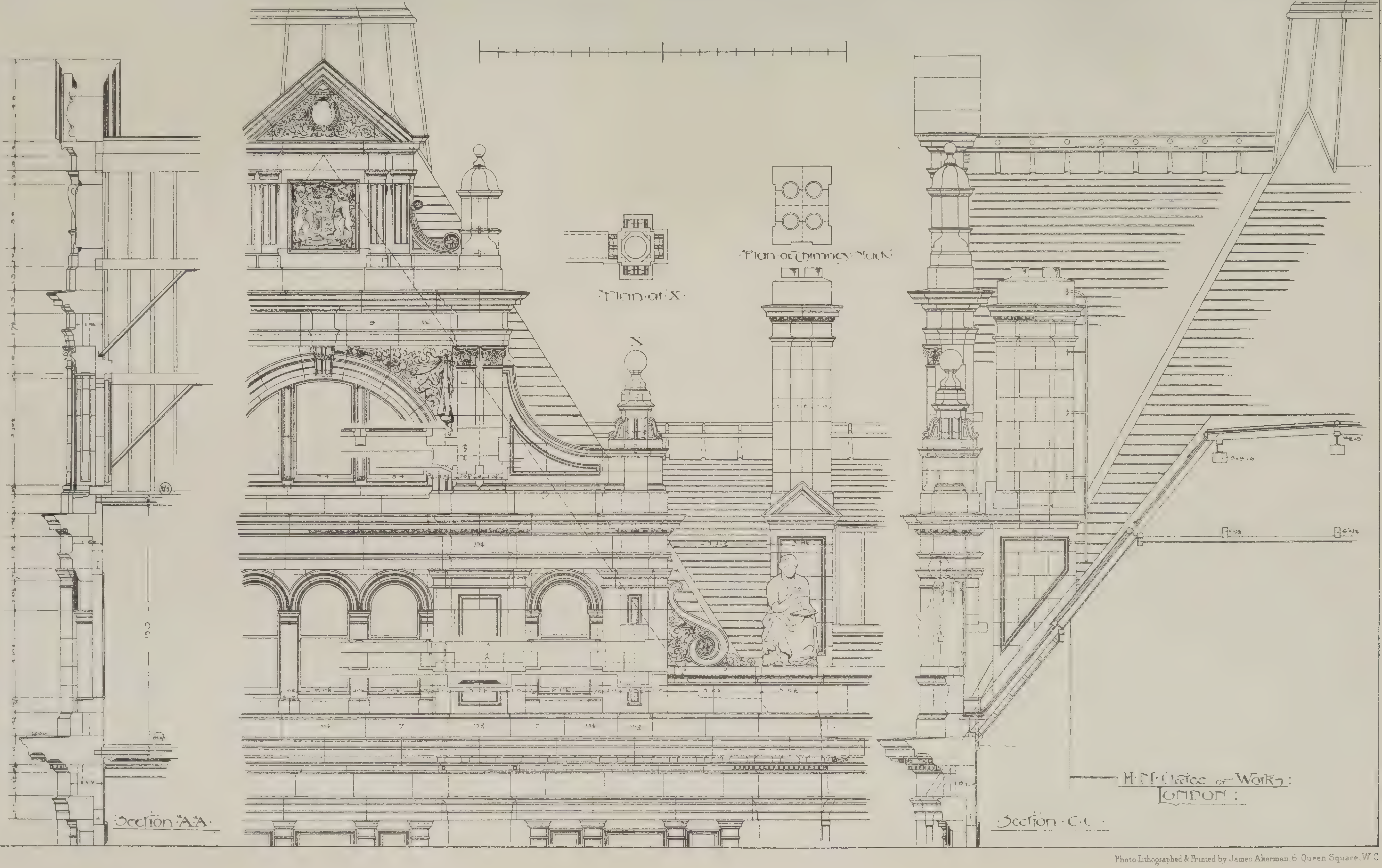

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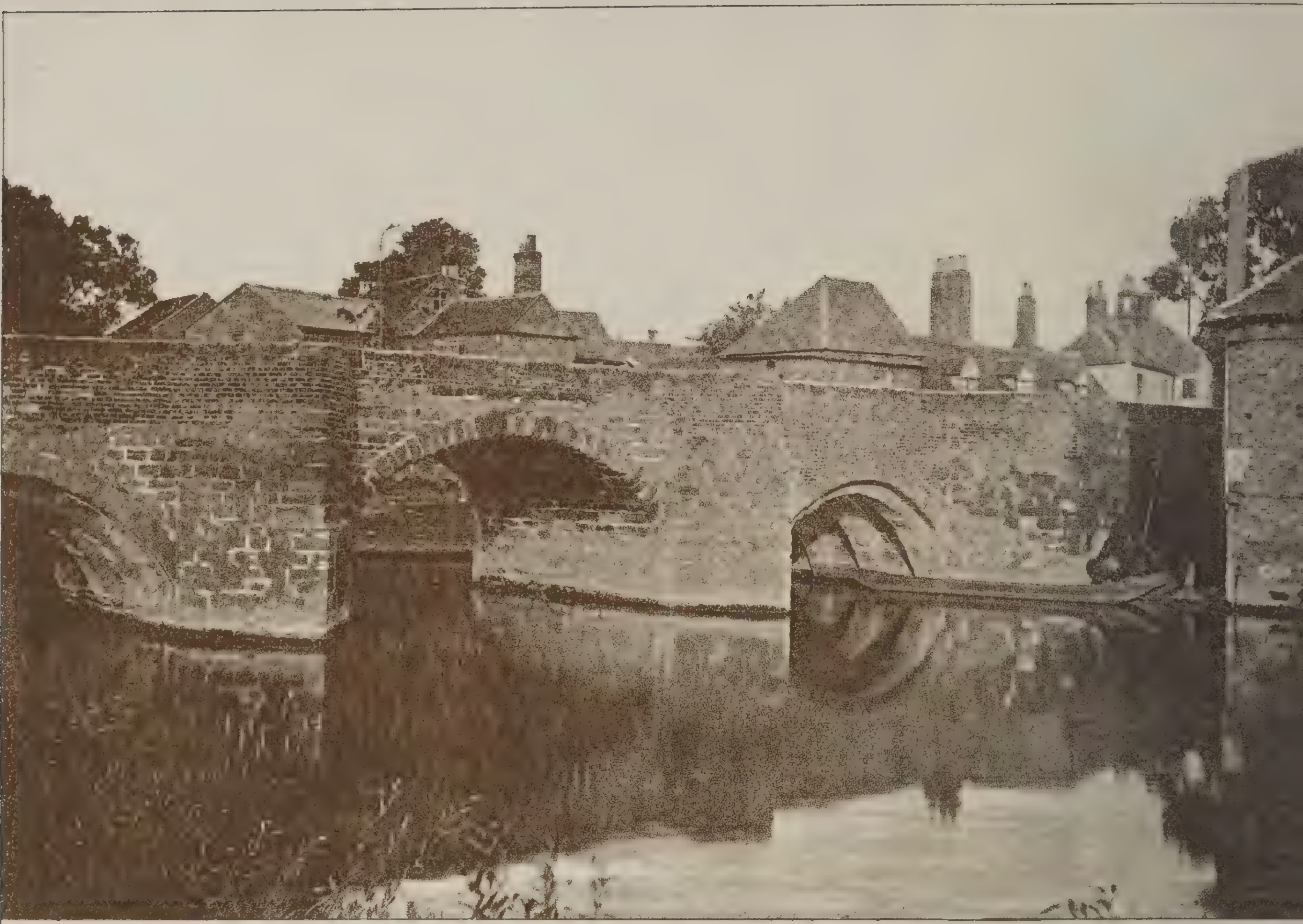

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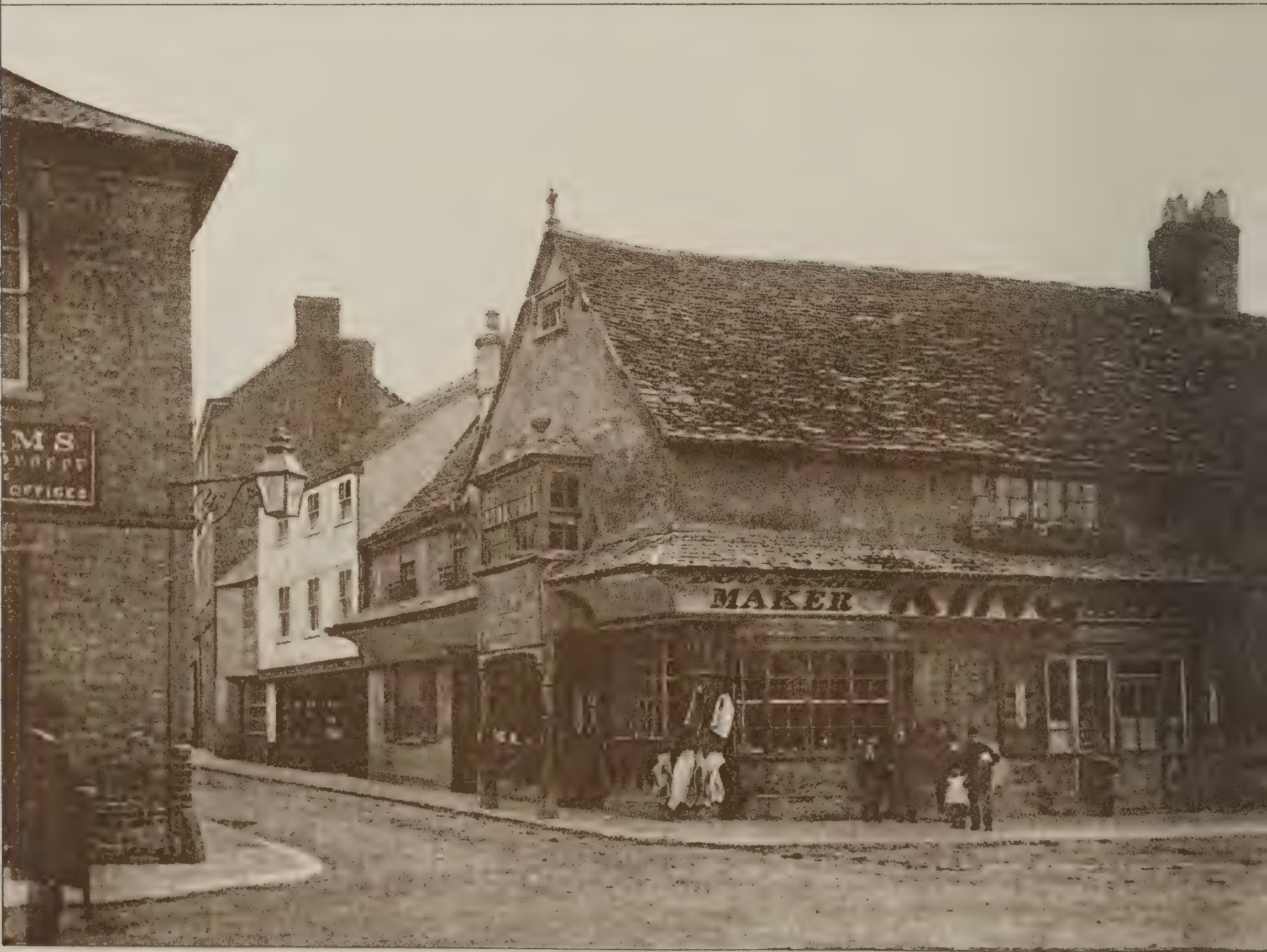

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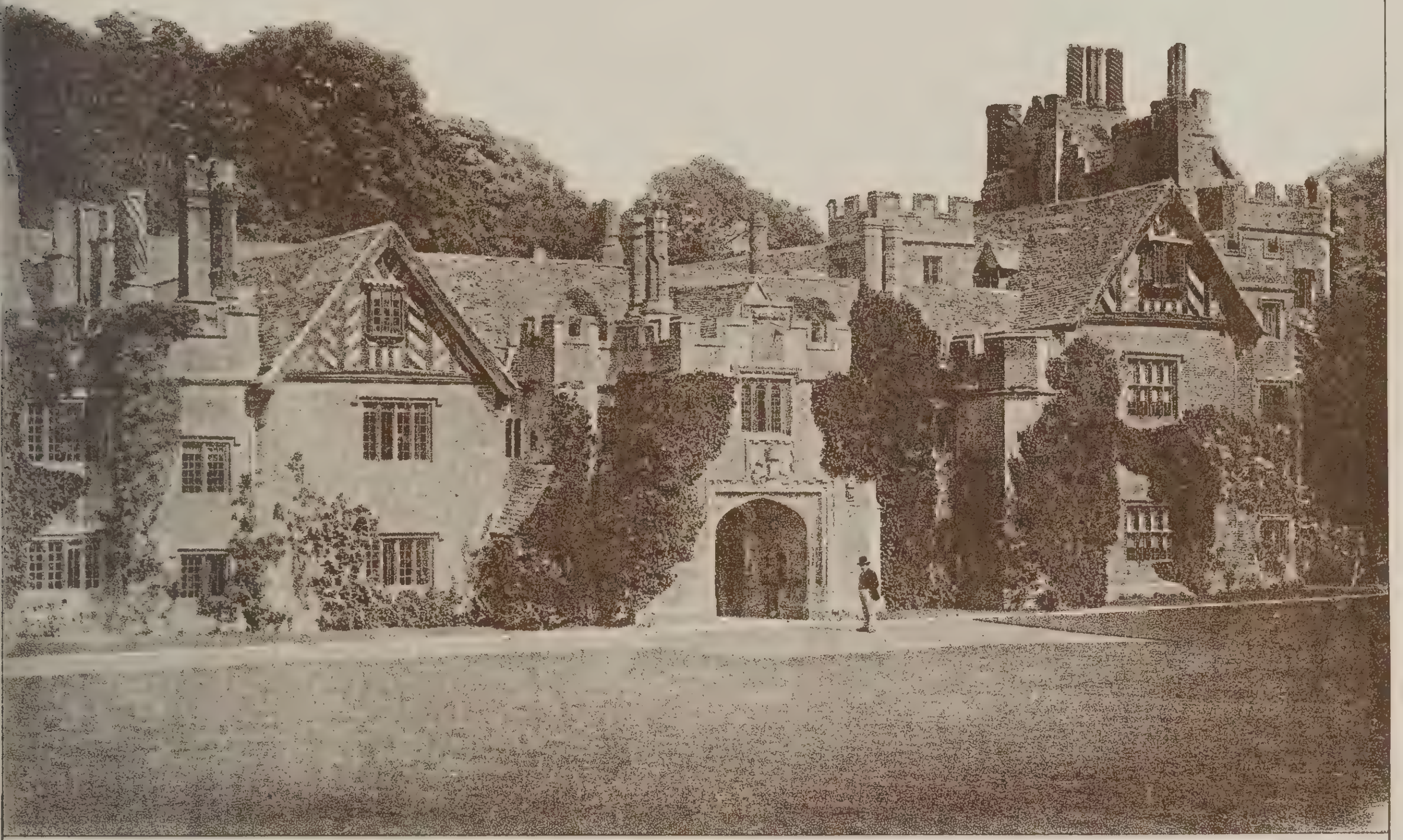

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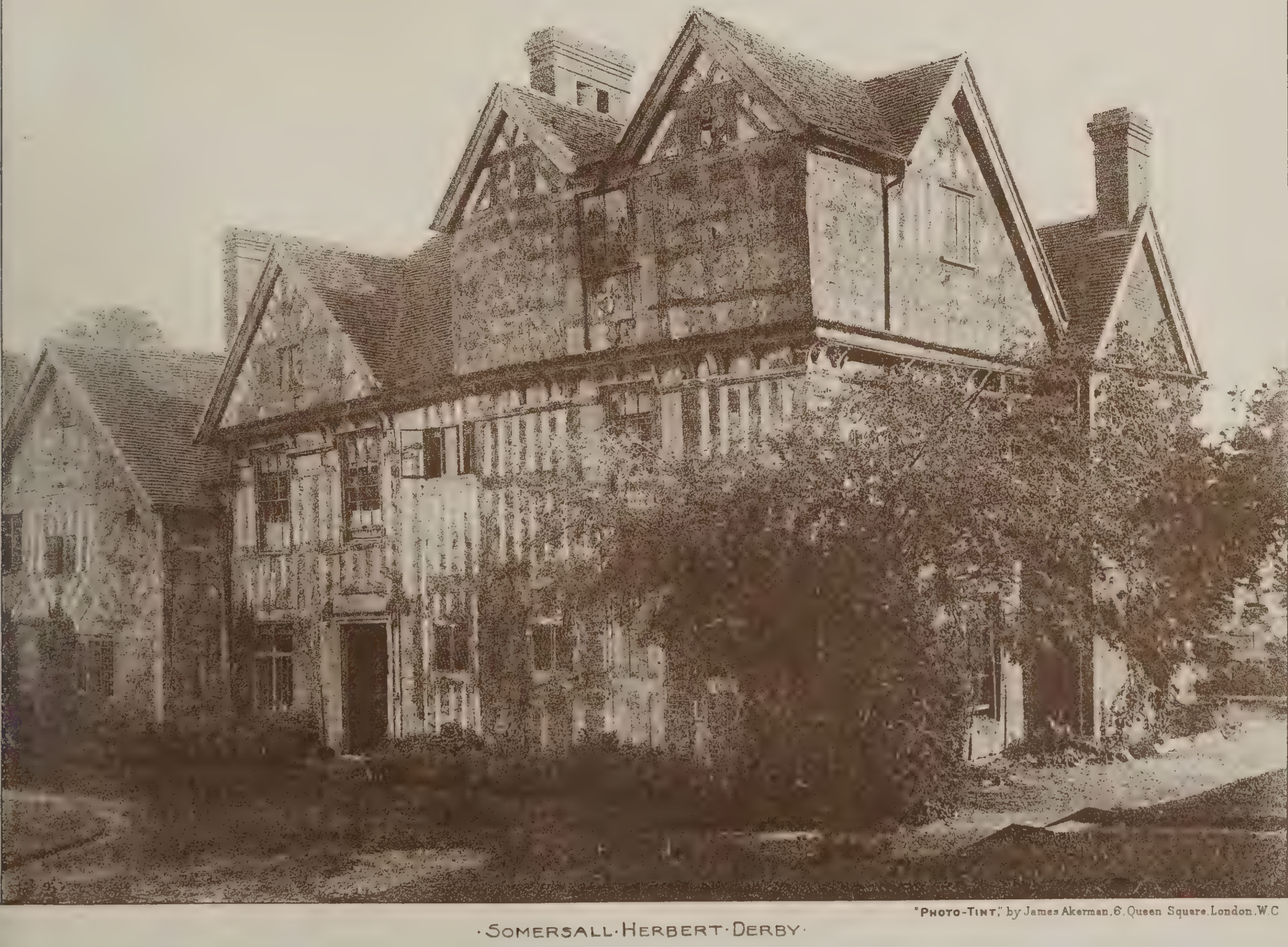

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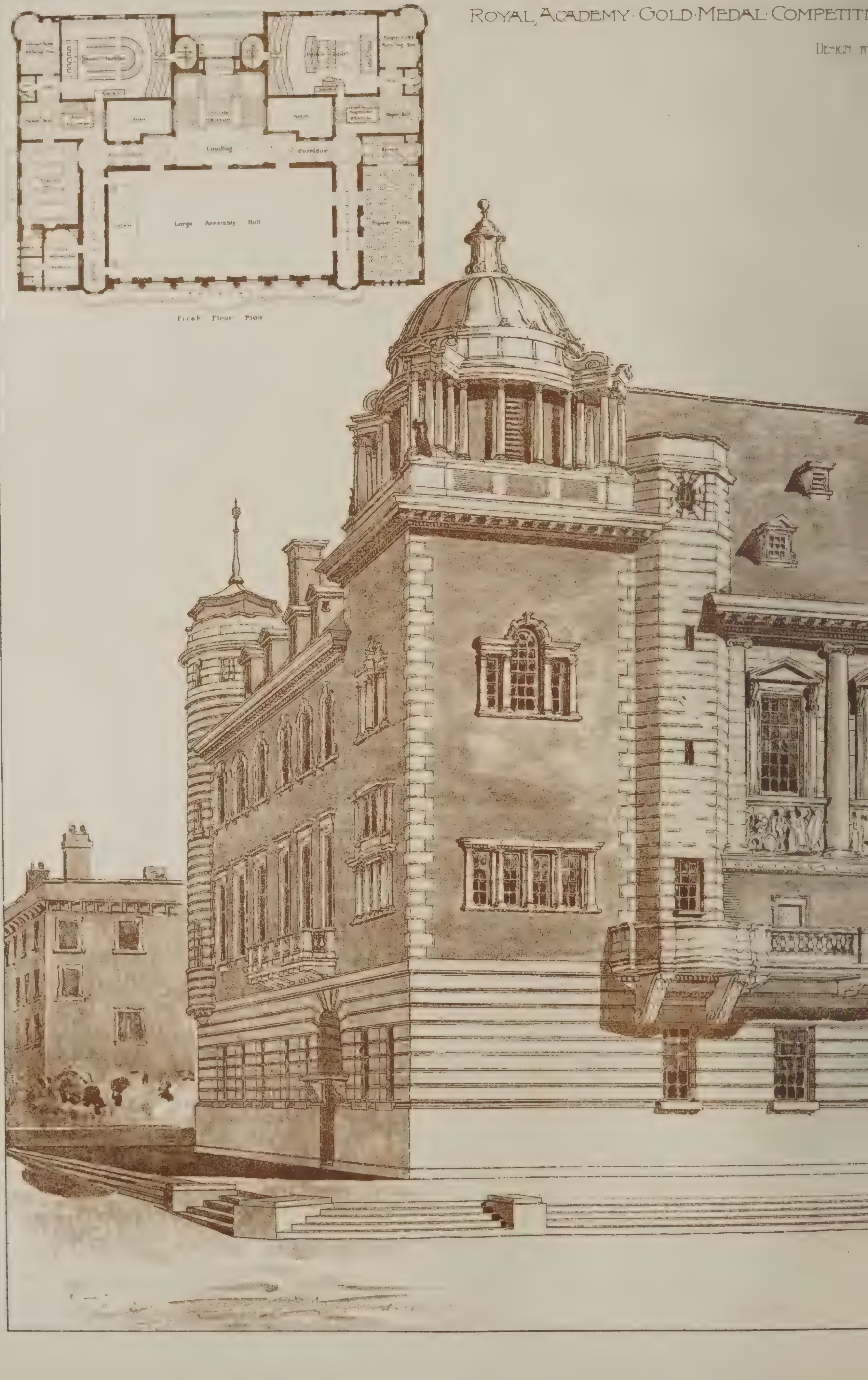

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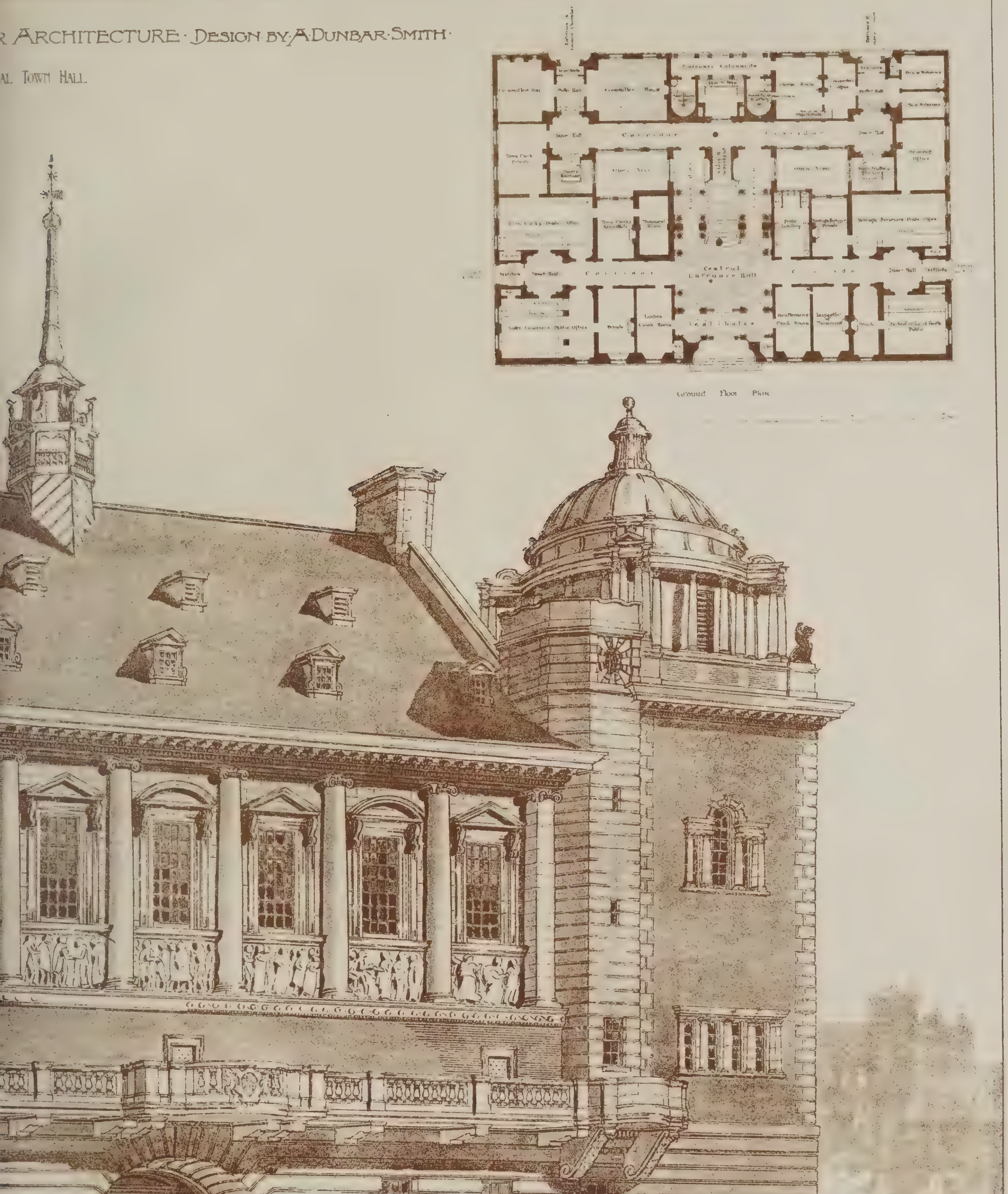

Ground Floor Plan

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2078.

FRIDAY, NOVEMBER 2, 1894.

BOOKS AND BUILDINGS.

TWO ways of teaching architecture may be summed up as teaching by precept and example. It is comparatively easy to frame a set of rules or precepts from a limited experience. The man who builds a house may be able to write down a few rules and suggestions that may be tolerably correct and fairly useful; but it is quite evident he cannot frame such a useful or reliable code as the man who has erected a score of houses or has spent a lifetime in dwelling-house construction. And the same may be said of anyone who writes a book on school or hospital construction from a few buildings, or of a man who writes a book on construction or sanitary matters from a very limited experience indeed. Then we have a set of men who are simply compilers, often copyists, and publish books upon various art subjects or technical questions, about which they know very little except what they have read in other books of a similar kind, just for the sake of advertising themselves. These "authors" are often mere prigs, and simply repeat what others have said, but in a less meaning sort of way. The book-instructed man is liable to fall a victim to this sort of teaching by precept—to learn a few superficial things at a great sacrifice of truth. The one exists for the other: the book reader must have books, and the man who "makes" books is ready to supply the demand. Of course, we are not speaking of all books, for there are many that are invaluable to the architect and the student, which have been written by men who have had a wide experience of buildings as well as students of literature; but we speak of the plethora of books which pretend to give instruction, and to lay down rules and directions from a very partial experience. The "precept," or the book system of equipment for the profession is essentially a modern method, very popular just now, and may be represented as the school method of instruction. But there is a danger in it. It saves thinking; the student, if of a receptive order of mind, readily accepts all the author says; every proposition receives assent, and the reader is all the better or all the worse for this kind of cramming, just, in fact, as it is true or false. We know architects who have taken their views and opinions on architecture generally from Fergusson's "History," who have accepted his views as to style; others who pin their faith to Scott or to Street's teachings—all excellent in their way, because men who had studied widely and who knew something about what they wrote. There is the mischief, however, of such students accepting too readily the opinions and teachings of authors of a very different calibre, of not inquiring of themselves whether there is another and opposite view of the question. In this way books rather stifle than promote inquiry.

We have such a thing as book architecture. The author of this kind of work draws his inspiration entirely from the illustrations of designs or old work he sees in books, just as others follow the directions given in sanitary and other manuals in carrying out such work. Not being able to dispute the author, they slavishly follow him in all his directions, and wonder afterwards why the work is a failure. The book-rule, in fact, is much stronger now than it was in the days of the Revival, when only a few great works were issued, like those of Stuart and Revett's "Antiquities of Athens," the Dilettanti publications; and in Gothic the works of Britton, of Pugin, of Dallaway, of Billings, of Paley, Sharpe, Nash, and others. Each of these had its influence upon style; but now there are hundreds of authors who pose as authorities on every conceivable branch: the student is overwhelmed by books on construction, technical subjects, hygienics, and so on, and he is supposed to go through a course of reading, after which he is assumed to be fully competent to act as an architect. No doubt there is a certain safety in number; it is better to trust three or four authorities on a given subject than only one; but the question arises how far the book-rule is to govern the rising architect in his choice of models and plans. A book can only be used as a skeleton—an outline—but the tissues and life must be obtained from personal observation and practical work. The practical mind can alone fill up the bare outline of the author, the experience obtained from actual building, from contact with manufacturers and craftsmen.

We must look rather to the clinics of architecture, the study of buildings, for any real help. Just as the surgeon or physician studies disease at the bedside of his patient, so must the architect try to discover the actual requirements of his profession from buildings. This is the old way, the way which all the great architects of the past pursued who had no books to refer to, when the literature of the art had scarcely become known. As Professor T. Roger Smith observed the other day in his inaugural lecture at University College, architecture can be better learned from buildings than from books. But we are afraid this source of information is being lost sight of. The output of modern literature has been so great, that there is danger of the younger generation of architects placing too much reliance on book study—first, because it is easier; and second, because it supersedes the study and observation of buildings. The courses of lectures on architecture, valuable as they are, naturally encourage the study of textbooks too often as the end, instead of as the means of professional knowledge. The student versed in a few textbooks imagines himself equipped in the knowledge of his profession; not so in the first practical application to a building, he is compelled to confess that his reading only extended to general principles, and did not take into account certain contingencies of practice. Take any practical question, as the construction of a timber or iron roof of certain span and height, with dormers or skylights; the requirements for specifying the heating a building by hot water or steam, the planning of a school or laboratory. How hopelessly his book knowledge misleads him in such questions as acoustics, the author of which takes care not to give any examples of how a hall or church should be constructed! Others lay down impossible schemes. How provoking it is to find a textbook on iron construction leaving one in the dark as to the connection of iron columns and girders, or gallery construction details! A score of instances of such might occur to any architect. On the contrary, the examination of any building in which these requirements have been fairly met, furnishes information of a sort no book can give. One thing a building affords is the structural *connection* of parts. While the treatise deals with design in its separate parts, perhaps plan, or construction, or detail—in the concrete building the eye and mind can grasp the connection of the several parts, the relation of plan to elevation and to detail. In this way buildings form the best school and discipline for the student of style. No illustrations can give so complete an idea of the characteristics and functions of detail. The architect can, by drawing and measuring a few of the best monuments of a given period, make himself master of types of plans and mouldings, and is able to put together the forms he has thus learned by heart; secondly, he can learn the adaptation of materials better than any amount of verbal description can teach. Treatises on materials consider their properties without reference to their use in the building, just as treatises on construction describe walls, frames of carpentry and floors as separate things. On the building the architect sees an organic structure in which every material and every piece of construction has its proper function adapted to their several purposes, and it is in this connection that its real educative value lies. The building is the only school of style and construction, whereas the illustrated treatise is more like a bare, disconnected collection, and serves much the same use as a technical museum. Both have their purpose in education; but it is necessary to reassert the proposition now more strongly than ever, that building knowledge can only be efficiently learned from buildings. Old as well as new edifices must be studied. In London there is a capital choice. We have Wren's churches and interiors, the works of Inigo Jones, Soane, Gibbs, Chambers, and Adam Brothers, to go no further back. In the executed works of all these masters we can learn a good deal, in planning, in internal arrangement, and architectural detail. In many of the Inns of Court, as we have been told, there is abundant to learn in details of woodwork alone, and not a little that is charming in plasterwork. These buildings may afford us all that is necessary to learn of the style of the 17th and 18th centuries. But we have also a valuable catena of modern buildings in our town-halls and municipal offices in the leading revived styles. They surely can teach us more than a whole host of books on many things if we study them both inside and out, as a biologist does animal life, or the conchologist and botanist do the forms and peculiarities of shells and plants. Books are useful in the study of the classification of these things; but no observant student of biology or any branch of natural history would think of stopping here. Architects alone, of all professional students and scientists, are satisfied to take other authors' impressions for their own, to accept second-hand dicta and conclusions drawn up by partisans of this or that style, or this or that arrangement, and to build up their professional knowledge on the precepts of authors instead of upon their own observation and study of concrete facts, such as may be found embodied in ecclesiastical, in domestic, and secular buildings, in houses, hotels, schools, commercial offices, hospitals, libraries, museums, and a host of other works by modern architects.

INSTITUTE OF PAINTERS IN OIL COLOURS.

THE Institute in Piccadilly has a very fair sprinkling of clever pictures of the anecdotal, *genre*, and landscape orders, and it is something to find that the directors or council of the Institute have at length given up their scruples about admitting works of the "Impressionists," and that a small corner of the East Gallery has been timidly appropriated to the school which finds its freer expression at the New English Art Club. To this class of work we shall refer, after a rapid glance at the pictures in the West and Central Galleries. In the West Gallery a few pictures of more than ordinary merit are seen. In landscape, J. L. Pickering has one of his solidly-painted landscapes full of light, "Weybourne Pool, Norfolk" (19), conscientiously painted and in good colour, qualities not always obtainable. Frank Brangwyn contributes one important work after his manner, "A Trade on the Beach," perhaps a scene from Morocco, in which are seen a group of negroes of the African type squatting down and bargaining. Flat and mosaic-like in treatment, there is a lack of modelling, life, and movement in the figures; but the painter has the courage of his conviction at least, and his mode of representing sunlight and colour is the main incentive of this school of painters. The very sombre canvas by this master in the Central Gallery (376), called "A Sketch," a woman feeding ducks in a pond, is more a study of deep shadow, and as a colour experiment is of interest only to a very few. Ernest Parton is as delightfully delicate in his subject and manner as ever. "Windermere from the Fields" (157) hangs in a centre position. The thin foliage of the beeches is graceful; the wild flowers in the foreground brightened by scarlet poppies are exquisitely painted, and the misty distance of the lake lends a charm to the scene. J. Clayton Adams's "Golden Rocks and Silver Willows" hangs at the opposite end of room, another exquisitely-painted landscape, but perhaps just wanting in those qualities of strength of colour and force of handling which have given rise to the more vigorous expositions of nature. There is a softness in the picture which finds many admirers in this gallery. In a more masculine mood is E. M. Wimperis's "Carting Gravel" (95), a broadly-painted common, breezy and fresh; James S. Hill's "On the Stour" (168), a grey, broad effect of river and meadows; and Arthur Severn's "Cloud Effect near the Lizard" (175). Other pictures of merit are by Hamilton Macallum, as in his "Landing Fish," fresh in colour; John Fulleylove's "Ely Cathedral from the Marshes" (28), Frank Walton's "Old Barns" (29), Joseph Knight's "Stubble Field" (13), R. Thorne Waite's "Hayfield," &c. T. B. Kennington has a clever lamplight study of a girl, "Pierette" (39). Some nice colour is seen in G. Sheridan Knowles's little girl in blue frock carrying hay (48). C. Burton Barber has in a centre position a taking picture of a fair-haired little girl in bed, about to partake of her breakfast, with her dog and kitten beside her and a box of flowers—"For What We are about to Receive" (57); the composition and colour are pleasing. Leslie Thomson's river scene (105) is a study of light and colour, broad and Impressionistic. Of figure subjects, we must note Edgar Bundy's "A Love Philtre" (108) as one of the best. The subject represents an old alchemist in a gloomy cell illuminated by the fire of a retort, and having before and round him all kinds of apparatus, alembics, and flasks. The old man holds a phial of love potion before a dark young maiden who stands in front of the table. She looks somewhat terrified and motionless. The figures and accessories are boldly and cleverly painted. J. C. Nettleship's "Scenting" is a fine leopard study, and S. E. Waller's "Cotswold Kennels" (181) is of interest.

In the Central Gallery, the President, Sir James Linton, has in the usual position a small half-length figure-study of a buxom maiden, entitled "Autumn," the note symbolising which season may be found in the rich rose-coloured low-cut dress. She holds a plaited basket of grapes, and her dark hair and face is set off against a sky-blue. There is much skilful painting in the texture and sheen on the dress, but the work is less satisfying than others we have seen here. J. C. Dollman (200), "Her Father," has one of his clever, humorous pieces, which appeals at once to our sense of drollery. In the dress of the 18th century, a well-got-up beau has alighted from his horse at the garden entrance of a country house; he holds a beautiful bouquet in his hand, while at the half-closed gates stands the old gentleman in spectacles, surprised and repellent in his manner, who refuses to take in the proffered nosegay to his daughter. The drawing and composition are admirable. G. G. Kilburne's young lady going to a ball, in satin before a mirror, about to have her cloak put on, "Ready for the Fray" (195); Alfred East's clever little study, "Hoar Frost," Vincent P. Yglesias's "At Gorleston" (210), C. MacIver Grierson's "The Merry Thought"—two young girls pulling at the "merry thought" at luncheon (222), Arthur J. Elsley's group of merry fisher-children, "Here's Father!" are all works of merit. A felicitous piece of imagination illustrating "Gabriel Grub," from Dickens's "Pickwick Papers"—the graveyard scene in moonlight—by Edgar Bundy, shows invention and cleverness. H. Caffieri's "Gone" (231), a mother and child on a rocky ledge of a sandy beach, is sympathetic in its rendering; near it G. Reginald Frampton has a broadly painted river scenery, "Rye, Sussex," in which the light of sunset is well done. Stanhope A. Forbes sends a charming study of roadside, "Paul Church Tower" (258), a country lane in which a man and horse and some cattle are coming, painted with masterly effect; the perspective and colour and the drawing of the cattle are inimitable. John R. Reid, who sends three characteristic specimens of his work, is strong in colour and grouping in "Hush-a-Bye Baby" (297); the deep-blue sea gives light and warmth to the figures. J. J. Shannon's clever and somewhat decorative composition, "The Purple Stocking"—a young girl knitting, her head seen against a brass plaque, which, nimbus-like, reflects the light—is quaint and symbolical in motive; a charming colour study, in which the blue plates on the wall make a pleasant harmony. This is one of the cleverest subject-pictures. "Orpheus and Eurydice," by T. Graham, a typical pair of lovers, the young man playing a concertina to his smiling 'Arriet, strolling along the Victoria Embankment in the evening gloom. The lamps on the river glimmer, and throw a charm of seclusiveness over the pathway of the amorous twain. Frank Walton has a fine landscape (344)—a wide heath, with its yellow gorse. Robert W. Allan (311) paints "A Fisherman's Haven" as only he can paint it, solid, fresh, and full of sparkle. We see also some capital work by Alfred Praga, "Sorrow and Sin" (261), a girl bending over her desk, sunbeams entering through a curtained window. Adrian Stokes's "River Bank" is rather too cold in colour; George Wetherbee's "Summer Sea" represents an undraped maiden of nymph-like grace standing near a rock; E. C. Clifford's clever figure of a student, "In Grub Street"; John R. Reid's "The Woman's Work," a bright and freshly-painted subject (293); S. Melton Fisher's "Spring," a nice study of pink almond blossom and peasant girl, an Italian scene, and G. J. Linton's cottage and garden scene, "An Autumn Day" (333) are worth attention. The latter is somewhat hard, a fault that appears in his otherwise good picture in the East Gallery (509). Among the small studies is Tom Noyes Lewis's feelingly-painted "Vigil until Dawn," a kneeling recluse before an altar, rich in colour. Herbert Dollman has a cleverly-painted *genre* subject, "A Love Letter." A disconsolate young lover is seated at desk puzzling his brain over a letter. Torn scraps of letters litter the floor, and an elderly gentleman, possibly the father, near the door watches in silent wonderment the distracted state of his youthful son. St. George Hare paints a child with toys with true sympathy and subtlety of colour, and we see a strong work by Flora M. Reid (379), one of those sparkling fresh Normandy market pieces she loves to paint, and a fine sunlit cornfield by Anderson Hague, "Harvesting" (381), vigorously painted. G. Sherwood Hunter's "Alight" (278), is a characteristic figure, replete with life and colour, a reminiscence of Zuider Zee, a sturdy Dutch fisher lad smoking a huge cigar. John A. Lomax's "Trapped" (384), is a piece of historical drama, painted many times, but which does not lose its interest, an episode of the Cromwellian epoch, which is told well and minutely. There is much life and animation in the figure of the young cavalier bound by ropes to an iron chest, and in the other figures at the table. In the East Gallery there are few pictures that need detain us. The last painter's *genre* picture (391), an invalid young lady in the convalescent stage, seated in an armchair, her lover beside her, who has picked a number of red roses, is painted with much delicacy and colour. The "Dragon and St. George," by Rowland Holyoake, is quite Dollman-like in motive, a clever bit of satirical humour, a screaming comedy simply told. "Allurement," by Edward H. Fahey, is rather overdone. The young lady's rich rose-coloured velvet dress is well painted, and also the playing cat, but the accessories are distracting. Passing a few mediocre works, we come to Geo. C. Haite's "Sunday Morning," a delightful piece of satire on 18th-century church-going—an elderly lady, finely dressed, her pageboy carrying her prayer-book and scent-bottle behind her. Several Impressionist pictures are here hung, startling to the admirers of old conventions. A. Harrison's three pictures represent effects of sunrise and sunset and moonrise. "A Yellow Harmony" (429), "Moonrise," and "Eastern Glow" (434) are intended to represent the effect on the retina of certain impressions of light. The first may be deemed certainly unnatural, but it is experimental. These and "A Nautilus Race" (427), "The Entr'acte" (425), will no doubt be thought audacious attempts, but they each have a meaning and a presentment of truth. T. B. Kennington's "Hush!" (465) is admirable in drawing and colour, and occupies a prominent place on the walls, and on the opposite wall Miss Henrietta Rae's "Pandora" will be admired for the delicacy and grace of the figure and the refined colour. John R. Reid's "Ferryden Fisherfolk" is one of the largest and most important works of this master of fisherfolk and harbours, solidly painted and rich in colour.

Miss Amy Sawyer's "Lost Princess" (501), a legendary incident, shows strength and inventiveness. We have seen elsewhere Fred. G. Cotman's "Steaming into Lincoln," a very dexterous study of mist, smoke, and sunlight. Other pictures include J. L. Pickering's "Blakeney" (527), Carlton A. Smith's "Sweet Springtime," a graceful figure in steel-coloured satin standing beneath the blossoms of a tree (534); Claude Hayes' seascape (540); Anderson Hague's forcibly-painted "On the Conway" (543), beautiful in colour, and in the ripple of the river against a cloudy sky. Arthur Severn's "Sun Setting in Mist," a luminous Thames view with lady in flat punt (548), by Arthur Barrington; Robert W. Allan's "Through Wind and Rain," and a pathetic study of mother and child (575), by Miss May Baylis Barnard, are among the pictures that call for commendation. Sir Geo. Hare's "Bubbles" is a delightful picture of girls blowing bubbles, animated and painted in a luminous key; and John Scott's "Seven Ravens" (578), is a cleverly-depicted fairy tale—the ravens admirably painted.

THE ROYAL SOCIETY OF BRITISH ARTISTS.

THOUGH a smaller gathering of pictures than usual, the old gallery in Suffolk-street shows a higher average of work. This autumn two or three eminent honorary members have come forward to lend a helping hand—Sir Frederic Leighton, Sir E. Burne-Jones, Bart., and G. F. Watts, R.A. The President of the Royal Academy sends several delightful small "Studies for Pictures," such as the now historic subjects, "Fatidica," "Rizpah," "The Bracelet," "The Spirit of the Summit," "Summer Slumber" (5—10); also a group of landscape studies, which are hung on the screen (340—362), which are chiefly sketches in Greece and Italy. These studies are free transcripts of nature, fresh and suggestive of atmosphere. True classical feeling for breadth and spaciousness is to be found in these sketches of ruins, and plains, and promontories. Sir E. Burne-Jones's single contribution is one of those idealised, sweet, and seraphic faces which we are all acquainted with, full of spirituality and expression, and is to be found over the fireplace in the South-East Gallery. Mr. Watts sends two works. "Arion" (44), as a sketch for a larger work, is the most characteristic of this master. The Central Gallery contains, besides, a few pictures that may be regarded as compositions above ordinary merit. Robert Christie's large picture of "Idleness" (8) has unquestionable invention of a high order; the figure of the girl who is seated below a tree covered in blossom, with a Cupid behind her, listlessly blowing bubbles, which surround on all sides the figure, is gracefully drawn, and the colouring is in a low key. The work has a decorative value. F. Caley Robinson is a contributor of whose work there may be two estimates. His "Evening," in this gallery (14), a girl in a punt on a river, is flat and uninviting, though extremely suggestive of the pre-Raphaelite manner in its earlier days. His work in the South-West Gallery, "Mother and Child," will be intensely strange to the ordinary picture viewer; but is interesting to those who are watching the movement in art known as "Impressionism." The mother and child—the latter looks rather a girl in her teens—are seated together at a table, the former a fair-haired woman of the straight pre-Raphaelite type, with some embroidery before her, while the girl has before her toy animals, and is drinking from a cup. Both are quaint and slim in figure. In sentiment and pathos, this picture has much of the early pre-Raphaelite manner—too much to awaken more than popular curiosity, yet it has a certain charm of its own. A large corner picture (21), "Springtime on the Bay," by Fred. W. Jackson, shows some good painting in the foreground weeds and flowers and in the colour. The President (Wyke Bayliss) is, as usual, strongly represented. "St. Mark's, Venice" (24), is a noble interior, showing the screen and apse, rendered by a master's hand. The gleaming marbles and gold mosaics and frescoes are painted with much beauty of light and colour, from the President's own point of view. "Interior of the Duomo, Florence" (61), is another characteristic work, of equal interest, a poem of light, perspective, and colour.

We can only note the merits of J. S. Noble's tiger and monkey episode (26), Yeend King's "View on the Ouse" (29), Chas. E. Marshall's "Birthday Ode" (33), Adam E. Proctor's "Old Cronies," a pleasant study of village life; R. J. Gordon's "Bracelet," and W. Douglas Almond's three clever figure-studies near the fireplace, "Rejected," "Sunday Morning," and "Labour." H. A. Brownsword's "A Grey Evening, Wells-on-Sea" (46), a view of harbour, is in pleasant colour; and G. Sheridan Knowles has a figure-subject, "Adeline," a Tennysonian heroine, graceful and delicate in tone. Julius Olsson (78) has an ambitious rainbow and seascape, with sandy beach; Fred. Millard, a clean group of monks preparing their fishing tackle; G. Hillyard Swinstead's "Spellbound" is a large group of young ladies round an old-fashioned fireplace listening to a thrilling story by an old soldier, a skilful firelight effect (93); Stuart Lloyd's view of Christchurch is a melodious sunset. H. W. Strutt paints a facetious subject, two monks on a see-saw, with characteristic humour, "Religion never was designed to make our pleasures less" (95); R. J. Gordon's subject-picture is a strong piece of *genre*, representing two attractive young ladies seated at dessert, and a young man on the opposite side indulging in complimentary banter; the red background throws up the figures and white table-cloth with telling effect. A colossal canvas in the centre of the gallery, "Hope," by H. T. Schäfer (102), is allegorical in composition. "Hope," clad in white draperies, is poised in mid-air over a rocky coast, her arms outstretched towards a man on the rock below. The merits of the picture hardly call for so large a canvas. "Vanity Fair," by Fred. Roe, a scene from Thackeray, depicts, with much dramatic skill, the incident where Rawdon Crawley opens the door, to the surprise of his Becky, who is in full toilette on a sofa, the villainous Steyne having her hand in his, bending over her to kiss it when Rawdon enters. The colour and accessories of the room are pleasing. "Fame" is another large picture by W. Hunt (111), a misty and shadowy figure hovering over a group of despairing mortals below. W. Gilbert Foster's landscape, "O'er the Hills and Far Away," is effectively painted. W. Smith's "Great Thoughts" (120) is a clever bit of humour, but the dog could not possibly see the tempting dish on the table above him where he is. "The Magic Spindle," by Sydney Muschamp (81) is admirable in drawing and composition. In the other galleries we note the following: Arthur H. Buckland's "Le Crépuscule" (131). R. Machell's "The Path" is a large symbolical picture of sufficient power to command notice, both for its composition and colour and the design of the frame. A large grey-toned and impressionist picture is Rupert C. W. Bonney's "Nausicaa finding Odysseus," in which there is evidence of strength. "Half-way," by John A. Lomax, is a capital *genre* study (160); and A. W. Weedon's "Evening, West Highlands," a fine sunset effect on hills (168); "Rumswick, Yorkshire," by V. P. Yglesias; R. J. Gordon's "Windy Day," a figure of a girl in the wind; a fine seascape, fresh in colour, by F. Spenlove Spenlove (195); W. Manners's "Hayfield" (202); Robt. Morley's dog study, "Envy, Hatred, and Malice" (216); and Alfred W. Strutt's study of dogs, "Live and Let Live" (233) are interesting subjects. In the North-West and North-East Galleries the President's drawings of "Caudebec" (238), "Bayeux Cathedral" (250), and of "San Pietro, Perugia," are of much beauty. W. Harding Smith sends a capital drawing of "The Jesse Screen, Christchurch" (257), and another view of Canterbury, with glimpse of cathedral; Montague Smyth, studies of atmosphere and colour in North Holland (259), "A Wet Evening" (262); J. Herbert Snell, "Gipsies" (269). Over the fireplace, Dudley Hardy, F. Spenlove, E. W. Davis, and Edward Read show several vigorous sketches.

THE ARCHITECTURAL ASSOCIATION.

THE opening meeting of the present session of the Architectural Association was held on Friday evening. The President, Mr. Edward W. Mountford, F.R.I.B.A., who was cordially received on resuming the presidential chair, delivered the prizes in accordance with the following list:—Architectural Association medal, with prize of the value of ten guineas, G. Lucas; measured drawing prize, J. Allen; essay prize, value ten guineas and silver medal, subject, "The History and Development of Timber Roofs in England during the 15th and 16th centuries," C. de Gruchy; Cates Scholarship, tenable for two years, John Hunt; travelling studentship, bronze medal, C. C. Brewer; Oliver prize, T. F. Green. Lecture Side:—Division I.—S. L. Crosbie, silver medal; P. J. Groom, bronze medal. Division II.—S. Perkins, silver medal; T. E. Abbott, bronze medal. Division III.—C. de Gruchy, silver medal; J. R. Stark, bronze medal. Division IV.—J. P. Clark, silver medal; A. J. Stratton, bronze medal. Studio Side:—Division I.—P. J. Groom and H. W. Tomes, certificates. Division II.—T. F. Green, silver medal and certificate; H. C. Trimnell, bronze medal and certificate. Division III.—A. C. Dickie, silver medal and certificate; A. Wood, bronze medal and certificate. Division IV.—J. P. Clark, silver medal and certificate; M. G. Pechell, bronze medal and certificate. The medals were the long-promised ones, designed by Mr. Alfred Gilbert, R.A.

This ceremony over, the President delivered his

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in which, after thanking the members for his re-election, he expressed his satisfaction that the past session had been a most successful one—perhaps the most successful they had had under the present order of things. The studio and classes generally had been very well attended, excepting in Division IV., and the work done had been distinctly good. In a large majority of the classes the first man had gained more than the 80 per cent. of the maximum number of marks necessary to qualify him for a book prize in addition to his certificate, while in several cases he had obtained the full number allotted to the subject. This was very gratifying, as was also the fact that of the 96 new members who joined their ranks during last session, no less than 73 joined either the classes or studio, and that there were 78 students who took up complete courses of lectures and classes—40 of them being in Division I., 25 in Division II., and 10 in Division III. As regarded those who were really making use of the educational course, and who alone could obtain the full benefit of it, of the students who worked in Division I. in Session 1892-3, fourteen moved into Division II. in Session 1893-4, while seven moved from Division II. into Division III., and two from Division III. into Division IV. It had been his hope that more students would have seen the advantage of this gradual and sustained progress from one division to another; but this was an improvement upon last year, and he trusted the improvement might increase, for only so could the best results be obtained. The continued want of appreciation of Division IV. had been very fully considered and discussed by the committee, with the result that it had been temporarily abandoned, the subjects hitherto contained therein being either treated as extra subjects or room found for them in other divisions. It was proposed to re-establish it at the first opportunity. There was improvement also in the competition for prizes. Six designs were submitted for the A.A. Medal, while Mr. Brewer carried off the Travelling Studentship with a set of drawings of unusual merit; and although only one entered for the Essay Prize (Mr. de Gruchy), the sub-committee reported that his production was most meritorious, and well deserved the prize. The Architectural Union Co.'s prize was not awarded, neither was that offered by Mr. James Brooks. With reference to this last, the President suggested that the subject—one bay of the vaulting of the Cathedral at Oxford—was somewhat too difficult, necessitating, as it did, the use of scaffolding and ladders, as well as residence in Oxford. Mr. Brooks had, however, kindly allowed him to set the subject for the coming year, and intending competitors would find it not only interesting, but easily accessible with ordinary appliances, and within easy reach of London, so that a few summer Saturday afternoons would be sufficient for the work. One cause of complaint which he had to make last year the members had removed entirely—the attendances at the fortnightly ordinary meetings had been very good, and the discussions frequently quite animated. Having made reference to the losses sustained by the Association through the deaths of Mr. J. L. Robinson and Mr. Wyatt Papworth, the President continued: During last session the Association was actively employed in the consideration of the new Building Act for London. We entered an appearance against it before the Committee of the House of Commons, and made a determined effort to obtain the abolition of the clauses respecting parapets to party-walls so far as relates to dwelling-houses. In this work our past vice-president, Mr. Caröe, took a very active part, and spared neither time nor money to achieve our ends. He fully proved his contention that there is no necessity for carrying party-walls above the roofs of ordinary dwelling-houses, but with the present and late heads of the fire brigade against him we failed to carry the point. This is much to be regretted, for all of us, especially those who live in the suburbs, or daily traverse them in the train, must know how extremely unsightly they are in small houses and what constant sources of expense and damage to their interiors. Although we failed in this point, we were more successful in others, and we may at least congratulate ourselves that the new Act is a great improvement upon its predecessors, and removes many irritating restrictions under which architects suffered. Very much time and consideration have been given by both the committee and a special subcommittee to the scheme originated by Mr. Owen Fleming, for the better technical education of London workmen employed in the buildings trades. Our communications on the subject with the various City companies, the trades unions, and other bodies have received general approval, and with your consent a preliminary conference will shortly be held at which all the above-mentioned bodies will be represented. In my address last session, I advised very young architects to take any work that may chance to come their way, so long as it be honest and at all remunerative, whether it be "light and air" cases, "dilapidations," sanitary work, or any other lowly undertaking. As a fact, these things pay very much better than more pleasant and artistic work, as may be easily seen by comparing the incomes earned by the lordly surveyor with those made by the mere architect, and the palace inhabited by the former with the humble home of the latter. But now I want to remind the aforesaid young architect that, although the surveying work referred to is by no means to be despised, and is indeed very profitable, that it is only to be regarded by him as a means to an end, and that architecture not only *is* an art, but the greatest amongst arts. It happens that it is not what may be called a popular art, nor does it command the same remuneration from the British public that the arts of painting and sculpture do; but this, considered in the right light, may possibly be an advantage. The public does not run after architects and compete for the honour of employing them. It would never occur to the vast majority of them that architecture is an art. Very few, indeed, know a good building from a bad one, and they pay us our £5 per cent. commission equally willingly or unwillingly as the case may be, whether it be for designing a brick warehouse or a church full of elaborate detail. The very method of payment is obviously against our acknowledgment as artists by the public: they are more likely to class us with auctioneers, house agents, brokers, and other individuals paid by commission in a like manner. No, when the great British public speak of an artist they mean a painter, or possibly a photographer; but certainly someone who makes pictures that can be put in gold frames (made in Germany), and hung upon the wall. To them picture-making is art, and pictures appeal to them because they can, if the story told by the pictures be sufficiently clear, understand them, and then they buy them, and the manufacturers wax exceeding rich. But very few, comparatively, of the public care about or understand sculpture, and still fewer architecture, which is quite sufficient proof that of the three arts architecture is the greatest, sculpture the next, and painting last. But the public reverse the order, and pay accordingly. And so, as we are not likely to attain to either riches or glory by our work, it only remains for us to work for the sake of doing good work—work that shall be an honour to our time, and which shall be appreciated in the years to come. If you consider the work of an architect you will see how responsible it is, and how careful we ought to be to carry out to the very best of our ability all that is intrusted to us. Our work is necessarily conspicuous, and its influence, for good or evil, correspondingly greater than that of a picture or statue hidden away in some gallery or church. Statues and pictures must generally be the property and delight of the more or less rich; our work is for all, from the richest to the poorest. Doctors have this great advantage over architects, that when they make a mistake it is promptly buried, while ours remain a constant reproach possibly for centuries. Our own motto, "Design with Beauty, Build in Truth," fairly expresses the whole duty of an architect, and happy is he who can do it. The question of what constitutes the beautiful in architecture is more than difficult to answer. There is beauty of form, mass, and outline, beauty of colour and material, beauty of detail. Failure in any one of these mars the building, and but few men can hope to attain all. As regards beauty of outline, it would seem that a change is taking place in our ideas. Not so long ago picturesqueness was the great aim of most architects, and I well remember the mayoress of a considerable provincial town seriously informing me that a leading builder of the town (naturally an authority on the subject) had imparted to her the one way to make a building pretty, which was simply "to cut up the roof as much as possible and use plenty of iron cresting." This opinion was once no doubt more or less generally acted upon, but lately men have learnt once more that long unbroken lines and large masses of roof and wall impart a dignity and repose to buildings not to be obtained in any other way. Unnecessary breaks in the roof of a building are to be specially avoided, for they are expensive, constant sources of danger from rain and snow, and being meaningless, are certain to offend the educated eye. In the matter of colour one is the less likely to go wrong, probably, because the opportunities for doing so are more limited; moreover, in this respect time is good to us, excepting in very smoky towns. In London there can be no happier combination than red brick, Portland stone, and Westmoreland slates for the exterior of buildings, and, indeed, they would be fairly safe anywhere; but there are many other building stones of great beauty of colour, and tiles, shingles, and lead have good claims to consideration as beautiful roof coverings. Of the various beautiful colour effects to be obtained internally by the use of marbles, alabaster, and glass, it is impossible to speak here. I would simply say, avoid violent contrasts, do not dot slender shafts of dark marble about an otherwise almost white interior, as one not unfrequently sees done in modern churches, and make all the use you can of British materials. Probably a good many people are unaware of the wealth of red, green, and grey marbles to be obtained in our own islands. Beauty of detail is, perhaps the most difficult of all to obtain; certainly nothing more marks the distinction between good and bad architecture than the quality of its detail. The tendency of modern times has been to overload buildings with ornament of all kinds, many important buildings having been thereby spoiled. "When in doubt, turn on the carver" seems to be the principle on which many architects work, and no more fatal mistake can be made. Simplicity and breadth are the great things to strive after, and nothing more helps the appearance of a building than abundance of absolutely plain wall surface. What is more beautiful than the effect of sunlight upon a large mass of unbroken wall, where the ever-varying tints of good brick or stone have a chance of displaying themselves? Have carving by all means, but see that it is the best obtainable, and then probably the cost of it will prevent your having too much. Concentrate it, too, in masses, and do not spot it all about your elevations; then its richness gives value to the plain wall surfaces which by contrast add to the effect of the carving. It is a good plan when you think you have finished your elevations to go carefully over them again and see what features you can omit, and as you grow older you will probably find that more and more can with advantage be omitted. It is quite possible to design a noble building which shall be entirely free of any (so-called) ornament whatever, and owe the whole of its beauty to fine proportion and materials. So much, then, for designing with beauty. It is granted to but few men to be able to do it, but we can at least all try. A man who, really loving his work, sticks to it unflaggingly, always doing his best, and losing no chance of improvement, is sure in the end to produce work worthy of respect, even though he be not, and never can become, a genius. To "build in truth" is simpler, and, requiring but good common sense, is within the reach of us all. This part of our motto means simply that we should use each material in the proper and appropriate manner. It is not building in truth, for instance, when one designs what professes to be a half-timber building and executes the timber in cement, as a good many architects have done. This may be artful, but it is not art—in fact, it is merely a poor fraud, by no means justified by the fact that our London and many provincial building regulations bar the use of timber in this manner. A very pleasing front can be made of stucco, used as stucco, as Mr. Colcutt has shown us in Fleet-street. The use of cast iron to imitate wrought iron is another common fraud, and one that is quite unnecessary, because cast iron, used in the proper way, can be perfectly satisfactory and beautiful, as may constantly be seen in old work. Indeed, effects can be legitimately obtained with cast iron that it would be difficult, or at least extremely costly, to get in wrought. It only remains to consider how best a young man may learn to design with beauty, because this is the one great business of an architect. Well, first of all he has to decide whether he really is fitted to be an architect, and whether he had better not turn his attention to something else. It is extremely difficult to understand the reasons which actuate many young men in their selection of the calling of an architect. Some do it under the mistaken notion that it is a genteel profession—whatever that may mean. They will soon find out their mistake, and my advice to them is to become solicitors, and so acquire the advantage of being declared to be gentlemen by a special, and often necessary, Act of Parliament. Others join us because their fond parents discover in them a "taste for drawing." Unfortunately, that by itself is a very small qualification for the practice of architecture, although it is a most necessary thing to possess. Possibly he might do better by becoming a draughtsman for an illustrated paper, or even a mere painter. One of the funniest reasons for becoming an architect that ever came under my notice was that it was "a nice clean business." This reason was given by a young gentleman who favoured me with a call with a view of entering my office, and who at the time was acting as assistant to a hair-dresser. Thinking I was upon the point of bringing out a hitherto suppressed genius, I asked if he could draw pretty well, but was somewhat staggered by the reply, that he "did not know, for he had never tried." So I strongly persuaded him to give up the idea, which I have reason to believe he did, and this same advice I give to every young man unless he is quite sure of his heart being in the work. Unless it be, the whole thing must necessarily become the most dreadful drudgery, for probably no other profession requires so much right down hard work as ours, if there is to be any chance of ultimate success. A man possessed of a small income and influential friends may, indeed, obtain a large practice, and, with the help of clever assistants, carry it on successfully without having the least ability or love for the work; but though he may thus become a successful tradesman, he is certainly not an architect. Of course, however, the public will not realise that; so with plenty of assurance, some good luck, and a little entertaining, he may possibly in time become even an R.A. Supposing the imaginary young man to have made his decision, however, to have become articled in a fairly good office, to have been admitted to our Association, and to have joined our classes and studio. Then the one and only way to learn how to design is by the constant study of existing work. I say existing work advisedly, because it is my belief that the study of modern work is as necessary, and more useful, perhaps than that of old work. Of course, he must study old work—that goes without saying, but by all means study modern buildings as well. The old men undoubtedly acted upon this principle; they saw what had last been done, and then proceeded to make some improvement upon it, and if we work upon these lines architecture will become more and more living art. It is my very strong belief that there are amongst us now men capable of doing work better than any done here in the Middle Ages; indeed, I often doubt whether we should so much admire some of our famous old work if we could see it "white from the mason's hand." Take the west fronts of Salisbury and Wells Cathedrals, for instance, two of the most admired productions of the middle ages Worn by the hand of time, beaten by the winds washed by the rains and baked by the sun o centuries; saturated with religious sentiment and surrounded by the glamour of romance, they are most beautiful, and their contemplation fills one with delight. But if they could be done by modern architect, and stand before us brand new with all their mouldings clear and sharp, and their every detail as it left the mason's hands, do not hesitate to say they would receive very much unfavourable criticism from our shinin lights. Therefore, I repeat, study old work, bu do not fail to study new. There is something to be learned from it all, and though a great deal may be useful only in showing us what to avoid, there is much, very much, that is well worthy of our admiration. Take Mr. Norman Shaw's New Scotland-yard, for instance, and see how that fulfils every requirement as to simplicity, breadth, proportion, and colour. Look at the ecclesiastical work of Messrs. Gilbert Scott, Bentley, Bodley, and Pearson. Note especially how the latter obtains beautiful results, sometimes with scarcely any ornament and no sculpture. On the other hand, look at the works of Sedding, and see how full they are of charming detail. But whether studying old or really good new buildings, remember that you are not to think that by reproducing certain details of them you are doing the right thing. Quite the contrary. It is the spirit you have to strive after, the life that is in them, the evident enthusiasm and love for the work which they all show so plainly. These are not the buildings that tradesmen-architects produce. Nor is the £5 per cent. commission what their designers had in view when they produced them. That £5 per cent. is a curse of our calling, and probably does us more harm with the public than we realise. You must not trouble as to whether your work is going to pay financially or not; enthusiasm is what you want, fiery enthusiasm that will carry you through days and nights of arduous toil and through years of disappointment. Spare no time, nor thought, nor labour upon your work, and then, though you may never earn the wages of a commercial traveller, and have no chance of realising the fortune of a stockbroker, you will be repaid by the knowledge that you have done good work, work that may give pleasure to generations of your fellow men, when the stockbroker and all his ways are forgotten or only remembered with horror. Some very good men hold that an architect cannot do his best when trammelled by the conditions of a competition; but I venture to hold an opposite opinion, because, even if it be true in the first instance, the man who is so fortunate as to be successful in one of these affairs is certain to have plenty of opportunity and time for improving and maturing his design afterwards, and no one will object to his doing so. What I said as to the necessity of making it one condition of every competition that the author of each design should send with his drawings a formal declaration that the work is absolutely his own, has since received very strong confirmation. There have been two competitions during the year for municipal buildings in London, and in each case the successful design was entirely the work of ghosts. Now, for a man to send in, as his own design, the work of another, everyone must admit to be a downright fraud, and the man so acting ought to be punished by immediate disqualification. It is a matter that the Institute should take up strongly for the credit of the profession, as nothing can be more damaging to us as a body than the knowledge that this sort of thing is done. The ghosts themselves are by no means free from blame, but I am not prepared to sit in judgment upon them. They do their work honestly, for a more or less nominal sum; but their employers, who do not do the work, and could not do it, take all the credit and all the profit, to neither of which have they morally the least right; and, after all, if the design be a good one, as it may or may not be, it is certain to be more or less spoiled in the carrying out, by the utter inability of the reputed architects to properly detail it. In conclusion, the President said: I hope we are all agreed to work together, shoulder to shoulder, for the good of the Association. See that there be no petty jealousies among us, no envying, and no malice, but good, honest, healthy competition, as to who can do the most, not only for himself, but for the whole body, to raise the standard of work, and to maintain, unbroken, as handed down to us by our illustrious predecessors, the glorious traditions of the Architectural Association.

Mr. W. H. Seth-Smith proposed a vote of thanks to the President, which, having been seconded by Mr. Aston Webb, and supported by Mr. Leonard Stokes, was carried by acclamation.

THE SOCIETY OF ARCHITECTS.

THE tenth annual general meeting of the Society of Architects was held at St. James's Hall, Piccadilly on Tuesday evening, Mr. George Highton, F.R.I.B.A., of London and Bedford, the President in the chair. Mr. William Herbert Alton, of Sea-road, Bexhill-on-Sea, was elected as a member.

ELECTION OF OFFICERS AND COUNCIL.

The scrutineers reported that 78 voting papers had been received, two of which had been rejected as spoiled. The voting had resulted in the election of †Edwin J. Hamilton, of Brighton, as president; vice-presidents: †Ernest Day, J.P., F.R.I.B.A., Worcester; and Banister Fletcher,[§] J.P., F.R.I.B.A., London; honorary secretary, *Ellis Marsland, London; hon. corresponding secretary, †Major F. Seymour Leslie, R.E., War Office, Whitehall; treasurer, †H. G. Quartermain, Merton; hon. auditor, †S. C. Johns, Wallingford. Members of council (12): *G. A. T. Middleton, of London, 72 votes; Robert Keith, president, Dundee Institute of Architecture, 69; George Thomas, Cardiff, 69; Edgar Farman, London, 68; Henry Lovegrove, London, 65; Silvanus Trevail, Truro, 65; *C. A. Bassett Smith, London, 61; J. W. Frazer, A.R.I.B.A., Newcastle-on-Tyne, 61; *William Allport, F.S.I., London, 58; Herbert J. Jones, Bristol, 50; *W. A. Mallett, F.S.I., London, 49; and †Edward Tidman, F.S.I., 49. There were four unsuccessful candidates. (An asterisk denotes re-election, a dagger that the member previously held some other office.)

Mr. E. J. Hamilton proposed, and Major Seymour Leslie seconded, a vote of thanks to Mr. Highton, the retiring president, the first to hold office since the incorporation of the society, and who had carried out his duties with great ability, zeal, and tact. The President, in replying, expressed his desire to see the Society growingly prosperous and useful. He believed that the scheme of examination for membership to be brought before them would have an excellent effect on the Society. They had the prospect of a good series of papers to be read during the coming session. A vote of thanks to the retiring vice-presidents, Messrs. E. J. Hamilton and G. Baines, was agreed to on the motion of Mr. Edgar Farman and Mr. H. G. Quartermain, and was acknowledged by Mr. Hamilton. Mr. E. J. Kibblewhite proposed, and Mr. Sidney Marsland seconded, a vote of thanks to the retiring members of Council, for whom Mr. Allport responded, and a vote of thanks was also accorded to Mr. Ellis Marsland, the hon. secretary, on the motion of Messrs. Hamilton and Allport, and was suitably acknowledged.

THE MEMBERSHIP EXAMINATION QUESTION.

Mr. Ellis Marsland, in the unavoidable absence of Mr. G. A. T. Middleton, moved the adoption of the Report of the Council upon this question, as follows:—

> "The subject of the desirability or otherwise of an Examination of Candidates for Membership was referred to the Council at the General Annual Meeting held in October, 1893, and since then it has been under careful consideration. A Committee was appointed and drew up a series of questions, which were approved by the Council and submitted to the Members of the Society. The replies received have been considered, and the opinion of the Members appearing to be practically unanimous, the Council have decided as follows:—
>
> 1. That after October 31st, 1896, Election to Membership will only be open to Candidates who have passed the Society's Examination, with the following exceptions:
>   (*a*) Candidates who are not less than 35 years of age, and have been directly engaged professionally in architectural pursuits, as Principals, for at least seven years.
>   (*b*) Candidates who are not less than 35 years of age, and have been directly engaged professionally in architectural pursuits as Assistants for at least seven years.
>
> Candidates applying for Membership under *a* and *b* will be required, as heretofore, to submit drawings and other proofs of their professional abilities.
>
> 2. That the Scheme of Examination shall be formulated and published before June 30th, 1895.
> 3. That a Register of Students between the ages of 17 and 23 years be open on November 1st, 1894.
>
> Registered Students shall be pupils or assistants in Architects' offices and be nominated by a Member of the Society, subject to the approval of the Council.
>
> 4. Registered Students shall be entitled to the following privileges:—
>
> Free admission to lectures to be delivered under the direction of the Council in London and the Provinces; a ticket giving admission to the Society's Ordinary Meetings and the use of the Society's Library for reference; and a copy of each issue of the *Journal*.
>
> 5. That each Registered Student shall be required to pay 5s. per annum, on November 1st, in each year, and shall cease to be a Registered Student on October 31st next, after his attaining the age of 23 years.

In proposing its adoption, Mr. Marsland remarked that this was a very important step for the Society to take. He wished to see the Society a progressive one, and that could only be done by adopting progressive measures as the one under consideration. They did not propose to institute progressive examinations; but they wanted to be able to say that all elected as members were fully qualified architects. To the rule of examination before admitting to membership, it would be seen that two important exceptions were made—candidates over 35 years of age, and who had been in practice as principals for seven years, or as assistants for ten years, would be exempt, for it was felt that those who fulfilled either of these conditions would be loth to submit to examination, and probably too busy to undergo it. It had been objected that the examination was in opposition to, or rivalry with, the Institute; but he denied that this was the case, for they proposed only to establish a qualifying examination for their own members.

Mr. H. G. Quartermain seconded the adoption of the report.

Mr. Edgar Farman asked what were the numbers of replies to the circulars sent out asking the opinions of members on the scheme, and the proportion of votes.

Mr. A. Montefiore, the secretary, said about sixty circulars were returned, and of these 90 per cent. were in favour of the scheme. The report had been unanimously adopted by the Council.

Mr. A. Stoner protested that the Council was by no means unanimous; the report was adopted *nem. con.*, because the minority, rather than divide the Council, abstained from voting when it was finally carried. The opposition had been very strong.

The President said that the council minutes recorded that the report was unanimously adopted.

Mr. J. Hicks, of Redruth, as one who had passed many examinations in earlier life, thoroughly believed in the value of the system as a training. He should like to know what would be the nature of the examinations proposed, and whether acquaintance with the dead or with modern languages would be regarded as one of the tests.

Mr. Henry Lovegrove had considerable experience in the establishment of examinations in other bodies, as a member of an examination committee, as moderator, and as lecturer. He wished them first to decide whether or no it was well to establish examinations, and then they could consider what form they should take. The desirability of examinations was now agreed to; the first question was, Did the Society feel strong enough to close its gates against all but those passing an examination? If they believed they were, by all means let them institute a qualifying examination, and it was possible that they might, as the examining bodies of other professions did, accept certain examinations held by other bodies as evidence of qualification. It had always been thrown in the teeth of architects and surveyors that, unlike other professions, anybody could start in practice, and that there was no proof of their proficiency; and this argument was an injury to their status. He was glad to see that they proposed to exempt men of 35 years of age, both principals and assistants, from examination, as it was hardly fair to expect such men to submit themselves. He had been moderator at many examinations, and had found that men of 40 or 50 were not nearly so ready as younger men. Art writers told them that artistic faculties cannot be developed by examination; but he had never known a man of genius injured by education. Burns would not have written worse poetry, and might have avoided some mistakes, had he been as well trained as Tennyson, and while they could not insure that examination would produce an architect of refinement, they ought to ascertain that a man in practice possessed a minimum knowledge of constructional matters.

Mr. W. H. Seth-Smith, past president, expressed the continued interest he had in the welfare of the society; but he pointed out that they had consistently maintained that any examinations ought to be in the hands of the older and representative body, the Royal Institute of British Architects. In the past a great lack in that Institute was the absence of a compulsory examination to everyone entering that body. In draughting the Registration Bill the promoters had named the Institute as the sole examining body, and in so doing they had made a great concession and sacrifice to the R.I.B.A. He

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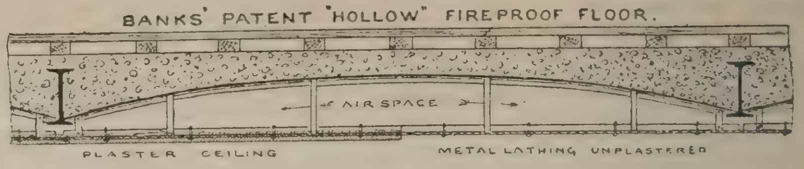
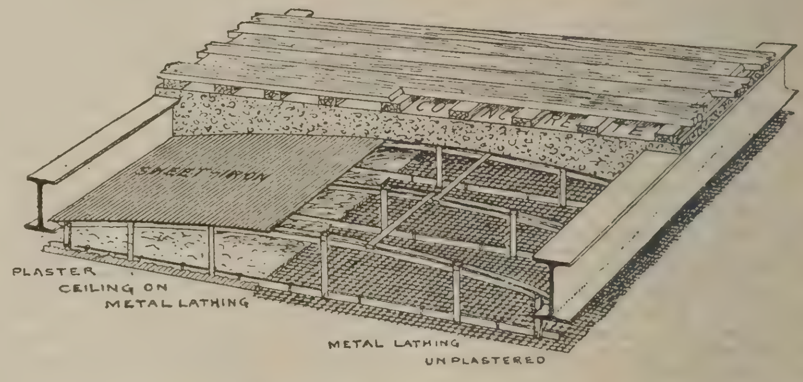
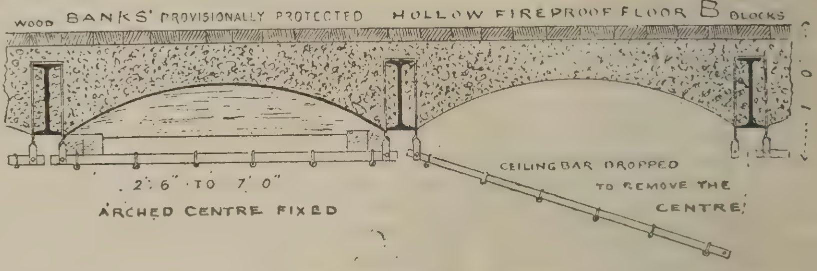
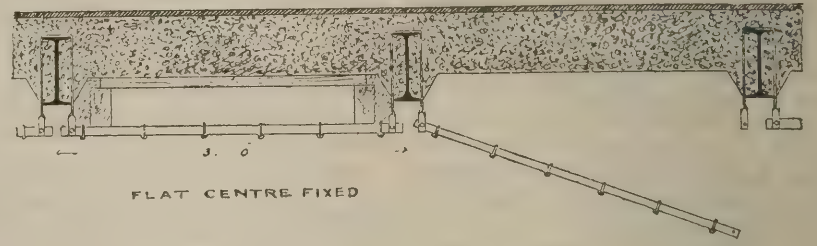
[§] We have since received a letter from the Secretary of the Society stating that Mr. Fletcher is unable to accept office.


BANKS' PATENT "HOLLOW" FIREPROOF FLOOR.
AIR SPACE
PLASTER CEILING
METAL LATHING UNPLASTERED




WOOD BANKS' PROVISIONALLY PROTECTED HOLLOW FIREPROOF FLOOR B BLOCKS
1' 0"
2' 6" TO 7' 0"
CEILING BAR DROPPED TO REMOVE THE CENTRE

ARCHED CENTRE FIXED



FLAT CENTRE FIXED

felt bound to say a few words in opposition to the proposal for exempting those entering the Society. They had in the past urged that there should be one qualifying standard, as was the case in most professions. A notable exception was the medical, and the numerous schools were a great trouble to the General Medical Council, whereas they were asked to establish a fresh scheme. They had, further, always contended that the standard ought to be a very high one, and they all knew that the Institute was doing its best in this direction by establishing the new progressive examinations. Up to the present time the Institute had not been able to pay their examiners, and the services of the best men could hardly be expected without remuneration. He believed the Institute was alone equal to the task of examining, and therefore could not support the present proposal. He admitted the desirability of instituting such a scheme if the Society were numerically strong enough; but at present they had neither the numbers nor the means, unless candidates were prepared to pay heavy fees. He also doubted the expediency of the proposal, and knew that it would elicit a good deal of opposition which might, or might not, be good for them. He hoped that the council would not press the scheme, and would propose the following amendment:—"That this Society, in the interests of the profession generally, decides to postpone the institution of any examination, in the hope that the Royal Institute of British Architects will speedily promote legislation for the compulsory examination of all architects, and will secure for itself the privilege of being the sole examining body."

Mr. Stoner seconded the amendment, as he held that the Society was not numerically or financially strong enough to close the door at present.

Mr. Tidman pointed out that the institution of an examination for membership was unanimously decided upon at their last annual meeting.

Mr. Hamilton, as president-elect, feared he might be misunderstood in supporting the amendment; but he thought the scheme was premature, and if examinations were left with the Institute it would afford very long leverage for the Institute to support the compulsory registration of architects.

Mr. Hicks regarded the amendment as humiliating to the Society. It was delegating to another body of men work that they ought to undertake themselves.

Mr. Farman held that all men who called themselves architects should be compelled to pass an examination. Mr. Hicks's remark that the amendment was humiliating showed that he had not sufficiently studied the question. The Institute examination might not be their ideal, but it was most thorough and searching.

Mr. E. J. Kibblewhite reminded members that the report was based upon the unanimous resolution of the last annual meeting, and was brought forward as the unanimous recommendation of the council. Were they to eat their own words? Was the scheme now to be frustrated by the—prudence, he would term it, of some members? They were warned that the Society was not strong enough, and that they must wait; but it struck him, in the words of the Salvation Army hymn, that—

> If you tarry till you're better,
> You will never come at all.

His objection to the scheme was not that it went too far, but that it did not go far enough. He did not see why the middle-aged gentlemen of 35 years and upwards should be exempted from examinations when two years remained in which they could freely enter the Society.

Mr. Ellis Marsland, in replying on the discussion, said Mr. Seth-Smith's amendment had been supported for opposite reasons. All admitted that architects should pass some examination; but Mr. Seth-Smith held that there should be only one examining body, the Institute, which would allow of qualifying examinations. Messrs. Hamilton and Stoner feared the Society was not strong enough, but they must go forward or the Society would retrograde. He entirely disagreed with the Institute system of examinations as too prolonged and needlessly severe. He wished the Society to institute a practical and shorter examination, and one that will enable the public to know, not whether a man can speak French or German, but whether he has a thorough knowledge of his profession.

The President reminded the members that examination had been practically decided upon by the Society, and it was not proposed to commence the scheme for another two years. He thought they would be doing wrong if they did not provide some sort of qualifiying examination. He then put the amendment, which was lost, in a thinly-attended meeting, by a majority of three.

Mr. Farman then moved a further amendment —Clause 1: "That the following article be added as Article 11a to the Articles of Association, to become operative on October 31st, 1896: 'Subject to confirmation by general meeting, the council shall select from time to time certain examinations, which shall be deemed qualifying examinations for membership of the Society; and election to membership shall be only open to candidates, approved by the council, who have passed an examination held by the Society, or any one of such examinations, with the following exceptions: (*a*) Candidates who are not less than 35 years of age, and have been directly engaged professionally in architectural pursuits, as principals, for at least seven years. (*b*) Candidates who are not less than 35 years of age, and have been directly engaged professionally in architectural pursuits as assistants, or as assistants and principals for at least ten years.'" He held that they were not yet strong enough to establish a sole examination, and ought for the present to accept certain examinations already instituted as qualifying ones. The alteration to Clause B was, it will be seen, a neutral one, providing for the case of the man of 35 who had been assistant, and then principal during parts of the ten years which qualified for exemption. He would suggest that the council's propositions for registering students be postponed for the present.

Messrs. Hamilton and Hicks supported the amendment.

Mr. Kibblewhite said he distrusted it, as it was asking them to shunt that which could not be obstructed. The Society would, moreover, never be thoroughly successful till provision was made for the registration of students. He would like to be quite sure that the new council meant to go on with that part of the scheme.

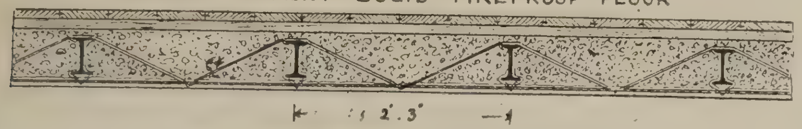
The hour being late, the amendment was carried in a rapidly emptying room, by ten votes to three, and Mr. Farman withdrew his proposal to postpone clauses 3, 4, and 5, providing for the registration of students.

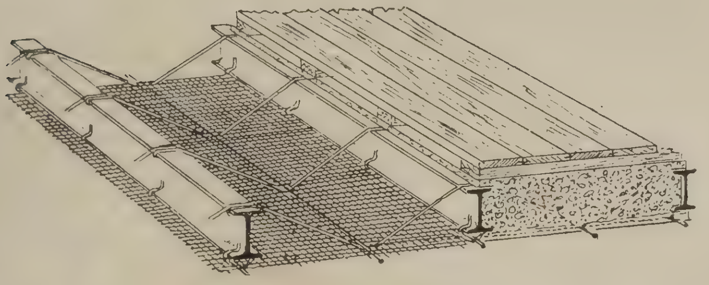
BANKS' FIREPROOF CONSTRUCTION.

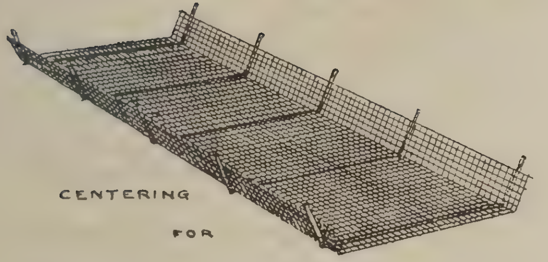
We have so often heard of "fireproof" buildings being burnt to the ground that some have come to the conclusion that fireproof buildings do not exist, and are not likely to. Unfortunately *uninflammable* is not the same as *fireproof*, as the construction of many buildings in brick, iron, and concrete has too often proved. At the great fire last year in St. Mary Axe, warehouses built with wooden floors stood better than some of iron and concrete; the reason, of course, being that frequently when iron is exposed to heat, it expands irresistibly, crushes the concrete floor, and the whole falls bodily, or it pushes out the walls and makes still greater ruin.

A new system has lately been brought out, and on Friday last a party of some 100 architects and scientific men met at the St. Pancras Ironworks, Belleisle, to witness tests of a severe character applied to a house built on this plan. A small four-roomed house with doors, windows, chimney, &c., was built in brickwork on a piece of waste ground adjoining the works at Belleisle, York-

BANKS' PATENT SOLID FIREPROOF FLOOR

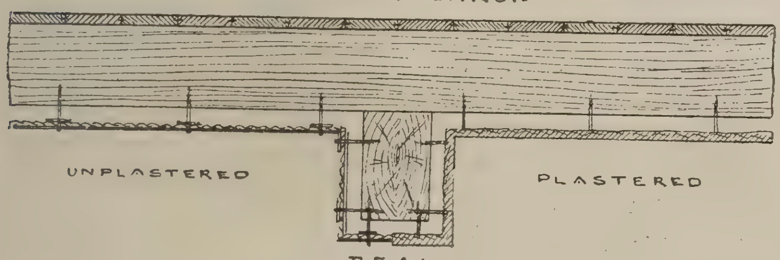






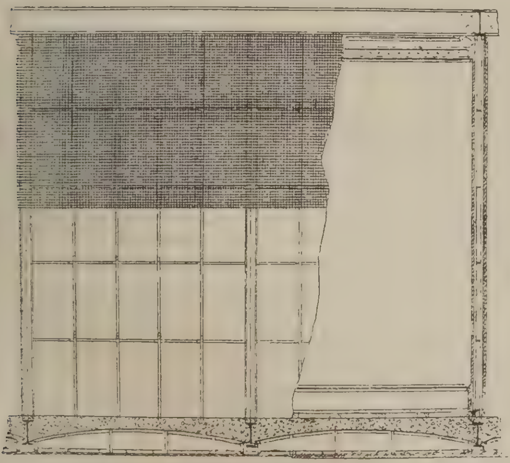
CENTERING FOR TRIMMER ARCH

BANKS PATENT METHODS OF FIXING METAL-LATHING TO WOOD AND IRON

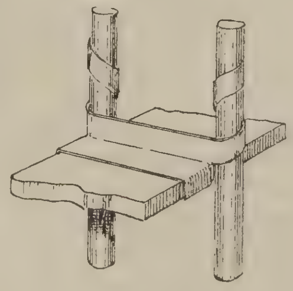


BEAM

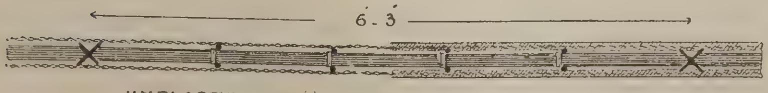
BANKS PATENT IRON-FRAMED FIREPROOF PARTITION WALL



ELEVATION



CLIP FIXED



PLAN

road, the upper story being covered with a wood-joisted ceiling, and the roof made of wood and corrugated iron. The floors of the upper story and the partition walls were made on the system patented by Mr. T. L. Banks, F.R.I.B.A., and the ground floor was filled with shavings and pitchpine, saturated with petroleum. This was set fire to, and allowed to play on the ceiling for about three-quarters of an hour. The fire was then extinguished, and when the interior had cooled sufficiently to be explored, the floor above the fire was found perfectly unharmed, and the ceiling and walls intact. There was no sign of falling plaster, and in the story above the apartments were cool, and a block of ice that had been placed there before the fire was lit, was unmelted.

We should like to have seen as well a vertical test of the system applied, say, to a staircase, or partition wall; but have no reason to doubt that the result would have been equally as satisfactory. The principle claimed for this system of fireproof is the interposition of a fire-checking obstacle virtually severed from, and not in direct connection with, that part of the structure to be protected. In the case of fireproof floors a suspended ceiling is the fire-checking obstacle. Between the ceiling and the floor above is a perfectly open and undivided chamber, through which an uninterrupted current of air passes. This current of air, it is claimed, provides much better protection from heat than covering the parts to be protected with any non-heat-conducting substance. It is also held to be of the first importance that the constructive iron or wood should not be in contact with any substance reached by the flame, such as tiles and plaster. The exhibits at Belleisle last Friday consisted of three fire-resisting floors, two being ventilated and one solid; a fire-resisting partition, a mode of protecting wood construction from fire, helical twisted metal lathing, and a fire and waterproof plaster. The first ventilated floor is constructed as follows:—Light iron arched centres, in lengths which can vary from 4ft. to 8ft., rest upon the lower flanges of the steel joists. They are spaced from 12in. to 15in. apart, and are covered with sheet or corrugated iron to support the concrete. Horizontal bars of iron are suspended from the ends of the centres, and are upheld throughout their length by additional suspenders from the arch bar. These latter suspenders are not bolted as those at the ends, but can be moved along the arch towards its centre, so that in the event of the weight of the concrete slightly deflecting the arch bar, the horizontal or ceiling bar can be adjusted to a true level. The level of these ceiling bars is never less than 3in. below the lower flange of the steel joist. Experiments, we are assured, have shown that small pieces of wood and shavings resting on the ceiling will ignite when the ceiling becomes sufficiently heated, but that removed 3in. away they will not do so. It follows, therefore, that the ceiling being suspended from arch bars which cannot be made red hot will remain level and unbroken, notwithstanding the heated state of the horizontal bars within the ceiling.

The lathing which supports the plaster is constructed of helically-twisted and woven flat wire. This metal lathing offers a perfect and uniform key. It is imbedded in the plaster, and, unlike punched sheets, is not *exposed in one surface* and liable to expand when heated. The plaster is a composition which is worked easily, and sets as hard as Portland cement. It does not corrode, but preserves the iron. This plaster not only withstands fire, but the effects of water played on it when white hot. Samples shown thus tested excited a good deal of interest

Ventilated floor No. 2 differs from No. 1 only in the substitution of removable centres which can be reused, which is a cheaper form of floor when there is much repetition of the same sizes.

The solid floor is distinguished from other solid floors by providing a centring in the metal lathing, which also secures a good key for the plaster ceiling, and by its binding together all the steel joists with straining rods. Should the floor become heated and the joists expanded by the heat, the metal lathing centring which upheld the concrete in its liquid state will continue to do so, though the concrete be rent and cracked by reason of this expansion.

In large works now being carried out, advantage has been taken of this principle. The floors are constructed of very light steel joists bedded in concrete. The floor over each room is treated as one slab, not *divided* by steel joists, but strengthened and bound together by the joists, straining rods, and metal lathing.

Floors constructed of wood joists are therein protected by a similarly suspended ceiling. By sacrificing 3in. in the height of a room, existing buildings can have this fireproof ceiling added, without removing the existing ceiling.

The fireproof partition shown is constructed of light iron framing, covered on each side with metal lathing, and plastered. It is extremely light, and at the same time rigid. Solid partitions 2in. thick can also be built by means of this metal lathing. Columns, stanchions, and girders to be incased with metal lathing and the fireproof plaster have patent "distance pieces" applied, to separate the plaster casing from the iron.

DEAN SWIFT'S ESCRITOIRE, AND CABINETS FROM ROXBORO' CASTLE.

APART from its associations with the gifted and eccentric Dean Swift, the old Escritoire of which we give a drawing is a highly-interesting piece of furniture. It is made ef oak, inlaid with walnut, and decorated with marquetry. In the lower portion, the two-side pedestals are fitted with different size drawers, slightly concaved in the front, and finished with a circular head on the top drawer, each ornamented with small beading round. In the central recess is a cupboard with shelves. Underneath the fall-down flap, which, together with the lift-up flap, at the top of this lower portion, incloses the escritoire proper, is a writing-table, which slides out. The inclosed portion is fitted with beautifully-made drawers and pigeon-holes, with a small central cupboard, with a niche-like shaping in the door, and curved pediment over; while right and left the two central pigeon-holes are likewise surmounted with curved pediments hollowed out. The upper body has the ordinary cupboard arrangement, with shelves shaped on the edges, and inclosed by two doors with fluted pilasters of sycamore on the stiles, with flat Corinthian caps. Between these pilasters, of which there are two on each door, is a bevelled mirror, with shaped head. Besides the general drawing with the escritoire thrown open, we give a small sketch showing the flaps closed, and the writing-slide drawn out, and revealing additional drawers immediately below the top cupboard. We may say that, though no absolute proof exists of this escritoire having belonged to Dean Swift, there are strong grounds for sustaining the traditional reputation it bears, and which its present owners, Messrs. M'Coy and Sons, of Belfast, will doubtless do all they can to establish. The two Cabinets which are shown on the same drawing were purchased at the sale of Lord Charlemont's effects at Roxboro' Castle, Moy, Co. Tyrone. They are unusually fine, and in splendid preservation. The Elizabethan one is in oak richly carved, and fitted with the usual top and bottom cupboard, separated by a long drawer. The other one, probably of earlier date, and certainly of more unusual form, is made of chestnut wood, and the carving seems to point to Irish workmanship. It is singular, too—in that there is no projection or break to separate the two cupboards, as in the other and most cases. We are indebted to Messrs. W. J. M'Coy and Sons, of Belfast, in whose possession these fine pieces of furniture are, for their courtesy in enabling us to illustrate them.

THE L.C.C. AS THEIR OWN CONTRACTORS.

AT Tuesday's meeting of the London County Council, the Works Committee presented accounts showing the differences between the estimated and the actual cost of works intrusted to them. The total estimates amounted to £66,061 19s. 2d., while the actual cost was £63,045 18s. 5d. They claimed that in such works as excavation and brickwork, the cost compared very favourably with that of contractors, but in architectural work, where the cost had exceeded the estimate, their work was of such a quality as is only comparable with that executed by builders of the highest class, who very seldom undertake work at competitive prices. They considered they had had to work under difficulties, such as unsuitable premises, second-hand machinery worked by old and wasteful engines, and so on, and these conditions will have to continue until nine or twelve months hence, when the new workshops, stables, and offices will be completed. In the discussion which followed, Mr. Westacott pointed out that in the report there were 13 items mentioned, of which nine cost more than the estimate and four less. The only work they could manage to do under the estimate was that done underground, where it could not be seen. Nearly every matter referred to the committee cost more than the original estimate, and they were by no means saving the ratepayers' money. Mr. Hoare said that the committee had not been in existence a sufficient length of time for the Council to ascertain the profit or loss arising from their operations. He suggested that the Council might later on obtain powers to compete with contractors for the work of local authorities. Lord Farrer agreed with Mr. Hoare that it was too early yet to say whether the Works Committee was a success or not. He hoped they would take into consideration the suggestion that they should offer to do work, especially sewer work, of which they had large experience, for vestries and other London authorities in competition with contractors. The debate was adjourned.

BEARING POWER OF FOUNDATIONS.

THE following data have been published in a recent textbook by Mr. E. L. Corthell, of the Western Society of Engineers, on the relative bearing power of foundations. In clay soils the resistance is from 2 to 8 or 9 tons per square foot, with allowance for friction. In sand the data vary much in different kinds. Sand mixed with loam will not bear more than 5 tons per square foot. Nine and a-third tons per square foot were placed on fine gravel and sand at Urk Viaduct; masonry piers on cylinders 4·8in. diameter; friction neglected. In India, on coarse sand, not over 9 tons are used. In experiments 20 tons have been placed on sand without settlement. Referring to friction, the author says: Side friction varies from 200lb. to 600lb. per square foot. Blackfriars Bridge, on clay, is put at 5 tons per square foot, settled; new London Bridge 5 tons per foot on piles = 80 tons per pile, settled badly. Other weights are given of American buildings. Thus, Washington Monument is 9 tons per square foot, inside edge; clay and sand 3 tons per square foot, outside edge. These data vary greatly, arising from the admixture of loam or gravel with the sand; the latter appears to give the highest results.

CHIPS.

The work of excavating the tumulus in Parliament Hill-fields, Highgate, was begun on Monday by a body of workmen in the employ of the London County Council. This tumulus is supposed to be the burial-place of either Queen Boadicea herself or of a number of her followers. The work of excavation and investigation is being carried out under the supervision of Mr. C. H. Read, of the British Museum. The mound has been carefully fenced in since the County Council became the guardians of the fields, and during the progress of the work of excavation it will be carefully guarded night and day.

At the eighth annual meeting of the Egypt Exploration Fund, held on Monday, the chairman, Sir John Fowler, stated that there was now little danger of the destruction of the temples of Philæ; further inquiries had shown that the material necessities of Egypt and the claims of archæology were capable of reconciliation.

The London County Council approved on Tuesday a recommendation of the Parks Committee for certain expenditure with the object of providing a new entrance to Brockwell Park from Arlington-road, Brixton. It was also agreed to contribute £7,500 towards the completion of Bishop's Park, Fulham. On the recommendation of the Water Committee, an expenditure of £450 for the surveying of certain large reservoirs in connection with a water-supply scheme now being considered was approved. In reply to a question as to whether the scheme was in regard to a direct supply from Wales, Mr. Bassett Hopkins said it would not be consistent with public interests to give any information at present.

In mentioning, on p. 559 in our issue of Oct. 19th, the new board schools in course of erection in Church-road and on Roman Hill, Lowestoft, the address of the builder of both groups of schools, Mr. G. E. Hawes, should have been given as of the Steam Joinery Works, Duke's Palace, Norwich.

The statue of Edward Colston, the Bristol philanthropist, about to be erected in that city, will be executed by Mr. John Cassidy, of Manchester, and is 8ft. in height, being executed in bronze. The pedestal will be of stone, and 10ft. in height.

The Pope has given orders for the preparation of his own tomb, and Signor Maccagnani has received the commission to set about the work. The monument, which is to be of white Carrara marble, is to be a sarcophagus, on which will repose a lion with its four paws resting on the Papal Tiara. To the right there will be a statue of Faith, with a torch in one hand and the Scriptures in the other, and to the left a figure of Truth, the hand laid on the coat of arms of the Pecci family. The Pope directs that his remains be buried in the Basilica of St. John Lateran.

COMPETITIONS

EDINBURGH.—At a meeting of the directors of the North British Railway Company, held on Friday, it was resolved to invite plans for the new North British Railway Hotel, Princes-street, Edinburgh, from a selected number of Edinburgh and Glasgow architects.

KILKENNY.—The corporation held, last week, a special meeting, for the purpose of considering plans sent in by architects for the erection of a new town hall. Seventeen designs were received, from among which an assessor had selected three, recommending one for adoption. This did not, for some reason, meet with the approval of the majority of the members, and a long discussion took place as to whether the assessor should re-examine the designs, or whether they should be dealt with by the members in committee. Several members objected to the further charge of five guineas which the assessor would require, and accordingly the corporation decided to act as their own adjudicators. The stipulated cost of the town hall is £4,000. We are no prophets; but we venture to predict that under this exposition of the practical working of Home Rule a local architect will be selected. We believe that a few months since the same corporation advertised for competitive schemes for a water supply for Kilkenny, and stated that an assessor would be appointed. The assessor placed the design of a Belfast engineer first; but in their wisdom the commissioners set aside the award, and adopted the design of a local gentleman.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—The 20th session of this association was opened on Friday night last by a conversazione, exhibition of drawings, and smoking concert, held at the rooms of the association in the Exchange. Mr. W. Henman, the president, was in the chair, and was supported by Messrs. Reading, Peacock, McConnal, Hawley Lloyd, Harrison, H. R. Lloyd, Newton, Hale Silk, Bewlay, &c., and Messrs. Bateman and Buckland, hon. secs. An interesting and representative collection of drawings had been provided, the chief exhibitors being Sir A. W. Blomfield, Messrs. George and Peto, Douglas and Fordham, Maurice B. Adams, G. Horsley, R. N. Prentice, Ernest Newton, R. A. Briggs, James Brooks and Son, Arthur Bolton, A. Cox, Bateman and Batemen, Cossins and Peacock, A. Harrison, Ernest C. Bewlay, J. A. Swan, &c. A few water-colour drawings and landscapes were also lent by H. Wilson, R. Phené Spiers, A. Harrison, Victor Scruton, Ernest C. Bewlay, &c. In the vocal part of the evening the members were assisted by Messrs. Crosbee, T. Mathews, Pritchard, Hughes, &c.

CARLISLE ARCHITECTURAL, ENGINEERING, AND SURVEYING ASSOCIATION.—The annual general meeting of this association was held in the Town-hall on Wednesday, Oct. 24th. The business consisted of the election of various officers, Mr. C. Lonsdale being elected president, Mr. P. F. Ruthven and Mr. F. J. Nichols vice-presidents. A letter of resignation was read from the late hon. sec., Mr. J. Rush Dixon, now residing in Walsall, and it was resolved that the best thanks of the association be awarded to Mr. Dixon for his former able services. Mr. Edwin B. Newton, city surveyor's office, was appointed hon. sec. and treasurer. The annual balance-sheet was read, showing that financially the association is in a most flourishing condition. The opening meeting of the session 1894-5 will be held in the Town-hall, at 8 p.m., on Wednesday next, when the president will read the opening address.

Major-General Crozier, Local Government Board inspector, held an inquiry at the Council-chamber, Haslingden, on Thursday in last week, with reference to the application of the corporation to borrow £19,000 for cemetery and town's yard purposes, and £3,300 for a town-hall.

High-street Congregational church, Burton-on-Trent, was reopened last week after renovation and alterations. The alterations include the removal of the old pews and the erection of more modern seats, the lowering of the general gallery, and the enlargement of the choir gallery. Messrs. Lowe and Sons and Mr. Turner have carried out the general work, while the decoration has been in the hands of Mr. Coulson, of Birmingham. The work was executed from designs by Mr. Carpenter, architect, of Burton.

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ILLUSTRATIONS.

TERRACOTTA MEDALLIONS, BY GEORGE TINWORTH, OF MR. J. PASSMORE EDWARDS AND THE LATE WILLIAM BLADES, FOR THE ST. BRIDE FOUNDATION INSTITUTE—THE NEW SWEDISH HOUSES OF PARLIAMENT AND NATIONAL BANK.—THE JOURNEY OF THE MAGI.—XXXVI. AND XXXVII. HIGHLAND GARDENS, ST. LEONARD'S; ST. BARNABAS' SCHOOLS, BEXHILL-ON-SEA; HOUSE IN BOSCOBEL ROAD, ST. LEONARD'S-ON-SEA.—DEAN SWIFT'S ESCRITOIRE, AND CABINETS FROM ROXBORO' CASTLE.—COUNTY BOROUGH OF SALFORD MODEL LODGING-HOUSE.

Our Illustrations.

TWO MEDALLIONS FROM THE ST. BRIDE FOUNDATION INSTITUTE.

Nearly twelve months since the foundation stone of the new St. Bride Foundation Institute was laid by the Prince of Wales, and in our issue of Nov. 17, 1893, we gave a double-page illustration of the building, which is being erected, from the designs of Mr. R. C. Murray, by Messrs. W. Brass and Sons. We mentioned at the time that Mr. J. Passmore Edwards had placed at the disposal of the governing body of the Institute a sum of money sufficient to purchase a modern technical library of works on printing and the allied trades, and that the collection of books and pamphlets on printing of the late William Blades, an eminent London master printer, had also been secured. The donors of the "Passmore Edwards Library" and the "William Blades Library" are to be commemorated by the erection within the building of the two Medallions we illustrate this week. They have been modelled by George Tinworth, and executed by Messrs. Doulton and Co., and are remarkably good likenesses, and more than average examples of their distinguished sculptor's ability. The late Mr. William Blades was doubtless highly esteemed by many readers. Mr. J. Passmore Edwards is as much so by all who know the Building News, which his energy and enterprise years ago made the foremost journal of its class, and most of the readers of which have reasonable cause to witness with satisfaction the bent and scope of his discriminating liberality, which, in the erection of many public libraries, hospitals, and other public buildings, has provided many thousands of pounds' worth of work for all connected with the building trades.

THE NEW SWEDISH HOUSES OF PARLIAMENT AND THE NATIONAL BANK OF SWEDEN.

For more than fifteen years past the question of a new parliamentary building worthy of the nation has been before the Swedish Parliament, but not until the year 1888 the indefatigable advocate of the scheme, Herr E. Lithander, member of the Upper House for the great city of Gothenburg, and to whose courtesy we are indebted for the drawings and plans, with description, published in the present issue of the Building News, succeeded in carrying a motion whereby a committee was appointed to invite and consider designs and plans for the new buildings, conjointly with similar ones for the National Bank of Sweden, to be located on the same premises. King Oscar has always taken a warm interest in the scheme, and supported it substantially, as we shall presently show. The committee appointed framed a programme for the erection of the buildings on the so-called Helgeandsholme, an island situated in the river which flows through Stockholm in the most central and public part of the capital facing the square of Gustavus Dolphus, and at an angle with the Royal Palace, the Prince's Palace, &c. The competition was naturally confined to Swedish architects, and although four tempting prizes were offered, and, we believe, over a hundred excellent designs received, none met with the full approval of the jury, most of the plans submitted far exceeding in cost of execution the sum limited by the Riksdag—i.e., about £350,000. In consequence of this result the committee was empowered to request Herr Helgo Gettervall, one of its members, chief of the Crown Building Office, and a leading architect, to prepare the necessary designs and plans of the buildings, and it is these that we illustrate. The technical part of the description of the structures runs as follows:—The Houses of Parliament are approached by a sweeping raised terrace and a flight of broad steps, and entered through a huge portal which constitutes the central portion of the main elevation. This portal is supported by Ionic marble columns. The portico leads into a vestibule and hall of great width and dimensions, running through two stories, and lighted from above. From this hall stairs lead on both sides to the upper and lower stories, whilst on the level are the Parliamentary lobbies or foyers, with refreshment bars, &c. Facing the great arched entrance-way runs a vaulted gallery, whence access is gained to the common hall, the private rooms of the Presidents, the Cabinet Ministers, and other high officials. Access to these rooms is also easily gained from the members' lobbies. The principal entrances of the body of the two Houses are, of course, from the foyers, with side entrances from the gallery referred to, both Houses being thus conveniently connected. Each House has its separate system of refreshment, club-rooms, &c. At the back of the Tribunes there are separate entrances to the body of the House for the Cabinet Ministers, Presidents, and others, whilst below the public galleries in both Houses are two large boxes, reserved for distinguished visitors. The lighting of the two chambers is effected partly from the ceiling, and partly through huge windows looking on to the courtyards. In the wing abutting on the Drottninggata Passage are localised the Parliamentary offices, and these are reached from the vestibule by separate staircases, whilst others lead direct to the upper parts of the House, to the Presidents' rooms, the library, and the clubrooms. Close to the common hall is a staircase, which runs through all stories, lifts, &c.; but this part of the building is not accessible to the general public from the galleries. Five staircases lead to the top floor, where are situated committee-rooms and other offices. On this floor, too, are found, but distinctly separated, the public galleries of both Houses, the diplomatic and the press galleries. There are no separate galleries for ladies. The three galleries communicate, and to each are attached writing, telephone, and cloakrooms. On this floor are various exits available in case of fire. On the upper floor is situated the library, with offices attached to the same, and in this part a lift runs from the top to the bottom of the building. On the bottom floor, reached by many staircases, are the public bars and restaurants, with offices connected with the Parliamentary Treasury (members are paid in Sweden), and the telegraph and telephone services. The Bank of Sweden will be located on the opposite side, or at the back of the block described, this part forming a semicircle by the Vasa Bridge. Naturally the bank will be constructed with all modern improvements and means of safety, whilst in all parts of the twin building concrete and iron are to be employed for floors and walls, and the materials principally used in the general construction are granite, lime, and sandstone. The roof will be of iron, sheeted with copper. The undertaking is the vastest of its kind ever entered upon in Sweden, and it may be confidently stated that its entire execution and completion will entail an outlay of close upon £400,000. As stated, King Oscar has given a strong support to the undertaking by presenting the site, his private property, estimated to have a value of £50,000.

OLD MASTERS ON THE CONTINENT.—X.: "THE JOURNEY OF THE MAGI" (FLORENCE), BY BENOZZO GOZZOLI.

Mr. Charles Eastlake, the Keeper of the National Gallery, has already somewhat fully described the magnificent series of Benozzo Gozzoli's frescoes at Florence, when we gave the first of our reproductions from them in our issue for July 27th last, p. 98 *ante*. On August 24th we printed another compartment of the same cavalcade, with a further descriptive article written for us by Mr. Eastlake, p. 241 *ante*. To-day we are enabled to represent another of these paintings, in which the grand costume of the figures and intricate detail of the landscape are excellently shown. The reader will do well to refer to the above papers, which include a biography of the painter. Some of these figures are shown as typical examples of historic dress by the late William Burges, A.R.A., in his big folio of "Architectural Drawings," and they were also included in Lonsdale and Tarver's smaller volume on the "History of Costume." They were in these volumes only depicted in outline.

XXXVI. AND XXXVII. HIGHLAND GARDENS, ST. LEONARD'S-ON-SEA.

These houses occupy a good position with south aspect, and contain three reception, six bedrooms, &c. The work has been carried out by Mr. T. Salter, contractor; Mr. Philip Tree, F.R.I.B.A., being the architect.

ST. BARNABAS' SCHOOLS, BEXHILL.

This scheme, by Mr. Philip Tree, F.R.I.B.A., was one of the two placed designs for the above in open competition some little time ago. The scheme was afterwards abandoned, and a two-storied building erected.

RESIDENCE, BOSCOBEL-ROAD, ST. LEONARD'S-ON-SEA.

This residence contains three reception, seven bed and bath-rooms, &c., and is occupied by the Rev. R. Cowan. Mr. Charles Hughes was the builder, and the architect Mr. Philip Tree, St. Leonard's-on-Sea.

DEAN SWIFT'S ESCRITOIRE, AND CABINETS FROM ROXBORO' CASTLE.

(For description, see p. 604.)

MODEL LODGING-HOUSE, SALFORD.

In the Building News for Oct. 19 last, we gave a full description of this building, and we now supplement it by reproducing the ground and first-floor plans and section, showing more clearly the arrangement of the blocks. The whole of the work has been carried out from the plans, specifications, and quantities of Mr. Joseph Corbett, the borough engineer, and the building, which is situated in Bloom-street, was opened on the 13th of last month. The scheme is based upon the successful design of the London County Council competition for a model lodging-house; but though this general principle was adopted, departure has been made from it in many details and in several important points.

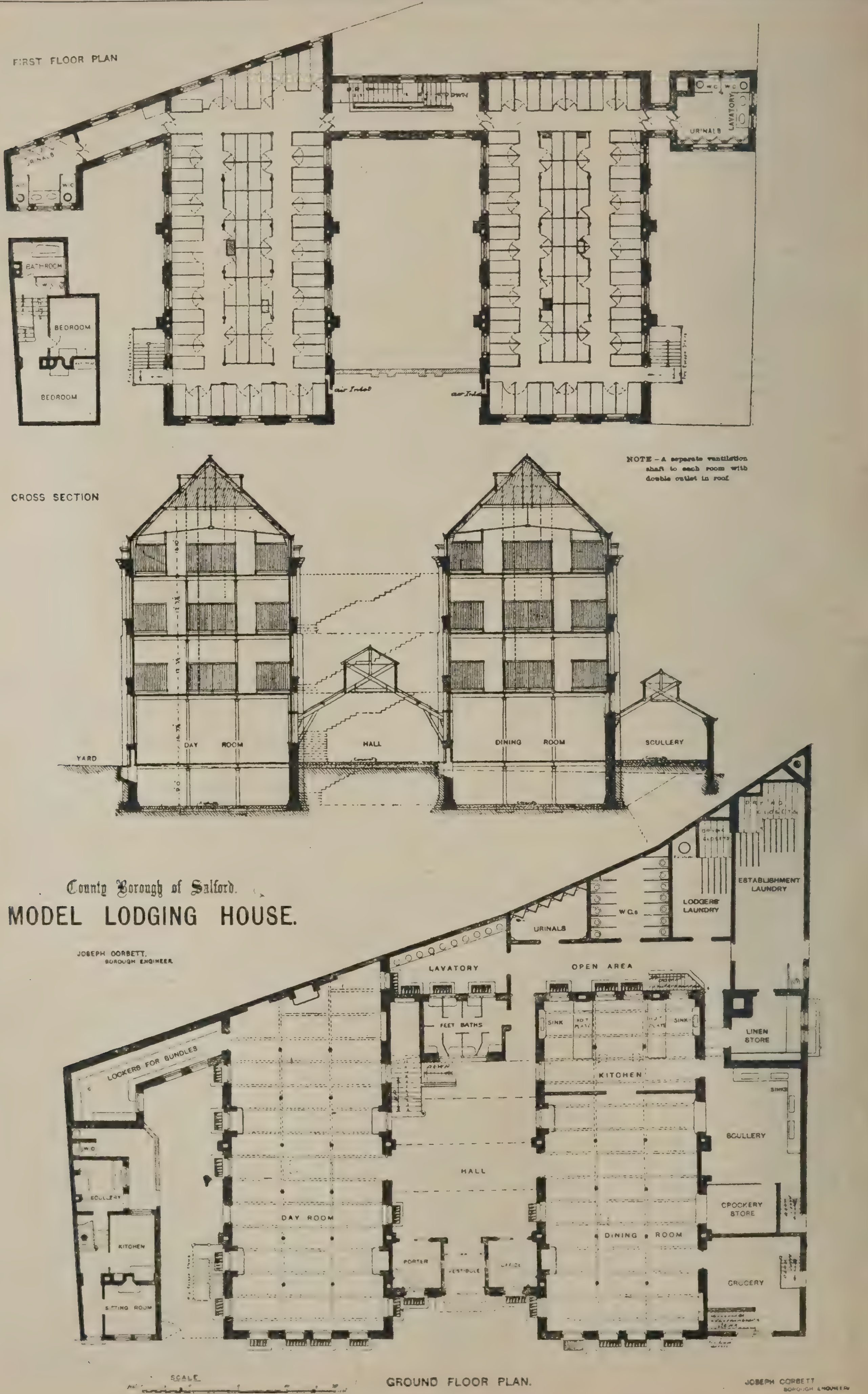
CHIPS.

A marble bust of the Marquis of Salisbury was unveiled on Tuesday in the Conservative Club at Edinburgh. It is life-size, and was executed by Mr. Birnie Rhind, sculptor, of Edinburgh. The head is bent, and the draping on the shoulders is simple. The bust is placed in the reading-room, on a carved oak pedestal, executed by Messrs. John Taylor and Son, harmonising with the woodwork of the room.

An organ, rebuilt by Messrs. Driver and Haigh, of Bradford, at a cost of £315, was opened on Friday in the United Free Methodist church at Cowling, near Colne.

The Devon Volunteer Memorial Committee have adopted the selected design for the monument prepared by Mr. Greenslade, F.R.I.B.A. A letter was received from the town clerk, intimating that the Exeter city council approved of the design selected for the memorial, and assented to its being placed on the terrace on Northernhay, subject to the foundation being laid under the city surveyor's direction. A draft contract with Messrs. Hems and Sons was submitted and approved of.

The new technical school at Heywood will be opened by Mr. Snape, M.P., on Saturday, Dec. 1. The school is Renaissance in style, and is three stories in height; it is faced with Ruabon red bricks with dressings of terracotta, except the window-heads and sills, which are of stone. Accommodation is provided for 1,000 scholars, and the cost has been £7,000. Messrs. Woodhouse and Willoughby, of Heywood, are the architects, and Messrs. Blakeley and Bell, of Hopwood, the contractors.



County Borough of Salford.

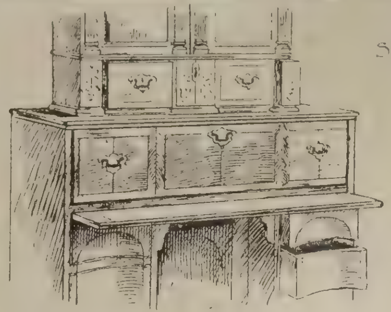
MODEL LODGING HOUSE.

JOSEPH CORBETT,
BOROUGH ENGINEER.

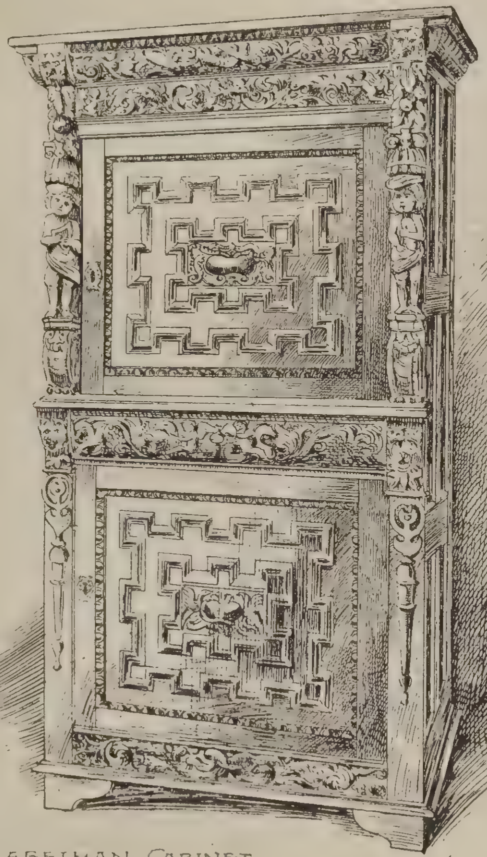
DEAN· SWIFT'S· ESCRITOIRE

AND TWO· CABINETS· FROM· ROXBORO' CASTLE

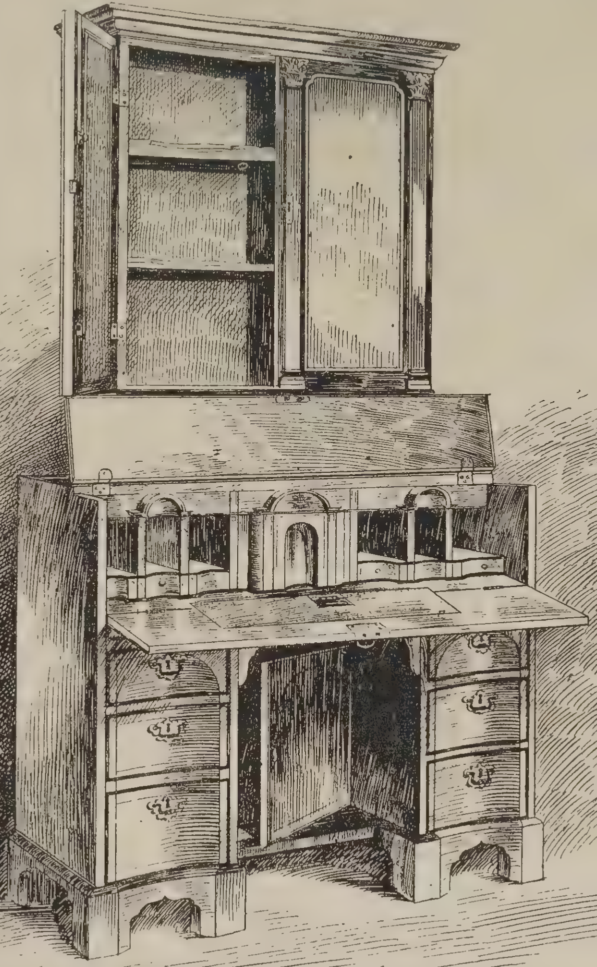
IN THE· POSSESSION· OF MESS^RS W J McCOY & SONS BELFAST



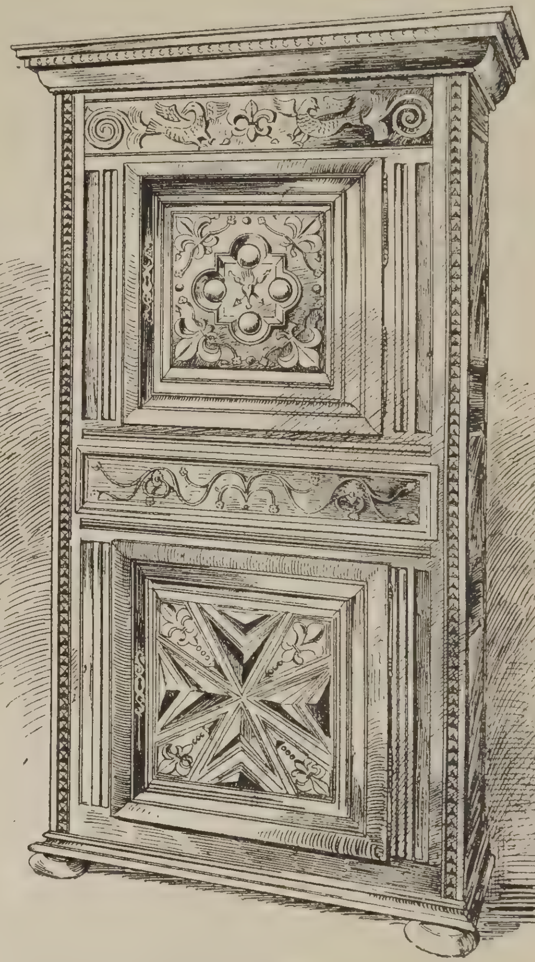
SKETCH SHEWING PART OF
ESCRITOIRE CLOSED



ELIZABETHAN CABINET



SKETCH OF ESCRITOIRE WHEN OPEN



QUAINT CHESTNUT· CABINET

A. Ernest Chancellor del.

WAYSIDE NOTES.

The Society of Architects has wisely taken a forward step which cannot fail to increase its prestige and usefulness. The report of the council on the proposed examination scheme was submitted to the general meeting of members on Tuesday night, and adopted. It now remains for the council to formulate its scheme of examinations, and at once to open its register of students. It would have been better, in my opinion, if the Society had decided at once to make its examinations absolute, and not to admit candidates of 35 years of age, actually in practice, for some time to come, without examination. That state of things, however, it may be confidently predicted, will not last very long, because, very properly, members who have won their membership by examination will take care to blackball all candidates seeking to crawl through the back-door the council leaves open. Men actually in practice—and there are many—who can hardly be called upon to pass examinations, have two years given them in which to join the Society of Architects without. If they do not do this at once, they will have no reason to grumble because they are shut out presently.

Mr. Edgar Farman's amendments, which were adopted by the council, are not likely to have any lasting effect. If it were otherwise, they would be disastrous. It is quite right and proper that the Society of Architects should recognise other examinations by competent bodies as sufficient tests for its own membership, while its own examination scheme is in a transition state; but it would be absurd to continue to do so after the Society's own examination is in full swing. I trust the new President and council will recognise these facts, and go to work manfully at once to prepare the scheme of examination, which is to be submitted and published before June 30, 1895. And meanwhile I urge on every "unattached" architect at once to apply to the secretary for a nomination paper and join the Society of Architects. Don't wait till just before the two years of grace is up, and then rush in like a flock of sheep afraid the gate is going to be shut. Join now, and give the council the benefit of your advice and experience in the consolidation of a scheme that will do much to raise the status of the profession, and to benefit the public.

It is pleasant to recognise that the good fellowship and resolution to pull together which have always characterised the deliberations of the Society of Architects have been well maintained all through the debates over this question of examinations, which, it is an open secret, has been a crucial one, and has naturally been productive of much division of opinion, both among members and on the council. Men like Mr. W. H. Seth-Smith and Mr. Alfred Stoner, who to the last opposed the idea, urged their objections with moderation and gentlemanly consideration, only, I am persuaded, to be equalled by the loyalty and heartiness with which, now the matter is decided, they will, as heretofore, work together for the good of the Society. It has ever been thus throughout the eleven years of the Society's existence; indeed, I know no society wherein legitimate difference of opinion has led to fewer discords. Much of this credit, it is only fair to say, is due to the tact with which the presidential chair has invariably been filled, and in no instance more so than to Mr. George Highton, who retired on Tuesday amid a chorus of congratulations on the effective and dignified discharge of his more than usually heavy responsibilities during the past year, which was as thoroughly deserved as it was hearty and unanimous.

Mr. George Highton will always be able to boast that he filled the chair during a year of unique character in the history of the Society. The past twelvemonths has been the first year of the corporate existence of the Society. And it redounds to its credit, and that of the past year's President and council, that they were not satisfied to allow the Society to sit down in the enjoyment of its new corporate advantages, but urged its members, at the earliest possible moment, to take advantage of the new facilities afforded to them to press further forward along the road of progress and consolidation, and to initiate the examination scheme, which I sincerely trust will be in full working order two years from now, and will attract year by year thereafter the cream of the profession.

A Parliamentary return, issued on Monday, contains several pages of public elementary schools in counties which have been "warned" or deprived of their grants, because of defects in buildings, &c. It is a most astonishing "black list," and shows nearly all down the alphabet how the conservers of the rates have resisted expenditure. In Lincolnshire there is a list of eight defaulters, Norfolk offers five, Suffolk, beginning with Bawdsey, is scheduled for five, erudite Oxfordshire for six, and Cambridge two; Essex for four, and Yorkshire for no fewer than fourteen. The cleanest sheets are offered by Bucks (1), Dorset (1), Monmouth (1), Rutland (1), and Wilts (1). Wales is a heavy defaulter for its size; but that colossal London is well looked after is shown by the black list including but two schools. I am myself, I confess, not quite so sure of the perfection of some of the London Board schools as the framers of this return seem to be.

I often see some curious attempts at architectural description in provincial newspapers. For example: Glancing over Saturday's *Shrewsbury Chronicle*, I notice an account of the rededication of the massive Perpendicular tower of St. Giles's Church, Newcastle-under-Lyme, after restoration. The intelligent journalist's comments are naïve:—"The parish church tower is probably the finest in the district, and of its *antiquity* there is no question, the bells having been first placed there in 1732!" How vastly remote then must be the days of good Queen Anne!

The Art Gallery Committee of the City of Manchester has arranged to hold an exhibition of contemporary arts and crafts, in the rooms of the City Art Gallery, in April next. It is sought to bring together a display of fine examples of industrial art, with a view to educate the public taste, and to stimulate the desire for all that is excellent in design and workmanship. Especially is it desired to identify the actual designers and skilled workers in respect of the exhibits offered. The committee hope to receive examples of decorative painting; sculpture and modelled work; wood, stone, and ivory carving; mosaic work, particularly in association with architectural and cabinet work; metal work, cast and wrought, and chasing in iron, brass, copper, gold, and silver; pottery and table glass; stained and painted glass; textiles, woven and printed; embroidery, tapestry, and laces; jewelry and other articles of personal ornament and use; clocks and watches; engraving and printing; book decoration and binding; printers' ornaments; illuminated and decorated MSS.; ornamental leather work; wall-papers, and other forms of surface decoration; photography; designs and cartoons for decoration of all kinds; architectural, mechanical, and ship models. The committee invite, and will I trust get, the co-operation of employers, trade guilds and societies, and of others interested in the promotion of artistic industries, with the object of insuring an exhibition of high merit. The schools of art and the various societies for the encouragement of art handicraft, which have of late been established in various parts of the country, will have in this exhibition an excellent opportunity of displaying the progress made. No charge will be made for space, and exhibitors will be permitted to put a price upon their works. Those wishing to exhibit should at once apply for a prospectus to the Curator of the City Art Gallery, Manchester.

At the Quebec Association of Architects, an instructive paper was lately read on "Foundations in Deep and Unreliable Soils," by W. R. Hutton, M.Am.Soc.C.E., in which the author alluded to many serious and expensive failures of buildings in the province of Quebec, as at Joliette, St. Bazile, St. Casimir and other places. The new Joliette church has a fine tower, which has sunk 11in., and has torn itself away from the adjoining masonry and façade to such an extent as to cause serious mischief; some parts of the church walls being thus overweighted have also sunk and given out. The authorities, to prevent this from going further, cut away the façade from the tower, so as to allow future settlement without dragging other parts. At St. Casimir, St. Nicolet, and other places, the churches have been seriously damaged from the same cause—viz., the failure to proportion the breadth of footings, so that every foot thereof should bear an equal load. At Joliette a bed of sandy clay about 8ft. deep, overlaid a bed of mud or clay of semi-liquid consistency some 20 or 30ft. deep; and the builders of the church excavated for the tower and façade to a lower depth than the aisle walls, by which the upper stratum of the solid soil of sand has been reduced in thickness, and a great tendency of the heavier tower walls to sink into the soft substratum is the result. Several Canadian structures have been damaged by the want of care in seeing that the bed of incompressible soil is of an equal thickness over the semi-liquid mud; wherever deeper foundations have been laid the effect has been disastrous.

OBITUARY.

Mr. J. B. McCallum, borough engineer of Blackburn, died on Tuesday evening. Three weeks ago he fell in the street, breaking his leg and dislocating his ankle. Blood poisoning and erysipelas set in, and a relapse proved fatal. Mr. McCallum, who was forty-four years of age, served his articles at Plymouth, and was afterwards appointed assistant engineer under the Liverpool Corporation. He was for six years borough surveyor of Stafford, where an important scheme of sewerage and other public works were carried out under his supervision. Twelve years ago Mr. McCallum was appointed, out of seventy-three applicants, for the position of borough engineer at Blackburn.

Mr. Eliezer Levi Montefiore, Director of the National Art Gallery of New South Wales, who died suddenly on Monday week, at Sydney, in his 75th year, had done much to foster a love of art at the Antipodes. The Sydney collection is housed in a building erected for the purpose in the Domain, or public park, and comprises many excellent works. Among these may be particularised "Les Enervés de Jumièges," by E. V. Luminais; De Neuville's "Rorke's Drift," for which the Colony paid £2,000; Luke Fildes's "Widower," for which the same price was paid. "The Gordon Riots," and "The Spanish Armada," by Seymour Lucas; "Wedded," by Sir F. Leighton, which cost £1,500; Topham's "Savonarola," Colin Hunter's "Salmon Fishers on Loch Fyne," Vicat Cole's "Arundel," Sir J. E. Millais's "Captive," Mr. Jacomb-Hood's "Triumph of Spring," one of the few nude subjects in Australia, which was purchased for £750; a Cattle piece by T. Sidney Cooper, R.A.; Sir O. W. Brierly's water-colour, "Venice: Weather Clearing up After Rain"; besides examples of Madox Brown, Keeley Halswelle, H. J. Mosler, W. L. Wyllie, A.R.A., A. C. Gow, R.A., David Law, Alfred Elmore, R.A., J. Sant, R.A., Louis Haghe, besides many others. Mr. Montefiore was a clever draughtsman and executed all the drawings in the illustrated catalogue to the gallery.

CHIPS.

Sanction having been obtained by the Portsmouth Town Council to the borrowing of £800 for replacing the present brick storm sewer from Burgoyne-road to Southsea Beach with a 36in. cast-iron pipe, the corporation authorised the borough engineer on Tuesday to carry out the alteration without employing a contractor.

New national infants' schools, seating 340 children, are about to be built in Bower-lane, Maidstone, from plans by Mr. Hubert Bensted of that town.

It has been decided by the parishioners of Holy Trinity Church, Blackpool, to proceed with the erection of a tower as an addition to the rebuilding of the edifice, which is now being carried out at an estimated cost of over £5,000. The additional cost of the tower is put down at £800.

The new portions of the Technical Institute at Coventry were formally opened on Tuesday week. The enlargement has cost about £5,000, and comprises a science lecture theatre, two large classrooms, carpenters' and mechanical engineering shops, gymnasium, &c. The plans were prepared by Messrs. G. and I. Steane, architects, of Coventry.

A selection from the objects recently discovered by Professor Flinders Petrie at Koptos has just arrived at the Manchester Museum, and was inaugurated on Monday evening. It includes two very fine granite carvings, one a colossal headdress of Rameses II., the other a baboon in black granite with a pectoral ornament representing a high priest of Amen named Fuamen adoring Tabuti or Thoth. Many carved objects in stone have been lodged in one of the wall cases in the historic-room.

Building Intelligence.

Camberwell.—The new Métropole Theatre at the junction of Coldharbour-lane and Denmark-hill was opened on Monday night. It has been erected from designs by Messrs. Crewe and Sprague, of Arundel-street, Strand. The first to be constructed in accordance with the stringent regulations now enforced by the London County Council, the theatre has a double frontage to two main thoroughfares. Seating is provided for 2,000 persons, of whom the pit and gallery will accommodate nearly 1,600. The interior decoration is Indian in character. The ceiling is a painted dome, with which the panels of the proscenium harmonise in tone. Fireproof material has been employed throughout the structure. The curtain consists of a steel frame with a double facing of asbestos, and the dressing-rooms are inclosed in a block separated from the theatre by brick walls and iron doors.

Heavitree.—The new chancel and transepts added to the parish church were opened on Sunday. Of the two transepts, one is used as an organ-chamber, and the other as a morning chapel. There are crypt vestries the whole size of the addition, which although more elaborate in design, it is not out of harmony with the nave, which was built about 70 years ago, while it is in complete accord with the new tower. It is of early 15th-century character. The interior arches are of stone-work, and the roofs are of solid oak. That of the chancel is waggon roof with moulded ribs, and on the south side of the chancel is a sedilia. The sanctuary steps are of Devonshire marble. The dressed stonework is from the Box ground quarries, Bath, and the stone for the walling is from Churston and Berry Head quarries. The architect is Mr. E. H. Harbottle, F.R.I.B.A., of Exeter, who also designed the modern tower; the general contractor is Mr. Lapthorn, of Plymouth; Mr. Dart, Crediton, undertook the oakwork, while the carving has been carried out by Mr. Rogers, of Exeter. The total cost has been between £4,000 and £5,000. The altar table, with super-altar, designed by Mr. Harbottle, are of English oak, and were carried out by Messrs. Harry Hems and Sons, Exeter.

Landport.—The new church of St. Agatha, in Conway-street, Landport, has already been commenced, and considerable progress has been made by Messrs. Light and Son, the builders, under the superintendence of the architect, Mr. J. Henry Ball, A.R.I.B.A., of King's-road, Southsea. The portion of the church at present in course of erection includes the nave, south aisle, and side chapel. The foundation-stone was laid on Saturday. The church will be in the Romanesque style, on the lines of the early churches of Lombardy. The nave and side aisle will be finished with semicircular domed apses. The columns of the main arcade are of polished granite, with Portland stone capitals and bases. The side chapel will form a complete church, accommodating about 250 persons. The total length of the edifice will be 124ft., with a width of 69ft. 6in., the nave having a span of 40ft. It will be seated for 800 persons.

Leith.—The memorial stones of the new infectious diseases hospital in course of erection for the Leith Corporation at East Pilton, Ferry-road, were unveiled on Monday. The hospital has been erected on the cottage principle, from plans by the late Mr. James Simpson, from which, with certain modifications, the hospital is being built, under the superintendence of Mr. George Simpson, who succeeded his father as burgh architect. An area of about six acres forms the site, but there are nearly other four acres adjoining, available for future extension. The buildings, which are of brick, include four ward blocks, isolation ward, administrative block, discharging block, laundry and disinfecting block, mortuary, reception rooms, and gate lodge. Each of the four ward blocks is to be divided into two, and in each division there will be ten beds, with two additional beds for private patients. In the isolation ward there will be ten beds, so that altogether there will be ninety-eight beds. The cost will be about £35,000. The contractors are: Mason, Mr. James Kinnear; joiners, Messrs. Drysdale and Gilmour; plumber, Mr. P. Knox; slaters, Messrs. M'Lean and Reid; plasterer, Mr. J. S. Sutherland.——A model lodging-house, erected by the corporation in Parliament-street, was also opened on Monday. The building is 30ft. by 45ft., and has a height of four stories above the basement. On the basement floor there is a cooking and dining-hall 38ft. by 34ft., furnace-room, clothes-drying apparatus, men's washing-house, and house washing-house, with two open airing courts at the back. A reading-room 39ft. by 35ft. is situated on the ground floor. Lavatories, bath-rooms, and superintendent's house and office are also provided. The three floors above consist of dormitories. There are 6 dormitories, 28 inclosed beds being fitted up in each, making in all 168 beds. All the pipes are brought to the face of the walls. The lodging-house is supplied with fire-hydrants and low-pressure heating apparatus. As in the case of the new hospital, the plans were designed by the late Mr. James Simpson, and were executed by his son, Mr. Geo. Simpson, burgh architect. The cost of the building and furnishings was between £5,000 and £6,000.

Middlesbrough.—St. George's Congregational Church was opened on Tuesday week. The church and schools cover an area of 1,280 square yards, the style being a free treatment of Early Gothic. The tower is 16ft. square, and rises to upwards of 100ft. The church itself, which is cruciform in shape, consists of nave, aisles, double-gabled transepts, and choir. The aisles are low and the windows small, lighting being chiefly by lofty clerestory windows and large openings in the gables. The roofs are barrel-shaped, finished inside with unvarnished pitch-pine. The choir is placed to the west, the end being apsidal, and is divided from the nave by a moulded arch. The floor of the choir is raised above that of the nave, stepped for the stalls, the pulpit being placed at one side of the choir-arch, the reading-desk on the other, with the communion-table between the two. The aisle floors are laid on wood blocks set in concrete. The stalls, and the nave, transepts, and choir are of pitch-pine. The Communion railing, Communion table, and pulpit are of oak and pitch-pine. The ground floor accommodates some 586 adults, and a small gallery provides seats for other 70. The windows are filled with tinted cathedral glass in lead frames. An organ chamber is provided on the north side of the choir. The Sunday-school buildings adjoin, and are three stories in height. There are six classrooms and recreation-rooms on the ground floor. The upper floor consists of a schoolroom 56ft. by 30ft., exclusive of a platform recess and further rooms, and accommodates 500 persons. The buildings are heated with hot-water pipes. Mr. J. Mitchell Bottomley, of Middlesbrough, is the architect, and the contractors are Mr. John Johnson, builder, Middlesbrough, and Mr. R. T. Snaith, joiner, of Darlington. The cost, exclusive of site, has been £5,600.

CHIPS.

Mr. Henry Harben has promised to give £4,000 for building a convalescent home near the seaside for working men of Hampstead and Kentish Town.

A Wesleyan school chapel was opened in Chard-street, Chard, on Friday. Mr. R Curwen, of London, is the architect; and Messrs. Lye and Sons, of Crewkerne, are the builders. The cost has been £1,000.

A crematorium is in course of erection in Priory-road, Liverpool, and is now being roofed in. Mr. James Rhind is the architect, and Mr. W. H. Forde, of Birkenhead, is the contractor. The cost will be about £3,000.

Colonel Langton Coke, C.E., held an inquiry on Monday at Oldbury on behalf of the Local Government Board, concerning an application made by the local board for sanction to borrow £1,000 for sewerage purposes. Mr. H. Richardson, surveyor to the local board, explained the plans.

At Kertch, in the Crimea, some workmen lately dug up a gigantic lion's head of Greek marble, 7ft. high, and in excellent preservation. It is to be sent to St. Petersburg, and exhibited in the Hermitage. It is supposed to belong to the 7th or 8th century before Christ.

A new organ has been opened at the parish church, Knaresborough. The specification was drawn up by Mr. Walker Joy, of Harrogate, and the organ was built by Mr. J. J. Binns, of Bramley, near Leeds. The instrument consists of three complete manuals and a separate pedal organ, and has cost £1,000.

A lych-gate, erected at the entrance to Berkswich churchyard, as a memorial to the late Judge Spooner, was dedicated last week by the Suffragan Bishop of Shrewsbury. It is of English oak with red tiled roof. Messrs. Chatfield and Wrench, of Stafford, were the contractors.

Engineering Notes.

Ayr.—The town council of Ayr recently voted a sum of money for securing the foundation of the centre pier of the historic Auld Brig o' Ayr, built in 1252, celebrated in song by Burns. The work is now complete. The burgh engineer, with the advice of Sir William Arrol, having removed a mass of concrete which was formed round the pier in 1883, built a brick wall under the foundations entirely around the pier, and some 4ft. lower than the oak frame on which the old foundations rest. This, it is believed, will securely inclose the clay under the pier, and, by widening the channel, lessen the force of the current during spates. Under the oak frame referred to can be seen the ends of small logs laid at distances of from 4ft. to 5ft. apart, crossing from side to side of the pier. The timber still looks sound after its long submersion in the river. The old bridge is now used only for foot traffic.

Edinburgh.—The town council have accepted the offer of Sir William Arrol and Company, the amount of which is £81,894, for the reconstruction of the North Bridge. The sub-contract for the mason work was given to Messrs. William Beattie and Sons, builders, Edinburgh. The design shows a bridge of three spans, each span being 175ft. It will have a uniform width of 75ft. between the parapets, which is practically the same width as the present North Bridge-street at its most northerly part. Except the piers, which will be of masonry, the structure will be entirely of steel, with ornamental cast-iron face work. The plans approved of provide for a uniform gradient from the post office to the High-street, which reduces the present gradient of 1 in 18 to 1 in 27. The scheme necessitates the taking down of the blocks directly at the south end of the present bridge—on the east and on the west side of the street; and another improvement effected is the additional width of the new bridge as compared with the existing structure—75ft. as compared with 54ft. between the parapets.

St. Louis, Missouri.—The Union Passenger station at St. Louis, claimed to be the largest and most costly structure of the kind yet built in any country, was officially opened last month. The cost has been £1,300,000 sterling. The station covers an area of 496,000sq.ft., and has been built from designs by Mr. Link. The main building or "head house," containing almost everything belonging to the station except the baggage-room, extends along Market-street from Eighteenth-street to Twentieth-street, and is thus two squares wide. The style is Gothic Renaissance, with the adoption of the round arch in place of the pointed, and Bedford stone is used as a facing material. The structure is irregular, the portion at Eighteenth and Market streets being separated from the middle one by one of smaller dimensions, and the western portion being set back beyond the middle one. The tower is 267ft. high, and is surmounted by a flat cupola. The main entrance is at the middle of the Market-street front. The roof of the train-shed extends the entire width of the station from Eighteenth-street to Twentieth-street. There are six points of support, thus dividing the shed into five parts. The shed has a liberal supply of skylights in the roof and at the ends, also on the Eighteenth-street side. Contrary to the usual custom, the shed does not rest on walls at its outer edges, but is left entirely open. In order to obviate the smoke nuisance, the Terminal Company has so planned the trackage arrangements that no locomotives are to enter the building.

Mr. H. T. Bulstrode, M.D., Inspector to the Local Government Board, held an inquiry at York, on Friday, into the circumstances under which the corporation apply for power to borrow £3,500 to purchase land for the extension of the Infectious Diseases Hospital at Yearsley Bridge, on the Huntington-road. Evidence in support of the application was given by Mr. A. Creer, the city engineer.

At a recent meeting of the committee of the Portal Memorial Fund a design for the proposed monument in Winchester Cathedral by Mr. Waldo Story was submitted and adopted. The design, which is Early Florentine in conception, will be executed in decorative marbles, and, should a sufficient sum be at the disposal of the committee, with mosaics in the background of the central group in high relief.

Correspondence.

"A DANGER TO THE PUBLIC HEALTH."

To the Editor of the BUILDING NEWS.

SIR,—The public are deeply indebted to you, and also to the editor of the *Local Government Journal*, for the exposure which has been made of so-called systems of mechanical ventilation by downward currents, and the manner in which the public health is being exploited in the name of sanitary science. Though those who advocate such systems may doubtless have substantial reasons for so doing, that in no way justifies the sacrifice of the public health, or purse, to private interests or prejudices.

Having lived in America, and taking an interest in the subject, I am fully cognisant of how the mechanical downward system of ventilation by impulsion was "boomed" there, just as is being done in this country at the present time on a smaller scale.

These "combines" did not, however, save the mechanical downward system from being ultimately discarded and condemned (as I observe it has been similarly condemned at the recent congress of the Sanitary Institute) by all but those financially interested in it and others immediately responsible for the expenditure of the large sums of money incidental to its application, for, independent of its being proved on the most unimpeachable testimony to be extremely dangerous to health, the downward system, as shown by the irrefutable data specially compiled by the United States Government (which also strongly condemned this system on every other point), is the most costly form of ventilation in existence, and yielding no equivalent value, but the reverse, for the money expended. It is easy to understand that, in this commercial and not over-scrupulous age, a form of ventilation, in the application of which much money is involved, would be operated by promoters in preference to any "natural" system, out of which, owing to its simplicity, comparatively nothing could be made.

It is a noticeable feature in connection with the commercial development of these mechanical systems that each inventor (?) or syndicate states, in explanation of the failures of similar systems, that the appliances used were defective and unscientifically applied, but that with *their* system "all will be well," generally backing up these statements with a display of tables of analysis of the air and volumes of air-supply truly marvellous, but, nevertheless, proved in their turn to be, as with others, something less than valueless. The ignorance of prospective clients of the subject is also relied upon as a chief factor in the successful negotiation of the business. The very timely exposure of this "system" and the mode of "working" it (which is nothing short of a public scandal, seeing that the matter is one of life and death) will doubtless have the effect of opening the eyes of at least the intelligent and thinking portion of the English people before they have had to pay so severely through the nose for their experience as our American cousins had to do. It is satisfactory to note from the newspaper reports that this awakening is seemingly already taking place in certain towns—Leeds in particular—where, amongst other matters, it is proposed to experimentally try mechanical ventilation, the Press taking the question up warmly in opposition, and meetings of the ratepayers held to protest against such unwarrantable waste of the public monies.—I am, &c., PUBLIC HEALTH.

Broadstairs, Oct. 29.

At the last meeting of the London School Board a report was received on the completion of the head offices of the Board. The work of alteration and enlargement has been carried out from plans by Col. R. W. Edis, F.S.A., in two contracts, each taken by Messrs. Higgs and Hill, of Crown Works, South Lambeth-road, at a total cost of £71,868 14s. 2d. It was agreed to pay Col. Edis's charges, amounting to £3,570 16s. 3d.

The Devon and Exeter Hospital is about to be reconstructed and enlarged, from plans by Mr. Charles Cole, of Exeter. The outlay will be about £12,000. Two new wings will be built for patients, the whole staff will be provided with sleeping apartments near the centre of the building, the kitchens will be removed from the basement to the topmost story, a new operating theatre provided, and the whole of the drainage reconstructed.

Intercommunication.

QUESTIONS.

[11237.]—**Granite Stone and Marble.** — Does any reader happen to know a work giving the locality of granite, stone, and marble quarries throughout the world? If so, I shall feel obliged with the name of publisher.—J. T. P.

[11238.]—**Glazier's Charges.**—Recently I gave an order for a small portable greenhouse to a builder of such things a few miles south of London. His price, £10 10s., I agreed to. In due time the greater portion of the woodwork arrived, but there was no staging, or several small things, such as capping for ridge, facia boards for ends, and not a particle of moulding. When the glass arrived, scarcely a pane would fit, and ¾in. to 1in. had to be cut off, as scarcely a partition in roof or ends were of the same width. All the glass sent was of one width, 14in.; of course this means a loss of time and expense in cutting. May I ask what the custom of the trade is in such cases? Also with regard to finding the staging and other things I have named? Some portion of the staging, I am informed, should be found by the builder of the house; but he says "none was estimated for, and none will be sent."—J. C. HOBBS.

[11239.]—**Open-Timbered Roofs.**—In open-timbered hammer-beam roofs is it necessary to sink into wall chases, the upright wall-posts, reaching from hammer-beam at eaves wall-plate line to stone corbels below? The reason I ask is that chases in walls seem to me a source of weakness to the structure.—IMPROVER.

[11240.]—**Bolting Stone Bases to Iron Pillar-Plates.**—What is the advantage of bolting down the iron plates of pillars to stone pier caps or bases? In my opinion, the process only means additional labour and expense, and weakens the stone bases under iron plates.—SCEPTICAL.

[11241.]—**Ventilating Strong-Room.**—Can any experienced reader tell me the best way to ventilate a strong-room? It is in a sunk flat, and at present has four small flues near the ceiling which go up to the roof of the building. There is a close smell in the place.—N.

REPLIES.

[11227.]—**Sound-proof Rooms.**—I would suggest either, or all, of three remedies. (1) Have only fixed furniture in maid's room, completely cover floor with a cheap thick carpet, and let the maid wear light slippers. (2) Otherwise, exchange rooms with the maid, if *she* does not mind. (3) Or lift the flooring boards and silicate cotton pugging. Repack the latter (not very tightly), and relay the flooring with strips of felt between joists and boards. In addition, censure the architect for not arranging a double set of joists to carry ceiling and floor separately, when he had been specially and definitely requested to insure a sound-proof room.—A SYMPATHISER.

[11228.]—**Quantities.**—The charge of 3 per cent. for preparing quantities is excessive. 2½ per cent. for small works and 1½ for large is a usual charge in London, a large proportion of the work being done for even less than this.—F. FIELD, 364, Fulham-road, S.W.

[11229.]—**Priming Internal Joiner's Work.**—I am obliged by "H. L.'s" reply to my query. However, it scarcely meets the case, as, no doubt, most people are aware, as I was, before asking the question, that the work can be done; but can he, or any of your experienced readers, state as to the advisability of priming joiner's work before taking same to building, and its being effectual in preventing the swelling of the woodwork as well as the flying of joints, arising from the absorption of moisture from plastering walls and ceilings, as ordinary joiner's work is principally done before, or while, plastering is proceeding. These points "H. L." does not touch upon. I noticed, while at Southport and neighbourhood, that a great quantity of the woodwork is so primed, the property in many instances being apparently built to sell. No doubt the priming in this case, in addition to preventing the taking in of moisture, does help to take in purchasers, who judge by outside show.—LEARNER.

[11230.]—**Steel Bearing Middle Gutters to Roofs.**—"H. L." says "this question is not very clear." I do not well see how it could be put more so, as I simply ask if steel middle-bearing gutters are an improvement over cast or wrought-iron ones, and if more durable than either of the metals named. "H. L." states, he "should say that steel would last longer in any position." According to this, he is not certain. Will some other readers give their opinion, and, if possible, their experience?—SCEPTIC.

[11232.]—**Domestic Hot-Water Supply.**—I beg to thank Mr. Angel for his detailed reply, and I hope he will not take offence at my telling him he is mistaken in stating that although, theoretically speaking, the flow-pipe to a hot-water cylinder should be greater in diameter than the return, yet in practice this is never carried out, as a plumber has carried out this very principle in some property I am interested in, and the effect is good, the flow being 1in. diameter, and the return ¾in.—TEACHABLE.

[11235.]—**Ash Vents.**—I quite agree with Mr. R. J. Angel that the old-fashioned ash vents (leading from underside of fire-grate up back of same to smoke-flue gathering) are not necessary or desirable, and in the most recent stoves are not generally provided for. Yet there are some clients and fixture setters who are still partial to same, as they say the ashes, &c., dropping out of grate are otherwise liable to fly about apartments in the form of dust, and this is to be avoided.—DOUBTFUL.

[11236.]—**Colouring Deed Plans.**—It is a long while since I was "in the drawing office"; but if my memory serves me rightly, I think, when our ink and colour would not run, owing to the paper becoming a little greasy, we used to mix a very small modicum of ox-gall with them, and that generally did the business. I much regret that, owing to the reason I have given, I cannot speak positively on the subject, so "E. H." must accept the will for the deed. He might, perhaps, try the recipe. Indiarubber, I think, only makes matters worse; but an ink eraser, very cautiously manipulated, is sometimes a useful assistance.—P. S. STRETONNE.

Legal.

LIABILITIES OF LOCAL BOARDS.

A PRINCIPLE of great practical and far-reaching importance was laid down and acted upon in the recent case of "Saunders v. Holborn Board of Works" (*Times*, 27th October), raising the whole question of the liability of Metropolitan local authorities for accidents occurring to individuals through their breach of duty in not removing snow and ice from the streets. The plaintiff, last January, slipped upon some frozen snow in a street within the area of the Board, and he now brought his action for damages based upon their breach of duty in neglecting to clear away the snow and ice. The County Court judge held there was no such right of action; and he appealed to the High Court. There the whole matter was gone into thoroughly, with the result that the decision of the County Court judge was confirmed. Briefly put, the point taken by the board was that, though they might be fined under the Act for breach of their public duty as to cleansing the street, there was no right of action against them for private injury, either existing in common law or given by, or resulting from, the statute.

Prior to 1891, and under a Police Act of 1839, the owners and occupiers of houses were compelled to sweep and clear away the snow and ice from their own pavements. By the Public Health Act, 1891, this duty was shifted to the various local boards as sanitary authorities, and for breach of this duty a penalty of £20 was thereby imposed. The defendants' contention that this was the only remedy for breach of duty was supported by the fact that before the statute, and at common law, there would have been no way of bringing an indictment against them for breach of duty nor an action for damages by a private individual. In fact, at common law there was no such duty as to the removal of snow and ice from the public thoroughfares; nor would it have been regarded as a nuisance, legally speaking. The whole thing, therefore, turned upon the statute, and as this gave no right of action to a private individual meeting with an accident by breach of their duty, the Court held that no such right existed. It was, however, admitted that in former cases the distinction between a penalty for a breach of a public duty and a claim to damages for a private wrong had been admitted. But later decisions showed that as the statute imposing such a duty indicated no intention to give a private right of action for damages, as well as a penalty for the public wrong by breach of duty, none could be presumed. The plaintiff's case, therefore, failed, and it follows that in all these matters the only thing to be done is to enforce the penalty given by the Act whenever the local authorities neglect to do their duty.

FRED. WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

H. B. J.—EASEMENT.—PRESCRIPTION.—Presuming you mean rights of way and the like, s. 2 of the Prescription Act, 1832 (2 and 3 Wm. IV. c. 76) deals with the two periods of 20 and 40 years. The former gives a practical and sufficient right of easement; the latter makes it wholly absolute and indefeasible.

LAWS. — LEASE. — MINE. — RIGHT OF SUPPORT.—Presuming the lease contains the usual covenant for quiet enjoyment, the lessor would seem to be liable in damages for breach by reason of the subsidence mentioned, while the right of the landowner and the colliery company to whom he has sold the minerals would have to be settled between themselves.

DOUBTFUL.—ARBITRATION.—ACCOUNT.—Practically, the arbitrator could increase some charges if he thought right, and reduce others, for his award would only give the total owing to the creditor. But the claim in dispute could not be increased as a whole.

A. T. C. W.—FOOTPATH.—PUBLIC WAY.—This was not a question of an easement or a private right of way; but of the public user of a certain path, and would not be decided by the Prescription Act, as you suggest.

W. W.—DRAIN.—SEWER.—The cases you mention do not decide any general rule as to the difference between a drain and a sewer which would govern your position. When the question arises, you can dispute it at the Court on the grounds you state.

Col. Ducat will hold a Local Government Board inquiry at Stafford to-day (Friday), as to the application of the corporation to borrow £45,000 for sewerage works.

LEGAL INTELLIGENCE.

A Builder's Responsibility.—A singular dispute was heard before Judge French and a jury at the Bow County-court on Friday, by which James Goodall, a carman, of Rotherhithe, sued Messrs. Perry and Co., builders, of the Tredegar Building Works, Old Ford, Bow, to recover £50 for injuries sustained through the negligence of defendants' servants. Plaintiff's case was that on May 1st, while leading a horse and timber cart along the approach to the Tower Bridge, he passed defendants' horse, which suddenly struck him, knocked him down, and the wheel of his own cart went over one foot, crushing the bones. He remained in hospital five weeks, and could do no work for fifteen weeks. The defence was that the horse was quiet. The jury returned a verdict for plaintiff for £20, and His Honour certified for costs on the higher scale.

The Fatal Collapse of Scaffolding at Plymouth.—At the adjourned inquiry held into the circumstances touching the death of Mrs. Rowan, who died from the effects of injuries sustained by the fall of a platform which had been erected at King-street chapel, the coroner, in summing up the evidence, expressed the opinion that Mr. May, the contractor, was in no way responsible for the deplorable accident. The arrangement was made with Mr. Nancollas, his foreman, and Mr. May was unaware permission had been given to use the structure which fell until after the accident. He asked the jury to find whether there was culpable negligence, and, if so, upon whom it rested. In case the jury found either the trustees connected with the transaction or Mr. May's foreman guilty of culpable negligence, he had no option but to advise the jury to return a verdict of manslaughter. The jury returned a verdict of "Accidental death," and exonerated all parties from blame.

A Neston Arbitration Case.—Mr. John Cullimore, Under Sheriff of Cheshire, sat with a special jury at Chester Castle on Monday to assess the value of the land taken from Mrs. Jane Scott, of Neston, by the Wirral Railways Committee in the construction of their new line. The claim was for £2,060, and the Company offered £970. Two acres of land were taken by the company, and 25 acres were alleged to be affected. It was contended on behalf of the claimant that she was entitled to claim not only for the clay contained in a portion of the ground but for its working value in the brickworks carried on there by claimant's husband. For the claimants, Mr. H. S. Whatley, F.S.I., valued the land taken and compensation at £2,060, Mr. John Cross, F.S.I., Manchester, at £1,954, and Mr. Edmund Kirby, F.R.I.B.A., Liverpool, at £2,027. For the respondent company, Mr. T. Taylor Wainwright, surveyor, Liverpool, assessed the total value at £759, Mr. Henry Hartley, surveyor, Liverpool, at £777, and Mr. Joseph Brattan, surveyor, Birkenhead, at £788. The jury returned a verdict for £1,200.

Appointment of Clerk of Works.—S. Hooper v. Bow School Board.—In this case, heard last week in a Devonshire county court, the plaintiff was an architect and surveyor at Hatherleigh. In April the School Board for Bow wrote to him and asked him to visit Bow and prepare plans for carrying out a new class-room. It was agreed that Mr. Hooper's services should be paid for on the lines of previous professional services which he had done for the Board in 1880-81. When the work was completed Mr. Hooper sent in his account, which amounted to £25 for charges, &c. An offer was made by the board to pay, without prejudice, his account less £10. Mr. Hooper declined to discuss the matter. Defendants paid into court the sum of £18 4s. The board's complaint was that they understood that a clerk of the works was required, but as they had not been applied to to make an appointment, they were not aware that one had been appointed. The point at issue was whether Mr. Hooper was entitled to charge £6 16s. 6d. in respect of that item. The contract was for £250. Plaintiff stated that he appointed his own brother as clerk of works. Witness did not mention to the board that he was going to appoint a clerk of the works. Cross-examined: It was necessary in a small work of this sort to appoint a clerk of works. Mr. Ellis, the contractor who carried out the work, said no complaints were made. For the defence, it was contended that the board claimed the right to nominate a clerk of works. James Crocker, architect, of Exeter, said it was the custom to consult a client before appointing a clerk of the works. He had never come across a case where the architect appointed the clerk on his own responsibility. A counter-claim was raised for damages and defects in the building. Mr. Crocker was called, and deposed to bad workmanship. William Layman, a builder, gave evidence. His Honour, in summing up, thought it a great pity that the case should be contested for such a small amount. No doubt the board contemplated the possibility of employing a clerk of works. Verdict was accordingly entered for the plaintiff with costs. Then it seemed curious that the board's counter-claim should amount to £6 16s., precisely the same figure as Mr. Hooper's claim. A counter-claim of that kind ought not to be encouraged. There would be a verdict for plaintiff for the counter-claim, with costs.

CHIPS.

A brass tablet mounted on a panel of dark red Italian marble, was unveiled on Saturday in Newton parish church, N.B., as a memorial of Sir J. Don Wauchope. Messrs. Hamilton and Inches, of Edinburgh, designed and executed the work.

Col. Ducat, R.E., Local Government Board Inspector, held an inquiry in the Board-room at Smethwick, on Tuesday, with reference to an application made by the Local Board for sanction to borrow £5,700, for the purpose of laying additional sewers, and £2,000 for house connections. Mr. A. Harris, the engineer, explained the proposals.

A stained glass window has been placed in the transept of the parish church at Dowlais, in memory of the late Mr. J. R. Jones, and presented by Mr. D. R. and Miss Jones. The window has three lights, the centre subject being "The Resurrection." In the left-hand light our Lord is depicted as "the "Light of the World," and on the right hand as the "Good Shepherd." The work has been designed and executed by Messrs. Jones and Willis, of Great Russell-street, London, W.C.

The directors of the Eastern Counties Coal Boring Association have accepted the tender of the Vivian Boring and Exploration Company, of Whitehaven, for carrying out the search for coal, and operations are to be commenced within the next few weeks. The first bore will be made upon the estate of Mr. W. J. Graham, at Stutton, opposite Mistley, on the Suffolk bank of the Stour, and about nine miles from Ipswich.

The congress of the National Free Labour Association at its meeting on Wednesday night in the Foresters' Hall, Clerkenwell, Mr. Chandler, the president, in the chair, unanimously adopted resolutions protesting against the re-introducing of an Employers' Liability Bill containing a clause forbidding "contracting out."

The Prince of Wales, who laid the memorial stone of the nave of St. Saviour, Southwark, on July 24th, 1890, intended to inspect the works in progress at the church to-day (Friday), and in anticipation arrangements have been made for electrically lighting the church. Although his Royal Highness is prevented from carrying out his intention, the church will be open to the public to-day between the hours of 3 and 9 o'clock, in order that persons taking an interest in the restoration may see how far the work has progressed. The amount expended in rebuilding the nave, restoring the north transept, and partially restoring the south transept, from plans and designs by Sir Arthur W. Blomfield, A.R.A., exceeds £31,000.

The association of contractors and builders for the Spen Valley and Heavy Woollen District held its inaugural dinner and meeting at the Crown Hotel, Heckmondwike, on Friday evening, Mr. William Isherwood (Cleckheaton), the president, in the chair. Alderman Moulson (Bradford) spoke at length on the advantage of combination.

The foundations of the new Church of St. Simon and St. Jude, Anfield, Liverpool, are now being dug out. The contractors who have the work in hand are Messrs. Chappell, of Walton. The church will be capable of accommodating about 600 persons, and will be built from designs which have been drawn by Mr. George Bradbury, the diocesan surveyor. The facing materials are brick with stone dressings.

The remodelled and enlarged church schools at Walton, Staffs., were dedicated by the Suffragan Bishop of Shrewsbury on Friday. The buildings have been renovated, and a room added 56ft. by nearly 20ft. Mr. N. Joyce, of Stafford, was the architect, and Mr. J. S. Burton, of Walton, the builder.

The laying-out of the Sparkhill Estate, near Birmingham, which has been in progress for some considerable time, is approaching completion. The architect, Mr. J. Statham Davis, has already prepared plans, &c., for a large number of commodious villa-residences thereon, and the total expenditure will probably exceed £100,000. The contractors are Messrs. Hughes and Son, of Sparkhill.

The foundation stone has been laid of a Wesleyan chapel at Garton, near Driffield, Yorkshire, on a site presented by Sir Tatton Sykes, Bart. The building will be faced with red pressed Lincolnshire bricks with stone dressings, and the interior woodwork will be in pitch pine. There will be accommodation for about 140, and the cost, including an additional room to accommodate about 60, is £600. Contracts for the various trades have been taken by Messrs. Gage, Rudd, and Walker, all of Driffield, and the architect is Mr. Joseph Shepherdson, of Driffield and Bridlington Quay.

STATUES, MEMORIALS, &c.

St. Paul's Cathedral.—The last of the series of statues of the Fathers of the Church, that of St. Ambrose, placed under the dome of St. Paul's, was lifted into its niche, on the north side of the building, on Tuesday evening. These monuments are eight in number—four Greek, St. John Chrysostum, St. Basil the Great, St. Gregory Nazianzen, and St. Athanasius, executed by Mr. W. F. Woodington, of Brixton Hill, under the superintendence of the cathedral architect, Mr. F. C. Penrose; and four Latin, St. Jerome, St. Ambrose, St. Augustine, and St. Gregory the Great, designed by Mr. C. E. Kempe, of Nottingham-place, W., and carried out under his direction by Messrs. Farmer and Brindley, of Westminster Bridge-road. These statues are sculptured out of Bere stone, from Seaton, have a height of 11ft. 1in., and weigh, including the plinth, about seven tons each. The figures are graceful, and their several characters well defined. The conditions under which they were executed presented considerable obstacles to the artists, because the lighting is principally under the figures, and reflected lights neutralise shadows, getting into even deep cuttings, so that the designers' chief attention has been directed to a graceful outline and pose, showing the whole length of figure, and that with precision.

WATER SUPPLY AND SANITARY MATTERS.

East Grinstead.—At the East Grinstead local board offices, on Thursday in last week, Dr. Sweeting, one of the Inspectors of the Local Government Board, conducted an inquiry concerning an application by the local board for permission to borrow £3,500 for the purchase of four acres of land at High Grove, and building thereon an isolation hospital. In explaining the scheme to the inspector, Mr. W. W. Gale, surveyor to the local board, said the land was four acres in extent, and ranged from 400ft. to 450ft. above the sea level. There were five houses within a quarter-mile radius, and 14 houses, all private, within a half-mile radius. It was 1¼ mile from the parish church, which was in the centre of the town. The site was bounded on the north and west by fields, on the south-west by a public road, and on the east by a railway cutting. The hospital generally would consist of five separate blocks—two wards, an administrative block, a wash-house block, and a mortuary block. Mr. Gale stated that his estimate of the cost of carrying out the plans was £2,916. The buildings were all 40ft. from the road, and 40ft. from each other. They faced due south. The cost worked out at £220 per bed.

Uckfield.—At their last meeting formal sanction was received by the Uckfield local board from the Local Government Board to a loan of £2,000 for sewage-disposal works. These works comprise the lifting of the sewage by pumps worked by a gas-engine a height of 80ft., and the disposal of the sewage by broad irrigation on eight acres of land. At present the sewage is screened and partially precipitated, and then discharged into the river. The new works were necessitated by the action of the East Sussex County Council, taken under the Pollution of Streams Acts. Mr. Wm. Willis Gale is the engineer of the scheme.

The Woodhouse Schools and the Normanton Common Schools, for the Normanton School Board, are being warmed and ventilated by means of Shorland's patent Manchester stoves, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Further buildings of the most modern type have just been completed for the accommodation of the troops at Aldershot, from the designs, quantities, estimates, &c., of the R.E. Civil Staff. The new structure is to be called the Malplaquet Barracks.

Lord Ashburnham's famous Rembrandt, "Renier Ansloo and his Mother," the finest example in the country of that artist's work, has been sold to the Berlin Museum. The picture measures 7ft. by 6ft., and contains two whole length seated figures with accessories. It is to be regretted that the opportunity of securing the work for the National Gallery was allowed to slip.

The new school of the Stationers' Company in Ridge-road, Stroud-green, Hornsey, was opened by the Lord Mayor on Tuesday. The building has been erected by Messrs. Parnell and Son, Rugby, at a cost of nearly £14,000, in succession to the old premises occupied since 1858 until last year in Bolt-court, Fleet-street. Mr. Stanham is the architect.

The committee of the Bristol Royal Infirmary having decided upon making extensive alterations and additions to the out-patients' department of the above institution, has intrusted the contract with Mr. William Veals, of Cheltenham-road; Mr. Bruce Gingell, of Corn-street, being the architect; and Mr. Arthur Hutton, clerk of works.

Our Office Table.

THE *R.I.B.A. Kalendar* for 1894-5, published this week in anticipation of Mr. Penrose's opening address to the Institute as President next Monday evening, shows the usual tendency of all such official publications of societies to increase in bulk. Nine years ago it was issued as a small publication of 80 pages; this year it numbers 312 pages, against 296 last year. A useful feature, newly introduced, is a concise summary of the London Building Act of 1894. The list of subscribing members shows a slight falling-off in the number of Fellows—617, against 628 last year—but a large increase in Associates—872, against 828—while there are now 60 honorary Associates against 65 in 1893-4. Among non-subscribing members there is a decrease—11 honorary Fellows against 13; 49 honorary corresponding members in place of 53; but there are now 6 retired Fellows against 3 last year. The list of students has swelled from 73 to 101. The total membership in all ranks is now 2,273, against 2,122 last year, 1,922 in 1892, 1,739 in 1891, 1,595 in 1890, 1,418 in 1889, and 1,276 in 1884, the jubilee year of the foundation of the Institute.

THERE is yet another hitch in the arrangements for the extension of the Grand Pump Room at Bath. At a meeting of the city council of Bath, held on Friday, a letter from the Local Government Board was read relative to the recent inquiry by Mr. Bird Clerke as to the application of the council for sanction to borrow £30,000 for the extension. The board raised no objection to the proposed new buildings so far as the design itself was concerned; but they pointed out that the extension building would approach to within some 25ft. of the west front of the Abbey, and would be almost in a line with the north front of the present Grand Pump Room building. The extension would thus overlap the west front of the Abbey for about one quarter of its façade, and consequently the view of that front will be somewhat seriously interfered with. The board added that they understood that the site upon which the extension building was to be erected had hitherto been wholly occupied by ordinary houses; but that, in order to enlarge the view of the Abbey, a part of the proposed new building was to be only one story in height, and the corner nearest to the Abbey was to be rounded off. The centre portion, however, was to be of the full height corresponding with that of the existing Grand Pump Room buildings. The board felt that it will be matter for regret hereafter if the opportunity afforded by the demolition of houses recently occupying the site were not taken advantage of for opening up the space in front of the Abbey, so as to afford a full view of the west front, and before giving their sanction to a loan for carrying out the proposed scheme, they desired that the council should reconsider the matter with the object of setting back the proposed building, so as to be quite clear of the west front of the Abbey. The city council decided to reply, explaining that from the restricted nature of the site it would not be possible to throw the proposed new building further back from the Abbey churchyard without serious detriment to the accommodation required, that the plans before the Local Government Board show a recess of 5ft. from the original building line and from the line of the existing Pump room, with a low building on the north side only 17ft. high, and that the highest part of the proposed new building would be 56ft. from the Abbey at the nearest point. Compared with the frontage and height of the ordinary houses which have been taken down, the view of the west front of the Abbey would be considerably improved. The council therefore asked the Local Government Board to sanction the scheme, as the present ruinous condition of the site was prejudicial to the best interests of the city.

"LEGAL Restraints upon Auction-Room Ingenuity" was the subject of the inaugural lecture of the present session of the Auctioneers' Institute, given by Dr. Heber L. Hart, on Tuesday evening. Mr. F. Everill, Worcester, presided. Dr. Hart said that as soon as the auctioneer left his facts and gave scope to his imagination he must be careful, as a matter of legal obligation, to confine himself to generalities, and must scrupulously eschew particularity of statement. Without special authorisation he must not allow himself to be entrapped into giving a warranty; otherwise he might become personally responsible to the purchaser. Any deliberately pursued design to disparage the property which was put up for sale on the part of one who subsequently became the highest bidder would entitle the vendor to set aside the sale. It seemed, therefore, clear that the auctioneer need not accept the bid of anyone who had intentionally disparaged the property, and also that an action would lie for any special damage sustained by the vendor in consequence of such depreciation. Bids which must be refused were those made by the vendor or his agent, unless the right to bid was expressly reserved. Puffing was now illegal in all cases. Where the sale was simply announced to be subject to a reserve price no bidding on behalf of the vendor was permissible. In the case of a sale by trustees, a bid by any of them must be refused. The auctioneer must not make a pretence of receiving bids which were not, in fact, made. If he did, he might find himself made a defendant to an action by the purchaser, in which he would be liable to repay the deposit with interest, and the costs of the action. A bid by the auctioneer on his own behalf could not be maintained as against the vendor if he declined to complete, and as against the next highest bidder in the case of a sale without reserve.

THE council of the Sanitary Institute have arranged for a second course of free public lectures on the Sanitation of Industries and Occupations, to be delivered by well-known authorities, as they think that further knowledge on this important subject will be of utility to those who have charge of the public health in factory districts. This is becoming more than ever necessary, as the sanitary inspectors of local authorities have recently had cast upon them a large increase of work hitherto performed by factory inspectors, which has already led to special inspectors being detailed off for these duties in a number of districts. Many will, therefore, probably wish to qualify themselves with a knowledge of the sanitation of factories, workshops, and workplaces, with a view to obtaining factory inspectorships or inspectorships under local authorities in factory districts. The subjects embraced in this course of lectures will be as follow:—1, Coal Mining; 2, Quarrying of Various Kinds, Granite, Marble, Stone, Slate, Chalk, and Limestone; 3, Workers in Mercury, Phosphorus, and Sulphur; 4, Chlorine and Chrome Compounds; and 5, Workers in Copper, Zinc, Brass, and Tin. The lectures are being delivered in the Parkes Museum, Margaret-street, W., on successive Thursdays, at 8 p.m., the first having been given last night by Mr. Simeon Snell, of Sheffield.

THE concluding lecture of a popular course by Professor Boyd-Dawkins upon "Prehistoric Civilisation in Western Europe" was given on Saturday at Owens College, Manchester. Taking for illustration "The Contact with History," the lecturer explained how, during the age of bronze, the hunter and the herdsman were succeeded by a race of people who, with better weapons and instruments, acquired in Gaul and the British Isles a fuller mastery of the arts of peace and war. The dagger was lengthened out to form a sword, the spear was introduced, the axe (with handle firmly fixed in the head, as contrasted with the neolithic axe in which the head was invariably inserted into the handle) and arrow tips, still of flint, became more efficient for their purpose. The habitation, traces of which are found in Anglesey and other parts of Wales, now began to have some resemblance to the modern house, being circular in plan, with a conical roof formed of turf or straw, and with a hole at the summit for discharging smoke. The art of the bronze-using people was evidenced by the form and ornamentation of cinerary urns, drinking cups, bowls, and personal ornaments. Greater attention was paid to dress and appearance; pins were used, often bent to give more secure hold, and also the safety pin, the forerunner of the brooch. The mode of sepulture, the religious belief as indicated by the remains of their temples at Avebury and Stonehenge, were also detailed. Later, the use of gold and enamel came into vogue, and the employment of amber in jewelry. In the next age the use of iron became known, and the knowledge of the capabilities of the master metal of civilisation led to a general outgrowth in human affairs. Immediately prior to the historic period coinage was introduced. During these changes the individual gradually became merged in the family, and distinct tribes were ultimately formed, foreshadowing the organised effort which, in the Saxon Heptarchy, assumed a more complete development.

THE ancient High Cross from Bristol, built *c.* 1373 in Box Ground stone, was demolished in 1763 as an obstruction, and was given three years later by Dean Barton to Sir R. Colt Hoare, who re-erected it stone for stone in his park at Stourhead, Wilts. Having become dilapidated owing to the use of iron dowels and clamps in its reconstruction at that period, it is now being restored by Messrs. Harry Hems and Sons, of Exeter, under the direction of Mr. Charles E. Ponting, F.S.A., of Marlborough. Five or six years ago Messrs. Hems filled with statues the hitherto empty niches of the replica of the cross erected at Bristol in 1851 on College-green.

IN his fourth lecture on Egyptian History given at University College on Saturday, Professor Flinders Petrie described the profound change which affected Egypt in consequence of the Syrian conquests of the XVIIIth dynasty. In sculpture the new ideal was of a peculiarly sweet and refined type, without the boldness of earlier ages; the design was with less reserve and more emotional expression. The handwriting underwent a great change, and lost the thick forms which had prevailed. The manufactures, which had remained almost the same since the XIIth dynasty, changed greatly in style and aim, and the language largely imbibed Syrian words. In every department the middle of the XVIIIth dynasty, the 15th century B.C., was one of the great turning points in Egyptian civilisation, though not marked by any outward break in its history.

IN describing the conversion of Norwich Castle into a museum last week (p. 596), under the supervision of Mr. Edward Boardman, F.R.I.B.A., of that city, we should have added that the whole of the works, including new buildings, difficult structural alterations, works of renovation, and the provision of new cases and fittings were carried out, at a total cost of £17,000, by Mr. G. E. Hawes, of Duke's Palace, Norwich. At the formal opening of the Castle by the Duke of York on Tuesday week Mr. Boardman and Mr. Hawes had the honour of being presented to His Royal Highness.

CHIPS.

St. Mary's Church, Crundall, Kent, which has been lately restored at a cost of over £1,200, was reopened on Thursday in last week. The work has been done under the superintendence of the architect, Mr. E. P. Loftus Brock, F.S.A., the contractor being Mr. H. B. Wilson, of Canterbury. The three bells, too, have been re-hung by Messrs. Stainbank.

On Sunday, the 21st inst., Mrs. Chas. Prescott, of London, formally started a large clock, of which she is the donor, at St. James's Church, Wednesbury. It has three dials, chimes the Cambridge quarters, and strikes the hours. The whole of the work has been carried out by John Smith and Sons, Midland Clock Works, Derby.

The death is announced of M. Leon Palustre, of Tours, author of "La Renaissance en France," in which the architecture of that period was studied and analysed with scientific precision. He was the author also of "Melanges d'Art et d'Archéologie," and of "Trésor de la Cathédrale de Trèves," written in conjunction with Mgr. Barbier de Montaut.

Lord Rosebery unveiled, at Bristol, on Tuesday, the bronze statue of Edmund Burke, which has been presented to that city by Sir W. H. Wills. The statue, which has been erected in the open space at St. Augustine's Bridge, is the work of Mr. Havard Thomas. It bears the inscription, "Burke, 1774-80," and the quotation from his last speech in Bristol—"I wish to be a member of Parliament to have my share in doing good and resisting evil."

Mr. Robert J. Angel, A.R.I.B.A., of the borough engineer's office, Birkenhead, has been appointed assistant borough engineer to the Walsall corporation.

The Portsmouth Town Council had before them on Tuesday the report of the committee to whom two schemes of railway extension were referred for consideration. By one it is proposed to connect Portsmouth with Basingstoke by a new line, *viâ* Petersfield and Alton, and by the other with Winchester and thence, by means of the Didcot and Newbury Railway, with the Midlands. The committee expressed a decided preference for the latter scheme, and the council unanimously agreed with the recommendation. The preliminary expenses, which are estimated at £7,000, have been guaranteed.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Royal Institute of British Architects. Opening Address by the President, F. C. Penrose. 8 p.m.

Society of Engineers. Adjourned discussion on T. W. Baker's paper on "The Utilisation of Town Refuse for Generating Steam." 7.30 p.m.

Sanitary Institute. "Sanitary Building Construction," by K. D. Young. 8 p.m.

Liverpool Architectural Society. "The Value of Archæology to Architecture," by E. W. Cox. 6.30 p.m.

Manchester Society of Architects. "Stained Glass," by Herbert Bacon, of London. 7.30 p.m.

Glasgow Architectural Association. "On Tramp," by J. Kennedy Hunter. 8 p.m.

WEDNESDAY.—Carlisle Architectural Association. Address by the President, C. Lonsdale. 8 p.m.

Carpenters' Hall. Lecture to Students in "Sanitation," by Professor A. Wynter Blyth. 8.0 p.m.

THURSDAY.—Parkes Museum. Free Lectures on "Quarrying," by Dr. C. le Neve Foster. 8 p.m.

Northern Architectural Association. "The Perpendicular Style," by D. H. S. Cranage, M.A. 7 p.m.

FRIDAY.—Architectural Association. "The Study of Modern Architecture," by A. Beresford Pite. 7.30 p.m.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

BATTERSEA, S.W.—For erecting a laundry centre at the Sleaford-street School, Battersea, for the London School Board:—

		A.
Castle, W. and H.	£927 18 0	£22 19 4
Hammond, W.	856 0 0	24 0 0
Whitehead, L., and Co.	659 0 0	13 0 0
Akers, W., and Co.	620 5 8	18 3 1
Lathey Bros.	580 0 0	11 0 0
Kent, G. and F., Whitehead's-grove, Chelsea (accepted)	548 0 0	10 0 0

A.—If brickwork be built in cement, add.

[(*a*) Cost of tar-pavement and drains, £68; (*b*) laundry centre, 293; (*c*) works on site, £167; (*d*) extra depth of foundations, £20; (*e*) add for brickwork to be built in cement, £10; total, £558.]

BAYSWATER.—For new parochial hall, St. Matthew's, Bayswater, for the Rev. E. A. Stuart and the churchwardens. Mr. E. P. Loftus Brock, F.S.A., architect:—

Williams, G. S. S., and Son	£2,824 0 0
Dove Bros.	2,455 0 0
Nightingale, B. E.	2,395 0 0
Mattock Bros.	2,391 0 0
Barrett and Power	2,325 0 0
Williams, J. P.	2,240 0 0
Allen, J., and Sons (accepted)	2,150 0 0

BERMONDSEY, S.E.—For new and refitted offices in connection with all departments of the Monnow-road school, Bermondsey, for the London School Board:—

Downs, W.	£1,190 0 0
Lathey Bros.	980 0 0
Nightingale, B. E.	936 0 0
Akers, W., and Co., High-street, South Norwood (accepted)	924 0 0

BOURNE END.—For new bungalow and chalet, proposed to be built for Mr. F. C. Frye, M.P., at Bourne End. Mr. Arthur Vernon, 29, Cockspur-street, London, S.W., and High Wycombe, architect:—

Bungalow—

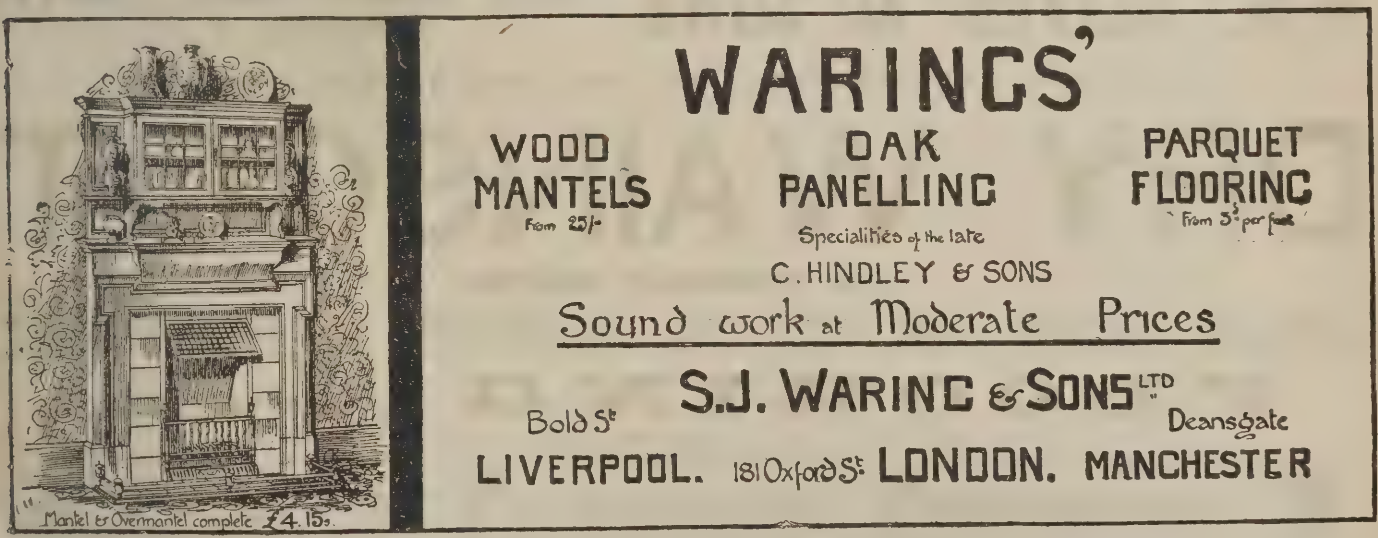
Edwards	£1,464 0 0
Cox, C. W.	1,446 0 0
Barker	1,387 0 0
Webster and Cannon	1,368 0 0
Gibson	1,345 0 0
Silver	1,338 0 0
Grist	1,338 0 0
Dickens	1,289 0 0
Hunt	1,270 0 0
Nash	1,269 0 0
Flint	1,227 0 0
Martin	1,220 0 0
Harris, H.	1,213 10 0
Loosley	1,205 0 0
Harris, J. T.	1,187 0 0
Smith	1,120 0 0

Chalet—

Edwards	1,316 0 0
Cox	1,315 0 0
Silver	1,219 0 0
Barker	1,190 0 0
Webster and Cannon	1,182 0 0
Harris, H.	1,160 10 0
Gibson	1,160 0 0
Hunt	1,124 0 0
Grist	1,118 0 0
Loosley	1,115 0 0
Nash	1,094 0 0
Martin	1,091 0 0
Flint	1,069 0 0
Harris, J. T.	1,054 0 0
Smith	1,050 0 0
Dickens	1,039 0 0

BRACKNELL.—For alterations to Priestwood House. Mr. J. T. Lawrence, Leighton Buzzard, Beds, architect:—

Brown, G.	£247 0 0
Parker	175 0 0
East, G.	160 0 0
Wheeler, E.	145 0 0
May, W. (accepted)	130 0 0
Clark, H.	129 7 0



Brighton.—For alterations and enlargement of St. Stephen's National Schools, Borough-street, Brighton, for the Rev. Prebendary J. J. Hannah, M.A., Vicar of Brighton, and the Rev. Canon C. Deedes, M.A., curate-in-charge of St. Stephen's District Parish Church. Mr. Charles E. Hewitt, 118, Queen's-road, Brighton, architect:—

				A.		
Garrett, W. and T.	£2,234	0	0	£108	2	4
Freeman, V. P.	1,787	0	0	122	0	0
Barnes, J.	1,757	10	0	121	0	0
Saunders, J. J., and Sons, Ivory-place, Brighton*	1,681	0	0	95	0	0

* Accepted conditionally.

A.—If extra revolving shutter in lieu of cross wall on ground floor, and extra movable cupboards are provided.

Brighton.—For new billiard-room at 7, Ship-street. Mr. Arthur Loader, architect:—

No. 1, with double-domed roof—

Botting, W., and Son	£1,240	0	0
Lockyer, G. R.	1,233	0	0
Barnes, J.	1,190	0	0
Field, W. A., and Co.	1,157	0	0
Taylor, W.	1,130	0	0
Sattin and Evershed	1,127	0	0
Freeman, V. P.	1,096	0	0
Saunders, J. J. G., and Son	1,082	0	0
Patching and Sons	1,078	0	0

No. 2, (alternative) with single-dome roof—

Taylor, W.	960	0	0
Garrett	928	0	0
Botting, W.	895	0	0
Field, W. A., and Co.	887	0	0
Barnes, J.	884	0	0
Patching and Sons	852	0	0
Kemp	845	0	0
Saunders, J. J. G., and Sons	835	10	0
Freeman, V. P.	824	0	0
Sattin and Evershed (accepted)	810	0	0

Bristol.—For alterations and additions to the out-patients' department of the Royal Infirmary. Mr. Bruce Gingell, Corn-street, Bristol, architect:—

Veale, W., Cheltenham-road, Bristol (accepted).

Bristol.—For furnishing South-street schools, for the school board:—

Brown, W. H. (accepted) … … £516 10 4

Bristol.—For heating and ventilating the Barton-hill United School, for the School Board:—

Crispin & Son, Bristol (accepted) … £293 0 0

Bristol.—For building a caretaker's house at Ashton-gate, for the School Board:—

Browning, J. (accepted) … … £280 0 0

Bristol.—For new caretaker's house, Ashton Gate schools. Mr. F. Bligh Bond, Liverpool Chambers, Bristol, architect. Quantities supplied:—

Messrs. Bale and Westlake	£415	0	0
Lovett, T.	408	0	0
Church, W.	397	0	0
Reed, T.	373	0	0
Humphreys, G.	365	0	0
Forse, H. A.	365	0	0
Perrott, T.	364	0	0
Walters, E.	360	0	0
Eastabrook and Sons	359	0	0
Hatherly and Carr	347	0	0
Wilkins, G. H.	340	0	0
Wilkins and Gosling	323	0	0
Hayes, C. A.	295	0	0
Browning, J. (accepted)	280	0	0

Cardiff.—For the furnishing throughout of the extension of the Free Library, for the town council:—

Lewis and Lewis, Cardiff	£2,701	9	2
Trapnell and Gane, Cardiff	2,596	14	0
Knight, T., and Sons, Bath	2,375	11	9
Lock, F. S.	2,374	10	3
Bessell, H., Bristol	2,230	4	4
Taylor and Co., Driffield	2,124	0	0
Turner and Sons, Cardiff*	1,849	0	0

* Accepted conditionally.

Colchester.—For re-draining cottage property in Butt-road, for Mrs. William Piper, of Ipswich:—

Cook, H., West-street, Colchester (accepted).

Edinburgh.—For the construction of the new North Bridge:

Arrol, Sir Wm. and Co. (accepted) £87,894 0 0

For masonry:

Beattie, W., and Sons, Edinburgh (accepted).

Hammersmith, S.W.—For the provision of a manual training centre in connection with the Brackenbury-road School, Hammersmith, for the London School Board:—

				A.		
Lyford, G.	£1,287	0	0	£17	0	0
Polden, S.	1,189	6	0	20	5	0
Cowley and Drake	1,122	0	0	37	10	0
Chinchen, F. T.	1,048	9	3	15	15	0
Kent, G. & F., Whitehead's-grove, Chelsea (accepted)	958	0	0	17	0	0

A.—If brickwork be built in cement, add.

[(*a*) Cost of manual training centre, £846; (*b*) works on site, £104; (*c*) extra depth of foundations, £8; (*d*) add for brickwork to be built in cement, £17; total, £975.]

Hendon, Middlesex.—For conservatory, &c., for Mr. W. R. Bousfield, Q.C., M.P, Mr. George Hornblower, A.R.I.B.A., 20, Fitzroy-street, W., architect:—

Tout, W. (accepted) … … … £255 0 0

Hackney, N.E.—For providing a new drainage, erecting new offices, and carrying out alterations to the existing w.c.'s and lavatories, at Turin-street board school, for the London School Board:—

McCormick and Son	£2,712	0	0
Knight and Son	2,358	0	0
Downs, W.	2,169	0	0
Calnan and Co.	2,118	0	0
Williams and Son	2,059	0	0
Staines and Son	2,055	0	0
Marsland, J.	2,055	0	0
Stevens Bros.	1,974	0	0
Triggs, E., The Chase, Clapham*	1,934	0	0

* Accepted.

Highgate.—For the erection of fence wall connected with the widening of Swain's-lane, Highgate, for the St. Pancras Vestry:—

Steed	£181	10	0
Wall, H.	159	0	0
Killingback	153	7	3
Davenall, H. G., Southampton Works, Gospel Oak (accepted)	146	0	0

High Wycombe, Bucks.—For new warehouse, &c., High-street, for Mr. A. Leadbetter. Mr. Arthur Vernon, 29, Cockspur-street, London, S.W., and High Wycombe, architect:—

Nash	£508	0	0
Harris, H.	505	10	0
Hunt	457	0	0
Dickens	454	0	0
Webster and Cannon	449	10	0
Flint	427	0	0
Gibson	415	0	0
Loosley	400	0	0
Harris, J. T.	382	0	0
Smith	380	0	0

Ilford.—For new Wesleyan Methodist church, High-street, Ilford, Essex. Mr. J. H. Carte, Upton Park, E., architect. Quantities by Mr. Henry Theobald, F.S.I., 87, Finsbury-pavement, E.C.:—

Hosking, G.	£5,067	0	0
Voller, F.	4,880	0	0
Harris and Wardrop	4,730	0	0
Atkin and Green	4,650	0	0
Scott, S. J.	4,549	0	0
Holloway, H. L.	4,540	0	0
Gregar and Son	4,367	0	0
Stroud, R.	4,360	0	0
Chessum and Son	4,310	0	0
Sharpe G.	4,295	0	0
Watson, W.	4,280	0	0
Pappin, J.	4,277	0	0

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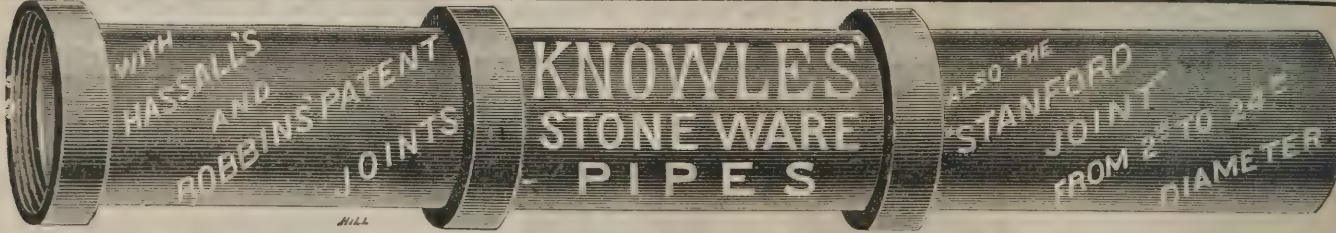
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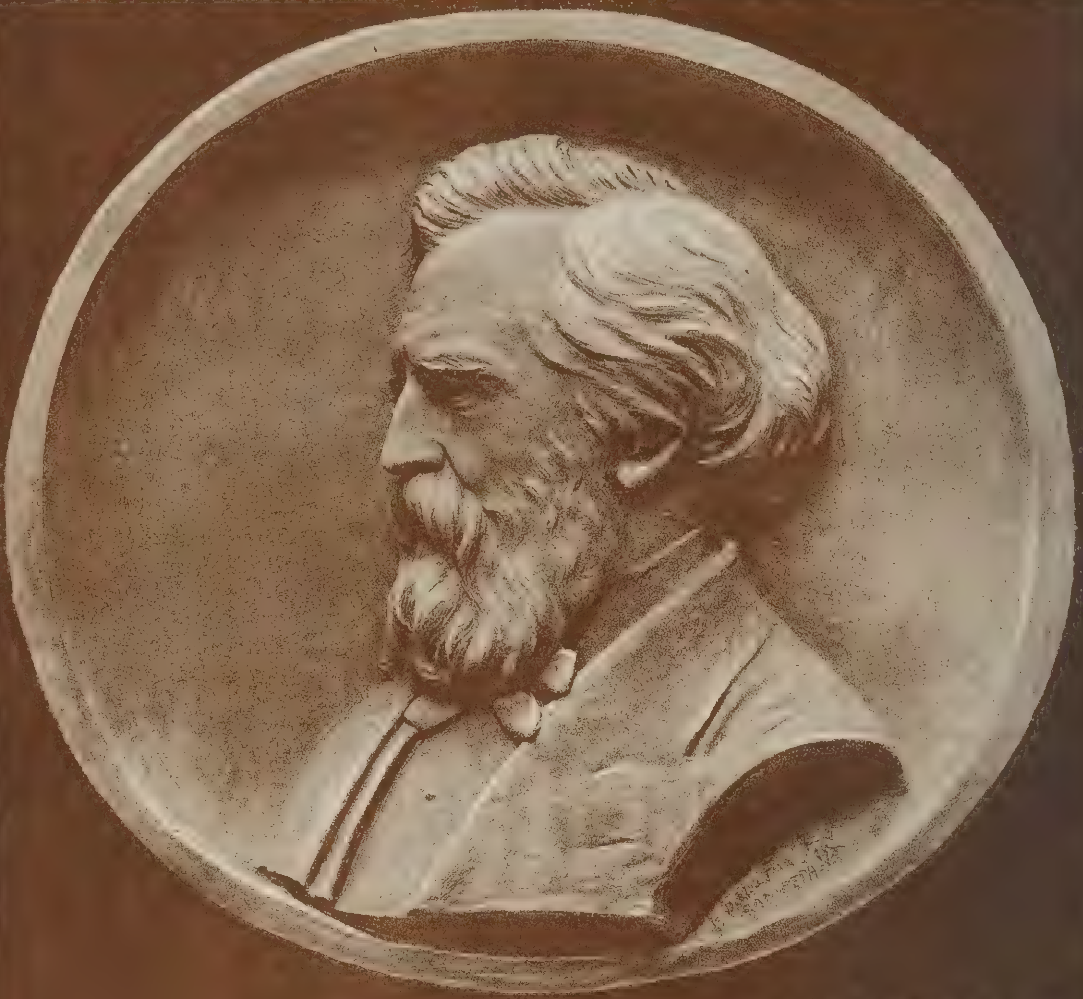
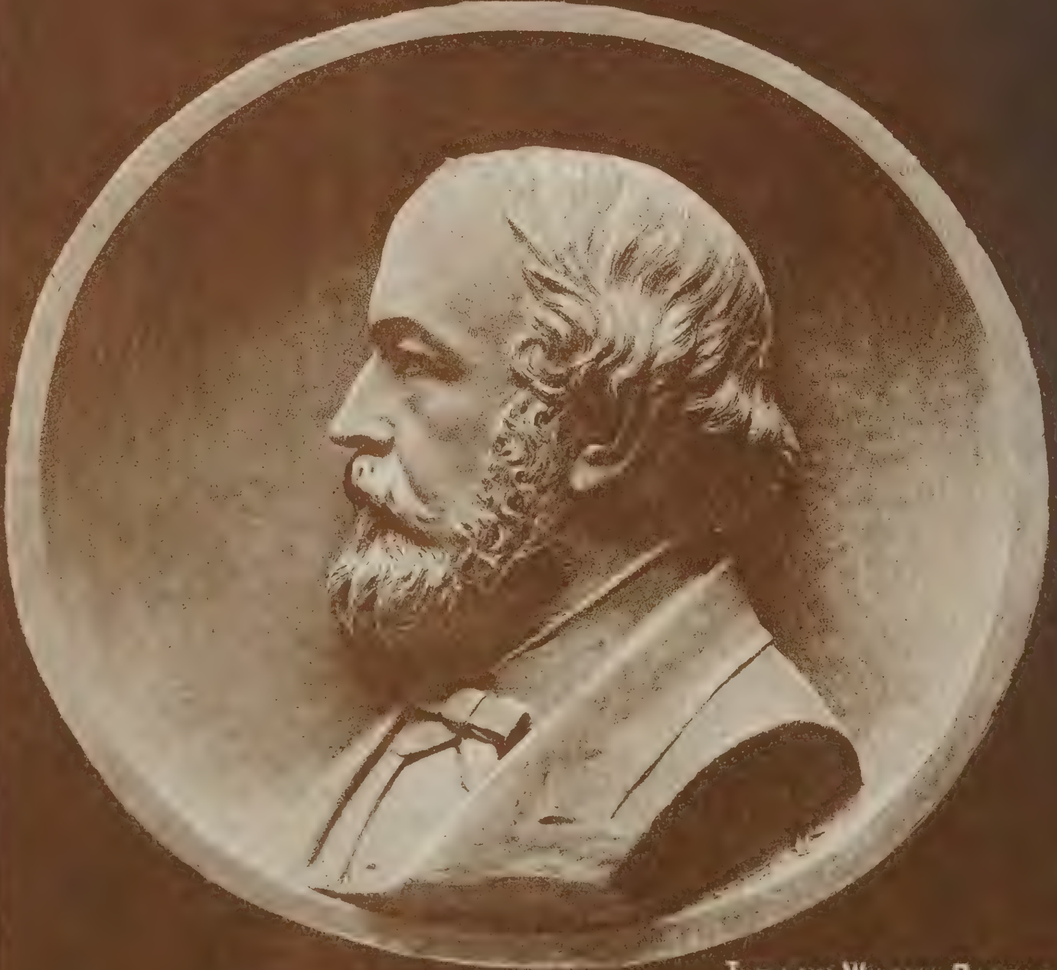


MR J. PASSMORE EDWARDS



THE LATE WILLIAM BLADES.

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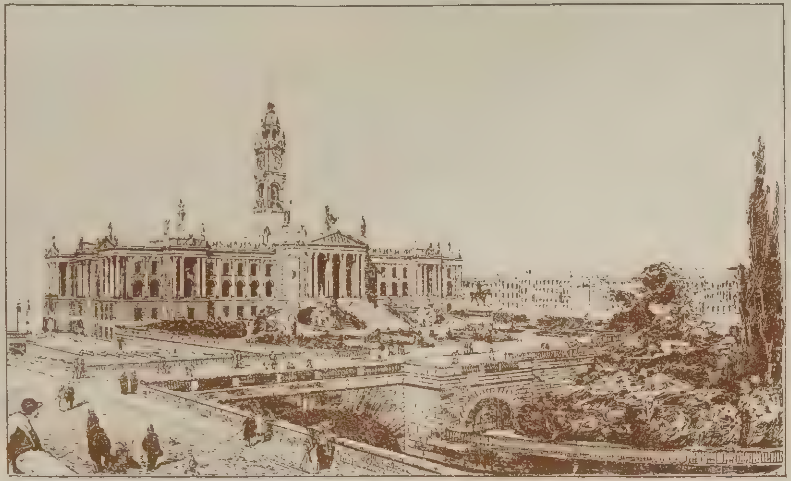
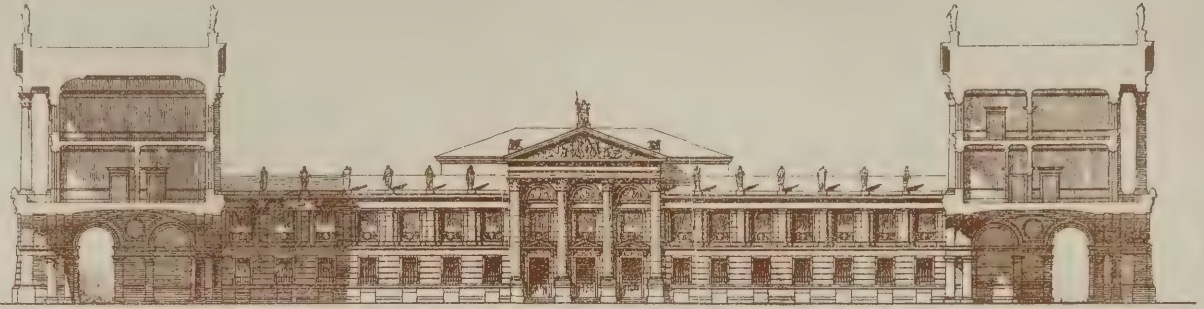
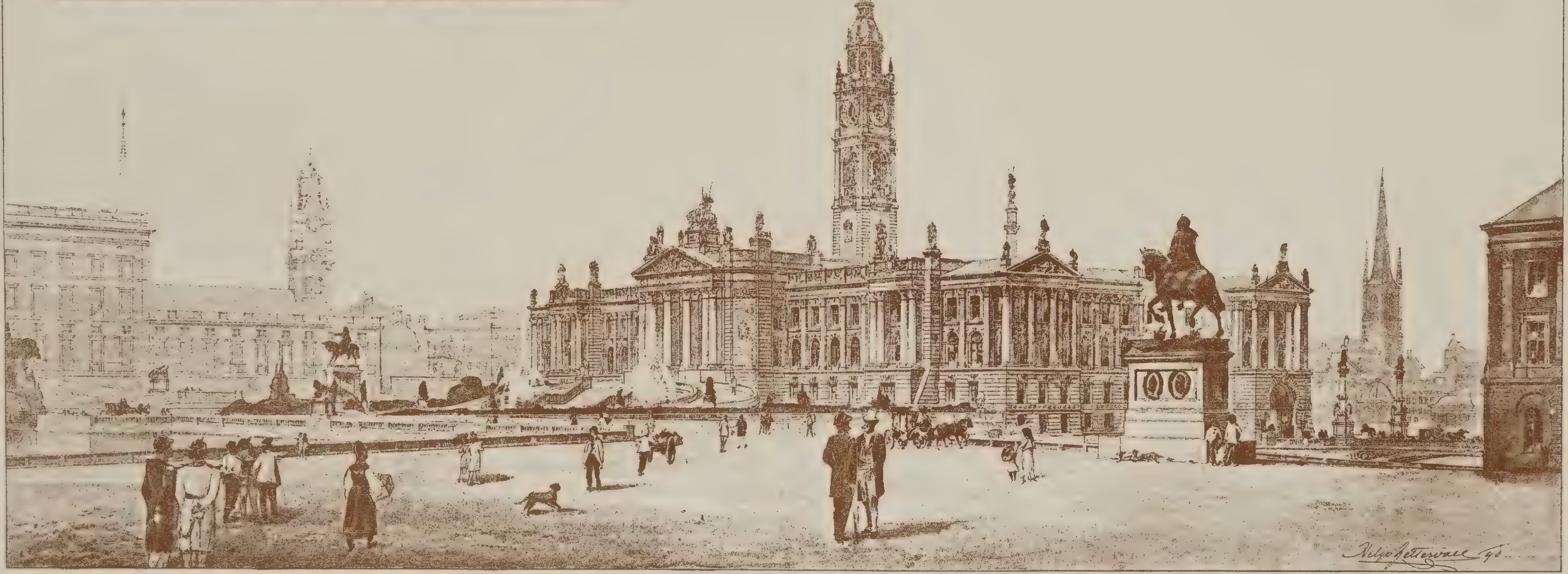
THE NEW HOUSES OF PARLIAMENT AND NATIONAL BANK OF SWEDEN AT STOCKHOLM

HELGO ZETTERVALL ARCHT.





ELEVATION OF BANK OF SWEDEN TO DROTTNINGATA PASSAGE.



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VIEW FROM THE SQUARE OF GUSTAVUS ADOLPHUS.

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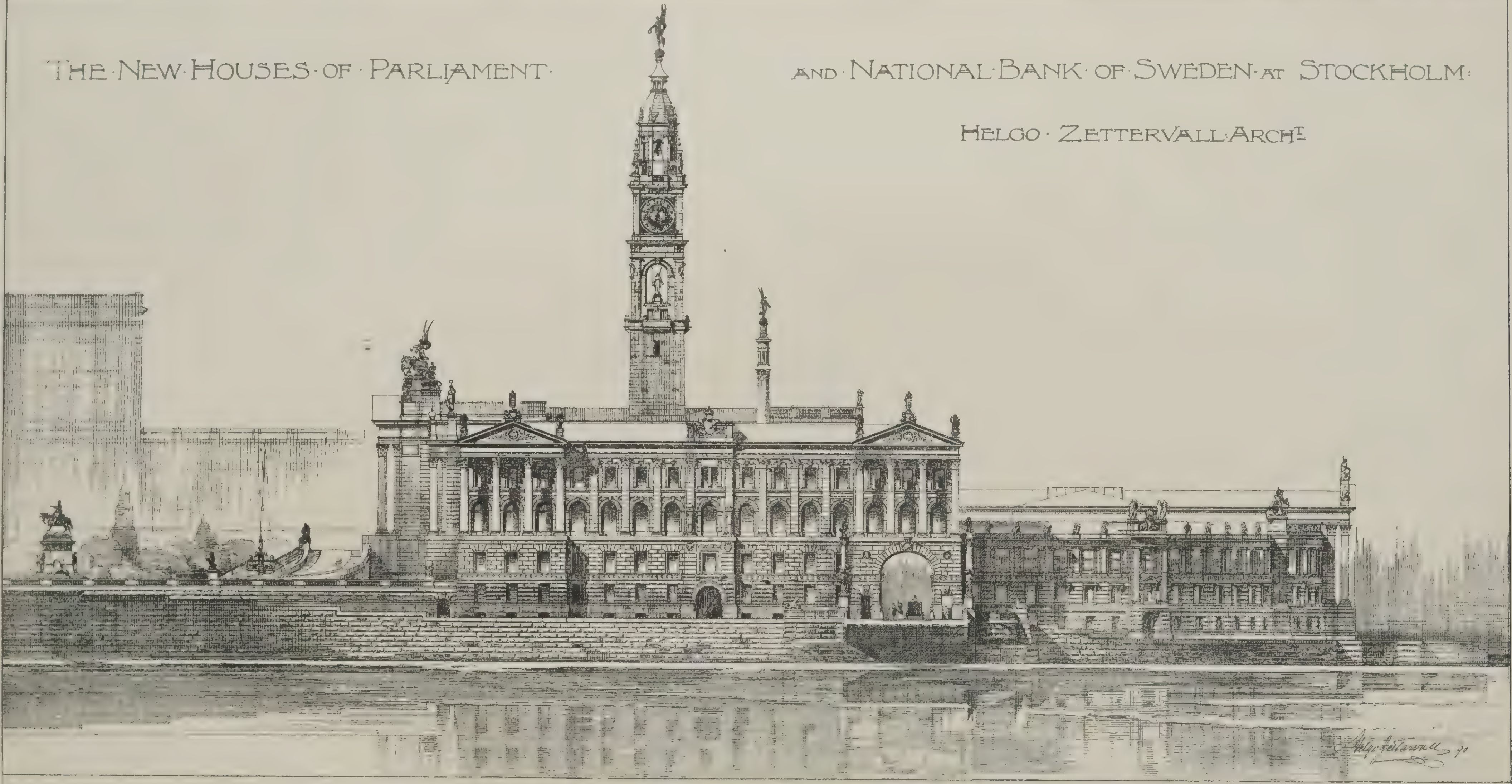
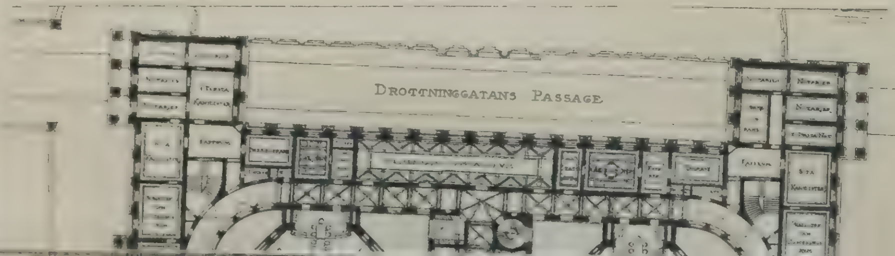
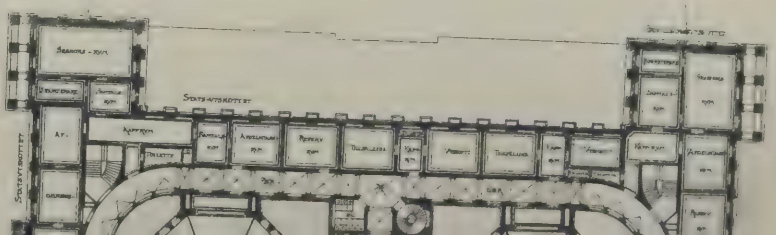
THE NEW HOUSES OF PARLIAMENT AND NATIONAL BANK OF SWEDEN AT STOCKHOLM:

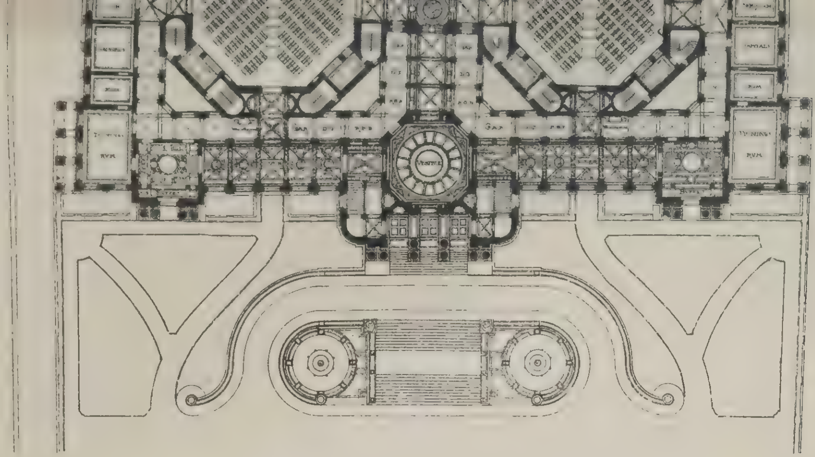
HELGO ZETTERVALL, ARCHT.



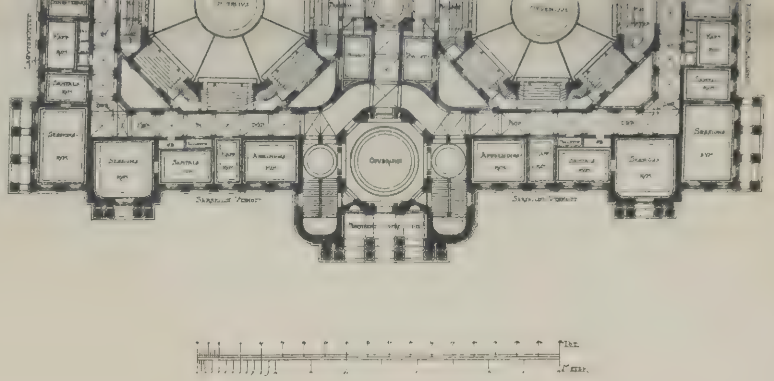
ELEVATION TO
WASA BRIDGE.





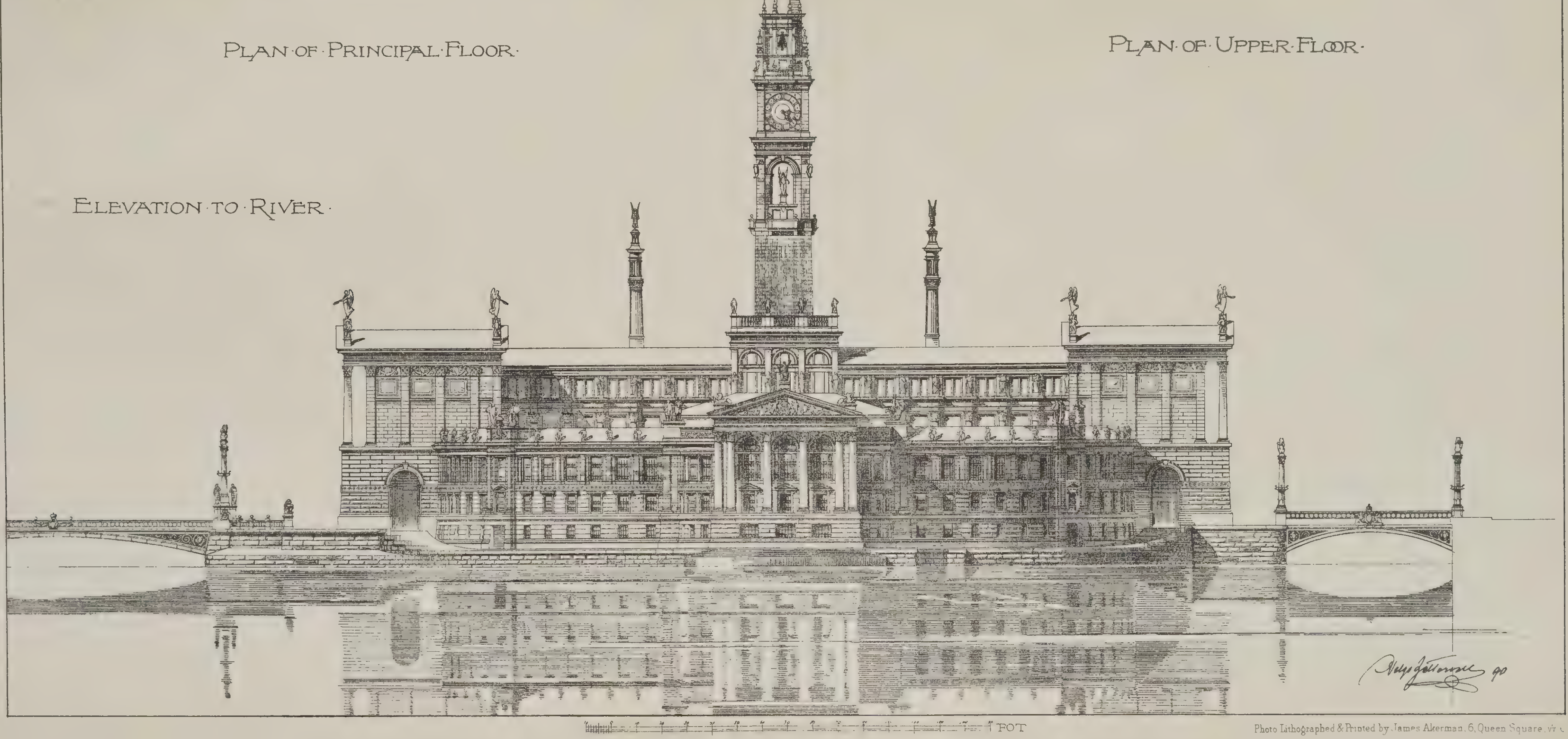


PLAN·OF·PRINCIPAL·FLOOR·



PLAN·OF·UPPER·FLOOR·

ELEVATION·TO·RIVER·



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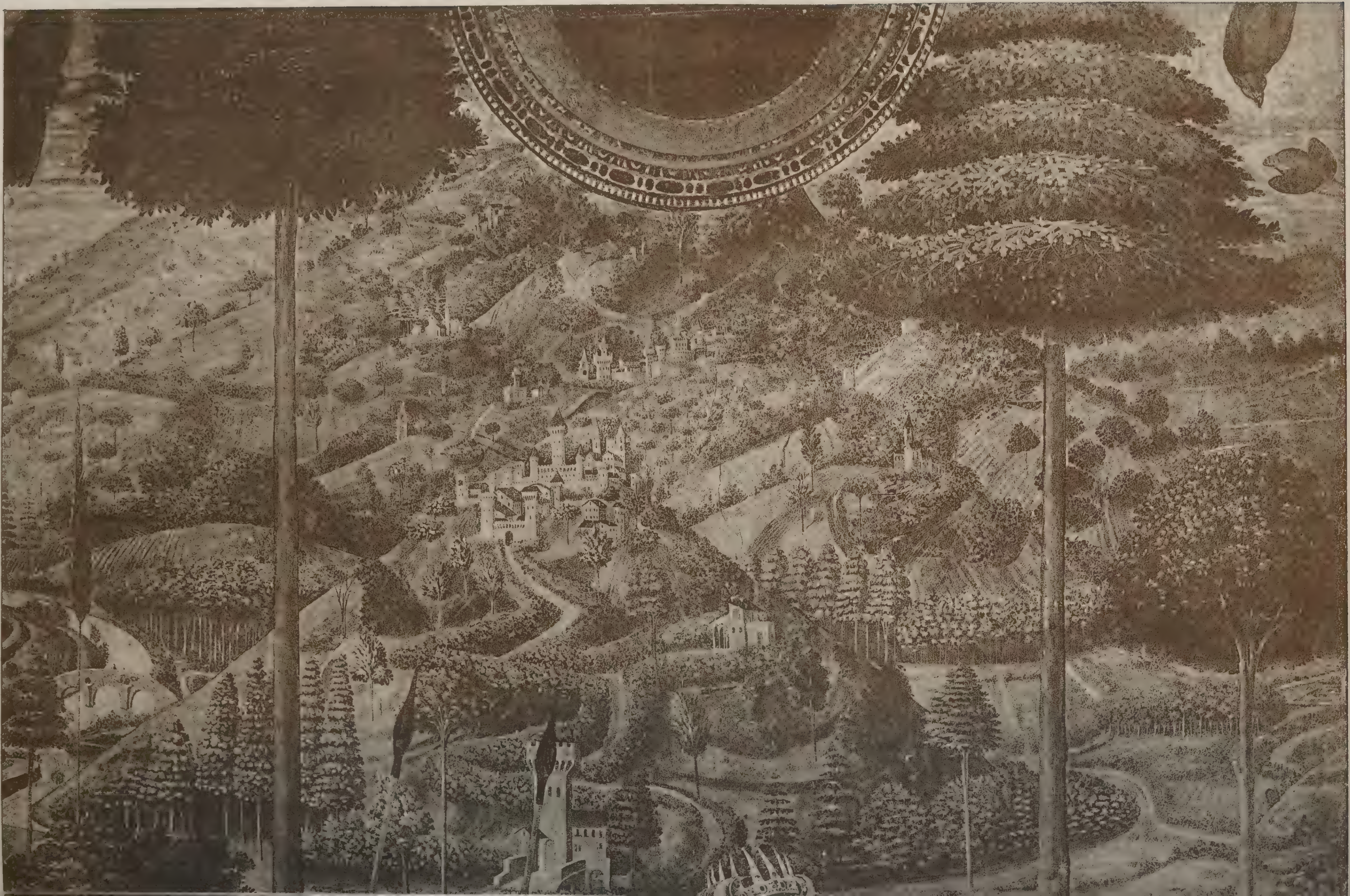

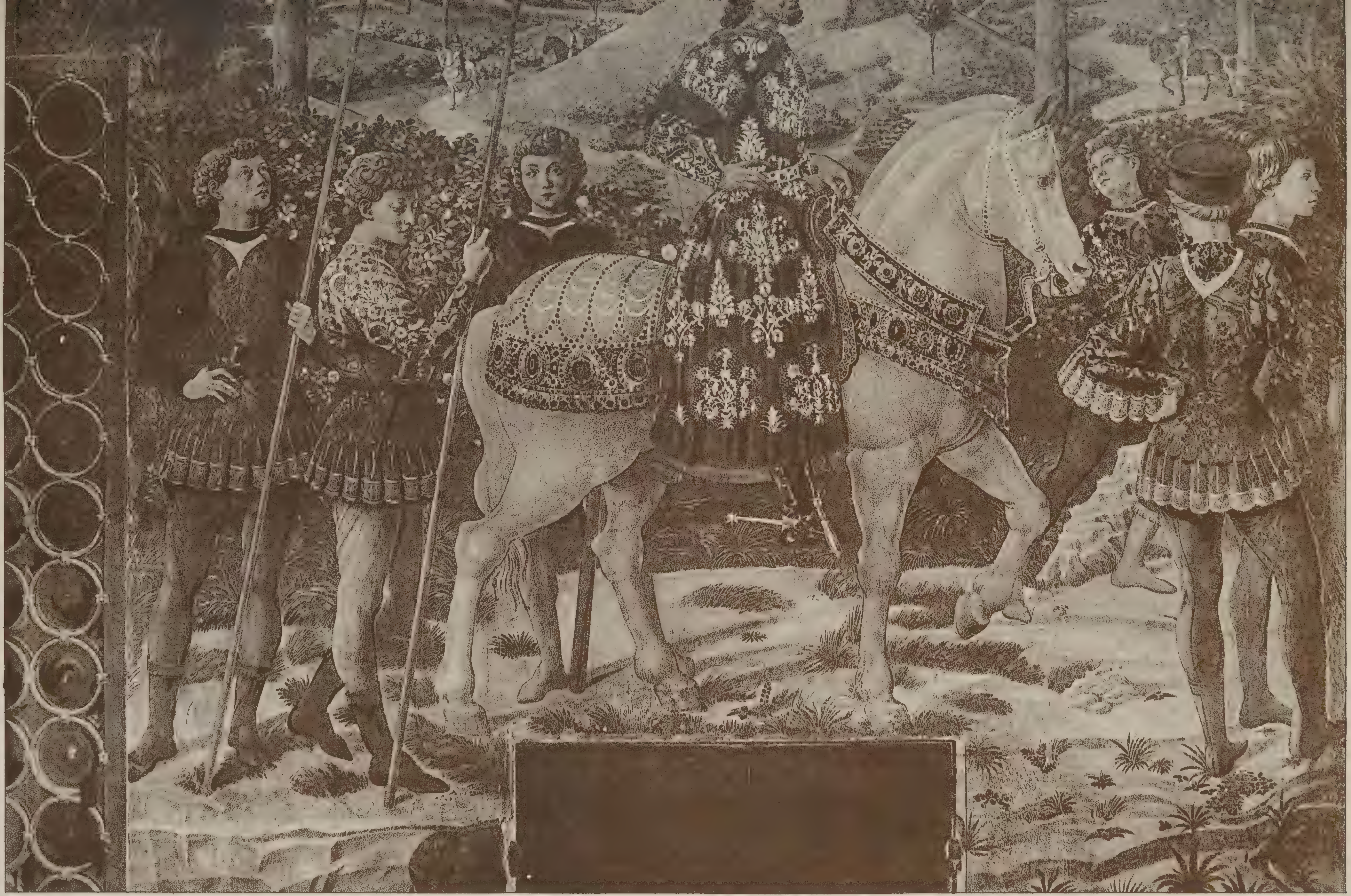

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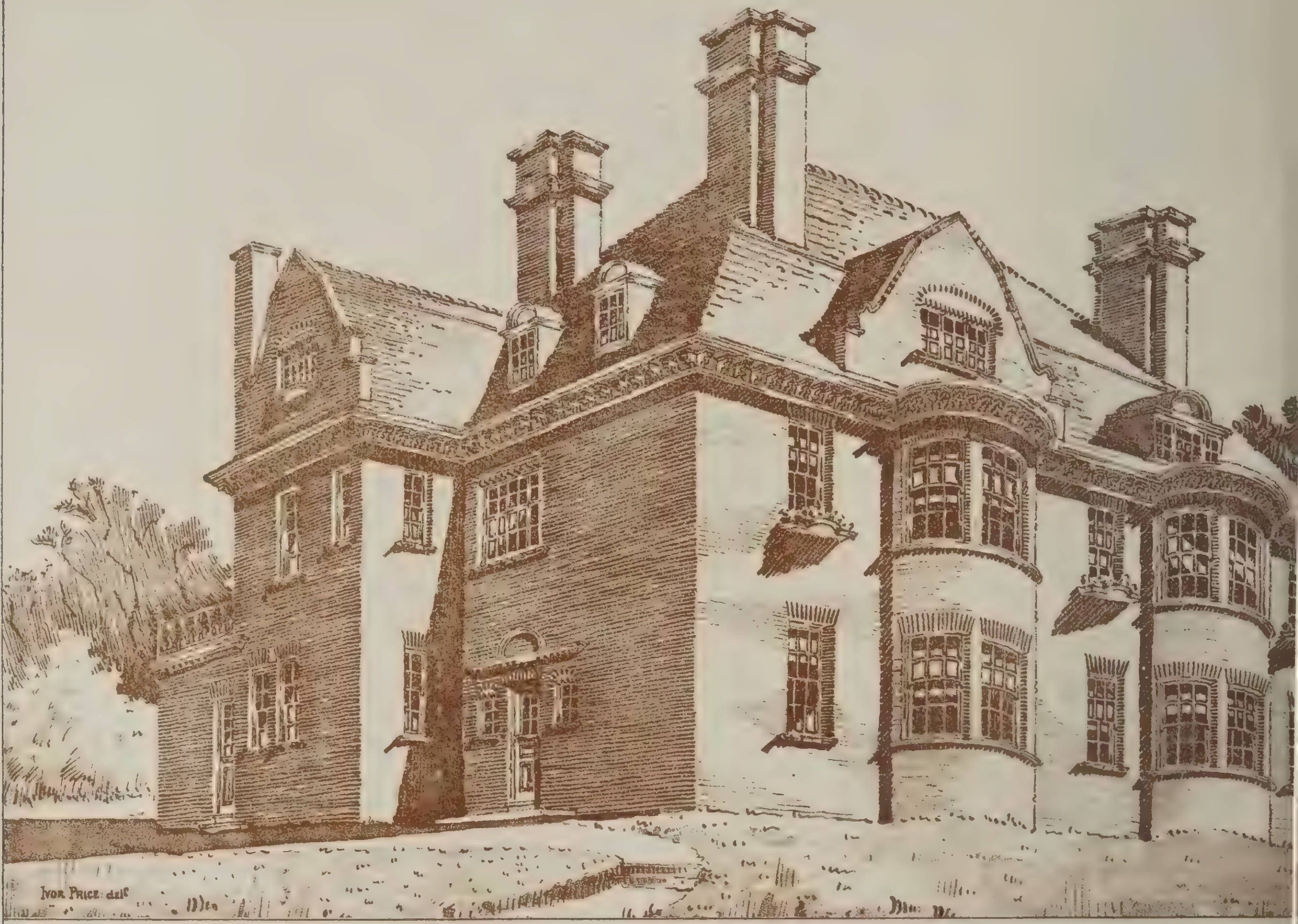
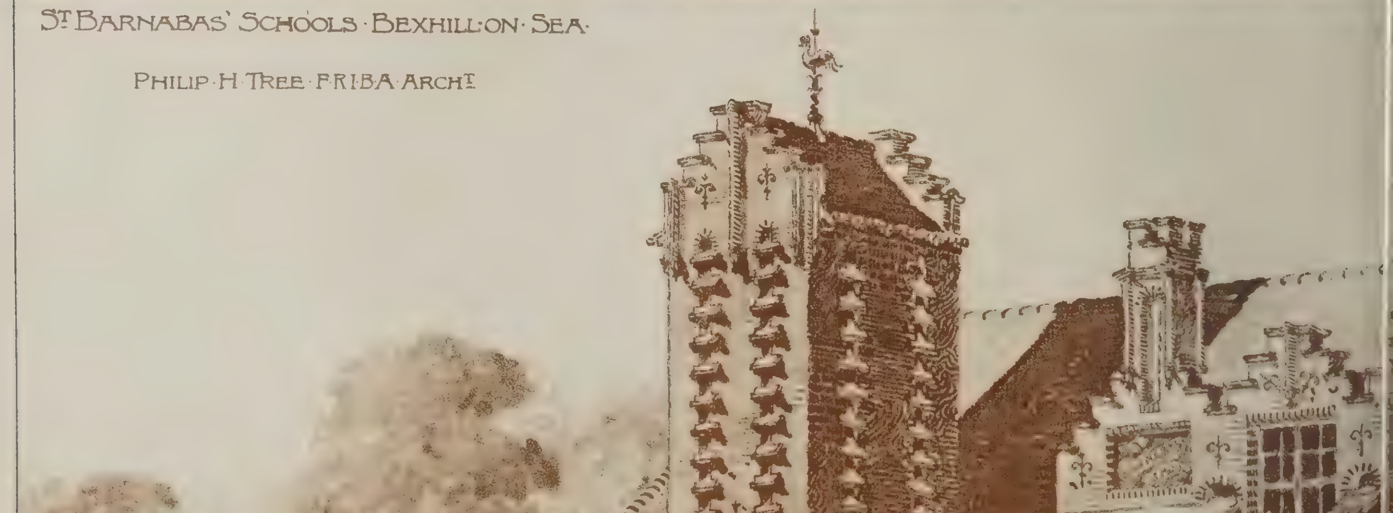
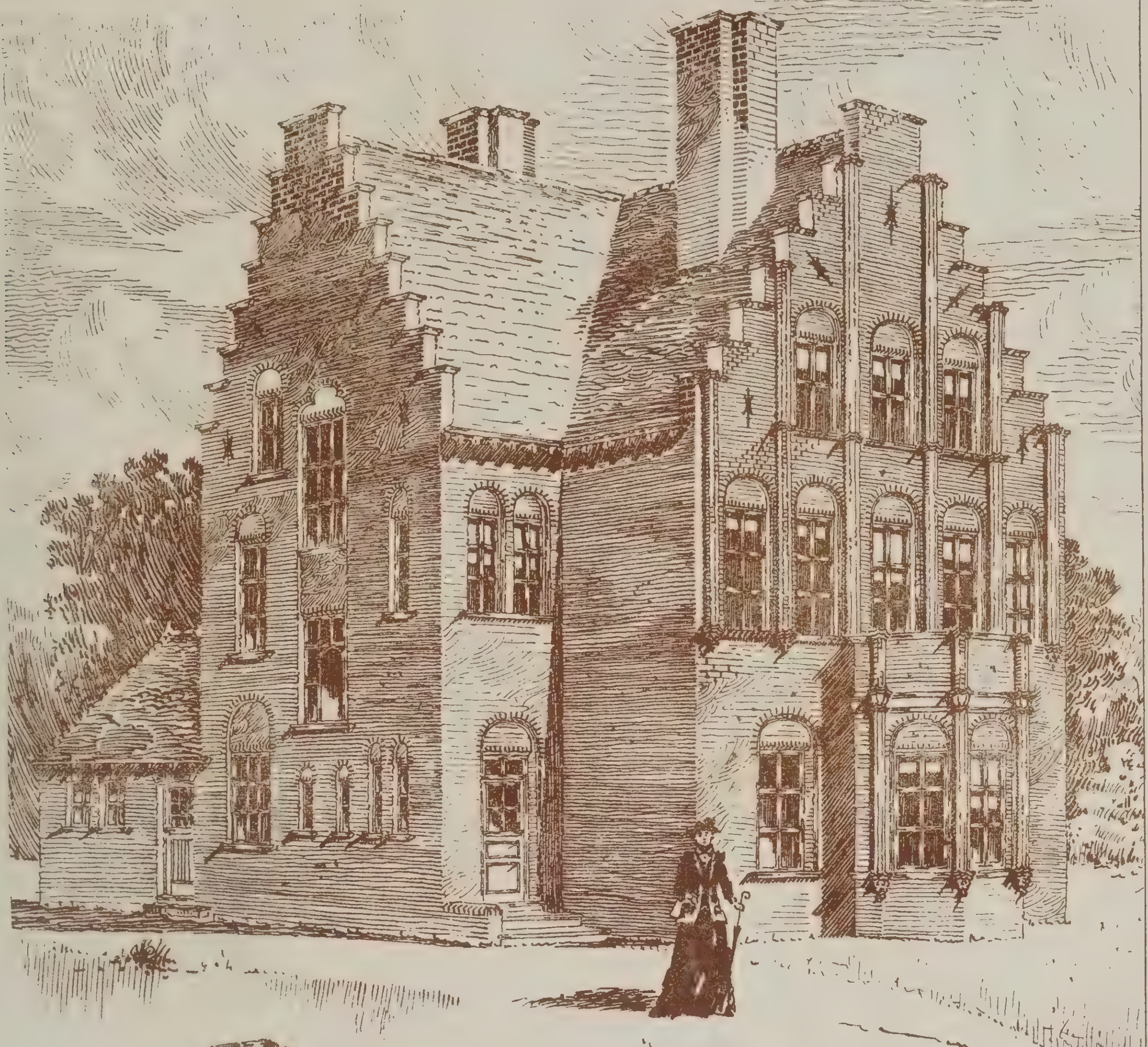


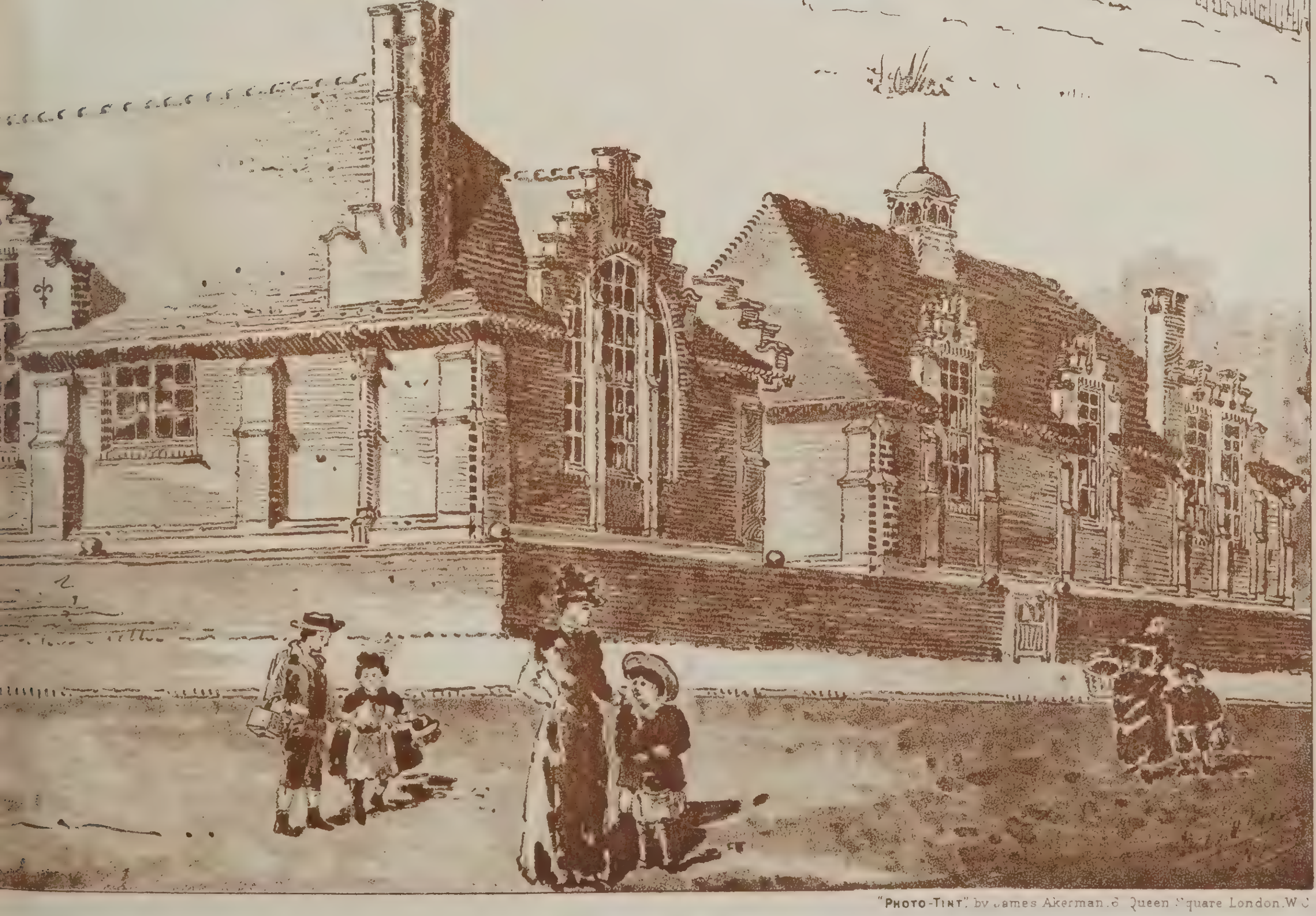
ST BARNABAS' SCHOOLS · BEXHILL-ON-SEA ·

PHILIP · H · TREE · F.R.I.B.A · ARCHT



HOUSE·IN·BOSCOBEL·Rd· St LEONARDS·ON·SEA·





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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2079.

FRIDAY, NOVEMBER 9, 1894.

CONVENTION v. INVENTION.

THOSE who are constantly engaged in designing must have discovered how readily their thoughts and ideas fall into grooves. They are impelled by certain forces or by unconscious habit to adopt particular conventions, perhaps against their inclinations; they cannot think of anything better, or perhaps if they did, their imaginations are curbed by considerations of a practical kind or by the prejudices of their clients. There are many men who will adopt a plan because it is workable or has been in use many years, and who would not alter it if they could; others who work in a particular style because they are versed in it, or because they know little of any other; some who adopt a particular kind of construction because it is a form which the bricklayer and carpenter understand. Their clients have also to be pleased and their prejudices consulted. All these influences fetter and restrain the imagination of the artist, so that it happens it is perfectly hard to think of anything fresh. We have known a few men, the late W. Burges, E. W. Godwin, J. D. Sedding amongst others, who had the knack of breaking through the conventionalities—often at manifest risk to their success as architects; their designs for churches, houses, town-halls often set at defiance all recognised or accepted canons of plan, of proportion, or of detail. Those who can remember the very bold design of the late E. W. Godwin for the Memorial Theatre at Stratford-on-Avon, will discern much that was in advance of its time. Other of his conceptions were characterised by a freedom from restraint, but his plans were often crude and undigested. Sedding's work always possessed a freshness peculiarly his own, and he was one of the few who had the power of rejecting the stereotyped and commonplace, and yet of working in the true spirit of Gothic and Renaissance. It is one thing to throw off all restraint and invent new forms, and another to adapt the spirit of an old style without slavishly following its letter—the *ipsissima verba* of tradition. The former is easier to the man of small culture; the latter implies a keen artistic sense combined with knowledge. By this rule we must estimate the difference in the work of the untrained and uneducated designer and that of the trained architect.

In the work of the engineer we often find uncouthness, a direct violation of some architectural rule; the builder also goes direct to the root of the problem, but his work bears the evidence of a lack of taste. Yet each of these may teach the architect something. Many an engineering structure has taught the architect how to attack a problem, and sometimes so ordinary a building as a house erected by a builder may show how practical common sense may suggest a better method of doing a thing than architects could think of. The "rough and ready" practical builder is one of those who rush in where the more cultured artist "fears to tread;" he does not mind making a divergence in some point of plans however heterodoxical it may appear to many; the form of his building may be singularly anti-traditional and unconventional, his windows and doors innovations, and the details appalling. But for all this the design may perchance answer its purpose better than one quite correct as to models. The ordinary client who has himself a practical turn of mind will get on with a man of this type very well, far better than with an educated architect. Mr. Brown does not mind coaxing his client by giving way to him in such a point as introducing ordinary square sash windows of large size in a house of otherwise Gothic character. Gables and square panes, pinnacles and balustrades, columns and tracery are mixtures about which he has not the slightest scruple. Hence it is easier for a man of these free and open views who does not allow any traditions to hamper his mind to get on with the average client. The same client has a feeling of combined wonder and awe, if not of disgust, for Mr. Strictlines, who will not humour him in any particular whim if it happens to be inconsistent with the proprieties of style. The conventions and arrangements known to be in accord with Classic and Gothic are strongly ingrained, and he could no more think of anything outside than he could overcome his natural disposition. They have grown to be part of his nature. Thus we see that education and training have a good deal to do with that adherence to conventional forms and methods which appear to hamper our architectural progress in certain directions.

Take, for instance, the design of churches. They have for centuries been built on the Basilican model, because it affords the most commodious arrangement, and its threefold division is symbolical, and can be constructionally expressed. No better form can be devised for ritual purposes; but if preaching is considered the chief purpose, then no doubt it is not so desirable as the central "hall" plan. Again the chancel must be a pronounced part for clergy and choir. Those portions suggest appropriate treatment, and must be more or less similar in their external design, and, therefore, churches must all be alike to a greater or less degree, and afford little scope for invention. The domestic building may differ much in external grouping, but the room as the unit cannot be altered much: it must have doors, windows, and fireplaces. Other secular buildings like asylums, public offices, schools, &c., are regulated by customary rules more or less; and all these rules carry certain and appropriate modes of construction and ornament which cannot be easily altered without loss.

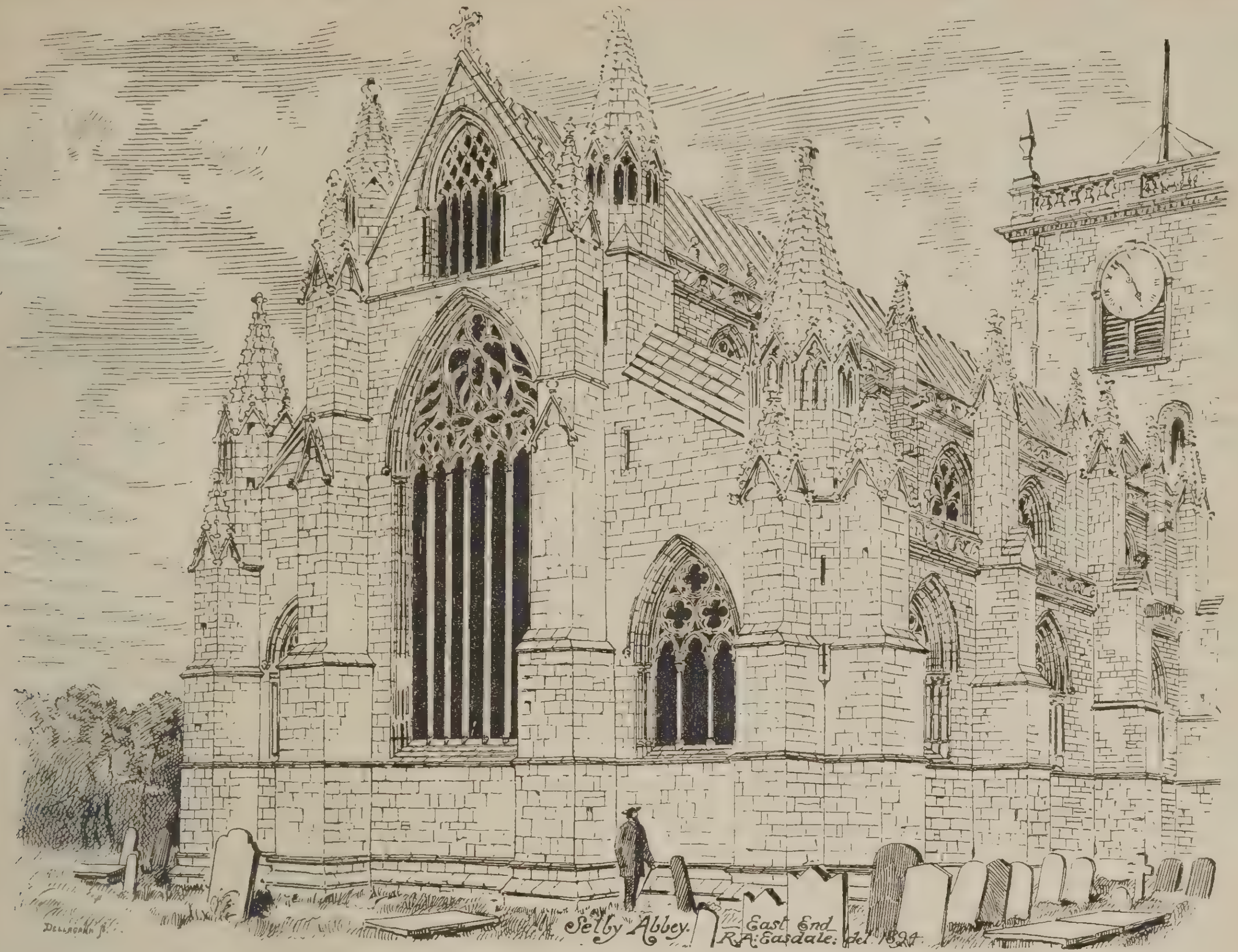
The stereotyped plan saves much thought, and is commercially profitable. Very few venture beyond the beaten track in their designs for buildings, except in those cases where the irregularities of site and other causes compel the architect to do something fresh. Many of our happiest designs have been inspired by necessity, by having to meet unexpected wants, thereby putting the artist's mind to a test. The tendency to follow in the worn track has other incentives besides saving of time and labour: it saves cost in building. The modern contractor is generally against all change and innovations, and when he sees a design on new lines he is apt to become fidgety and distrustful, and to add a percentage in his tender. Is it not the same aversion to anything new which has covered our fairest estates with stereotyped dwellings, and has placed in the hands of builders a great deal of the work which otherwise would have come to the architect? Independent design would have checked the mushroom growth of our towns. Blocks of dwellings and offices which at one time would have enlisted professional talent are now erected by builders all over London. Why? Because people will not ask for better. Is it not time for the profession to be on the alert? And is not the cause of this "leakage" to be found in the fact that the conventional plan has become in fact common property? If the speculative builder can turn out suburban villas by the hundred and city offices and residential blocks by the score, and with all the necessary appointments and decoration as well as the architect, there is nothing to prevent a similar encroachment on other domains. Conventions with all their merits may be purchased too cheaply. We live in days when cheap replicas can be obtained of the best art; when the decorative artist can turn out a drawing-room or a boudoir, or a saloon of a first-class steamship in the same style and with the same amount of effect, at least, as the best artists can produce, so perfectly as if possible to "deceive the very elect," and all this, it must be, at a loss to the original designer. Designs of the leading architects can be copied and travestied with a minuteness and expertness that defy detection. The best forms of doors, of windows, of columnar ordinances, wall panelling, carved and ceiling decoration can be copied in cement, stone, or wood, or reproduced in such materials as Lincrusta; while we have inferior and cheap reproductions of wrought iron and brass-work designed by the great workers in metal of the Middle Ages and the Renaissance. So, too, with the manufacturer of stained glass, in which some of the best designs are reproduced, and with other industries to which we need hardly refer. In all of them conventions have been stereotyped by machinery, by technical processes, and by manufacturers whose main object is to make a large profit. The manufactured convention enters into our best as well as our meanest buildings. Mere mechanicalism enters largely into our ornament and decoration. Our town-halls and even churches are not without the influence of mechanical decoration in a variety of forms, from the ornament of woodwork formed in plastic materials to the decoration of our walls and ceilings. Greek, and Gothic, and Renaissance ornament is stereotyped everywhere, and even our Schools of Art inculcate the copying of types, which are repeated in all textile manufactures and wall hangings. Machine production has in this case also been a hindrance to any original attempt to break through conventional restraint. And it is quite evident that this mechanicalism cannot be continued without detriment to progressive design, or without a sterilising effect on the work of the architect and artist. It is comparatively easy for a skilled draughtsman to become a slave of convention, but hard to disenthral the mind from customary ideas such as those we have described. Our best architects cannot altogether shake themselves free from stereotyped ideas, and those who have large practices fall helplessly into professional grooves. A very few can disengage their minds from those ordered conventions which seem almost to control the pencil. Even the expedients of construction have a trammelling influence. A girder can only be treated in one way, and the simplest feature, like a window, must be governed by the means to be employed in opening it. The one important point to learn is the real value of a convention, whether we can do a thing better by discarding all customary rules. To a very few is given the power of seeing a building or a design in quite a new light, stripped of all convention, and of giving form and appropriate decoration to it, without unconsciously repeating a platitude or a stereotyped expression.

◆

BRITISH BUILDING STONES.—XIV.

IN the BUILDING NEWS list of British Building Stones already published, the "Geological Formation" to which each kind of stone belongs is given in column 3 of that list. An explanation of the meaning of the term "geological formation," and the relation which one formation bears to another, for there are many, seems desirable. In columns 4 and 11 of the same list, certain technical expressions are frequently used, to understand the meaning of which implies some knowledge of mineralogy and chemistry, and it is no less desirable that the ordinary reader should be placed in a position to comprehend them. Any knowledge, therefore, of building stones worth the name, implies some acquaintance with the main facts of geology, mineralogy, and chemistry. This statement sounds rather alarming; but a few general principles deduced from these sciences, keeping rigidly to the particular object in view, will suffice to make clear to the most ordinary understanding, all that science can tell of the origin, composition, and relative position of all the rocks referred to in the Building News list. To a geologist any information of this kind would, of course, be superfluous; but it is not to be supposed that all who are engaged in practical building work are geologists, or that the majority of such have either leisure or opportunity to make themselves acquainted with even the rudiments of that science. It may be said that information of the kind referred to may be readily obtained by a perusal of any of the numerous and valuable works on geology recently published; but what the building operative wants is not so much a handbook of that science as a concise and familiar description of the rocks he has to deal with in his everyday work, divested of all needless technical expressions, and presented with as little admixture of scientific phraseology as possible. To understand the nature and proper use of building stone, it is necessary in the first instance to know something of physical geology, for this deals with the origin, mode of formation, composition and distribution of rocks, and with the various changes through which they have passed, whether physical or chemical. In geology the word "rock" denotes all the strata, whether soft or hard, which go to make up the earth's solid crust: the softest clays and loosest sands, as well as the hardest granites are therefore included, but the architect cannot conveniently extend his definition of a rock to include either of the former. For him, the rock must be sufficiently hard or indurated to allow, at least, of its being sawn with a plate or tooth-saw, and when on the banker to be worked with chisel and punch before being finally set in any building; it must be admitted, however, that some of the stones now used in building work come perilously near requiring the more extended definition of the geologist. All rock are derived from simple substances. Here it is necessary to make a slight digression to explain the meaning of the term "simple substance." All substances are either "simple" or "compound." A simple substance is one that cannot, by any known process, be resolved into two or more essentially different substances, whilst a compound substance is one from which two or more different substances can be obtained by analysis. An example will, perhaps, best serve to illustrate this difference. A piece of magnesium ribbon is composed solely of the metal magnesium. No matter what forces are brought to bear on this metal, in the present state of chemical knowledge, it cannot be resolved into any other substance: hence it is called a simple substance, or chemical "element." If this ribbon is now ignited, it will burn with an intensely brilliant white light, and the residue, or ash, is no longer the simple substance magnesium, but a totally new compound substance called "magnesia," or magnesium oxide. The metal which has disappeared can however be recovered by the chemist from the earthy ash produced by the combustion of the magnesium, which is now firmly bound up with oxygen derived from the air, and so completely altered and disguised that practically not a single property of the original substances magnesium and oxygen can be traced in this new substance. Continuing this digression, it should be noted here that in chemistry, when substances "combine," as the magnesium and oxygen in this example, they are not mixed in the ordinary meaning of that term. In a mixture, the substances mixed, no matter how intimately, can be seen, if not by the naked eye, with a microscope lying side by side. But no microscope has yet been invented that will show the particles or atoms of magnesium lying side by side with the particles or atoms of oxygen in the compound magnesia. Returning now to the rocks, all these are derived from simple substances which at one time existed in an incandescent condition; in cooling, these substances entered into combination with each other in certain definite proportions to form minerals of which the rocks are composed. It has been seen that when magnesium is burned in the air, heat causes the metal to combine with oxygen to form a compound. Chemical research has however shown that while moderate heat favours the combination of substances, intense heat will keep simple substances apart and decompose compound substances. Water is a solid when frozen, a liquid at ordinary temperatures, and a gas at high temperatures; at higher temperatures still water vapour is resolved into its constituent gases, oxygen and hydrogen. At a moderate temperature these gases combine to form water. At a higher temperature they are again separated. Hence all substances we know of possess at ordinary temperatures properties entirely dissimilar to that they possess at high temperatures. It is extremely probable that the earth was at one time in an incandescent condition—that is, all substances existed in an uncombined state as gases, and were maintained in this condition by intense heat. Of this early state of the earth there are two theories—viz., the nebular and the meteoric. The nebular hypothesis, first advocated by Kant in 1755, assumes that all matter in the universe was diffused throughout space in an incandescent condition, gaseous and nebulous, and that the formation of all suns and planetary systems, including our own, was due to the condensation and cooling of this heated gas. In 1796, Laplace advanced the theory that the solar atmosphere at one time extended beyond the orbit of the farthest planet in a heated and gaseous condition, and that the formation of the earth and other planets, with their satellites, was due to the cooling and consequent solidification of this atmosphere. Kant applied his theory to the whole universe; Laplace restricted his to the planets of our system only. The nebulous fiery mist of both these theories must have been of an extremely attenuated kind. Hydrogen, the lightest gas known, is 14½ times lighter than air. The original fiery mist must have been 100,000 times lighter than hydrogen! This would approximate, in popular estimation, to as nearly the original "nothing," from which everything was "created," as could well be conceived. Hence this theory was adopted without hesitation by those "whose philosophy begins where clear thinking ends." There are, however, certain facts known to astronomers which appear to be wholly incompatible with either form of the nebular hypothesis, and the difficulty experienced in explaining or reconciling these has become so great as to necessitate the adoption of some other hypothesis which will "square" better with well-known physical and astronomical facts. The most recent theory of the earth's origin is that of "meteoric agglomeration." This was first suggested by Mayer in 1848. He supposed that in very early times enormous numbers of meteorites of all sizes, moving at all velocities, in all directions, in orbits of all degrees of eccentricity, filled the entire interplanetary spaces, that these bodies frequently collided, generating heat enough to fuse the whole into one mass; this mass, losing heat by radiation, consolidated, and formed planets, movements of revolution and rotation being generated by the impact of falling meteors.

Whichever theory is correct, if either—the universal fog, or partial bombardment—it is tolerably certain that the earth, and all it contains, existed at one time in a molten condition, and that it is now cooling slowly from the surface towards the centre. The origin of all rocks is, therefore, igneous, and with this fact geology may be said to begin. The ordinary observer will be puzzled to know in what sense it can be said of the sandstones and limestones now quarried that these existed once in a molten condition? These rocks in their present state were not consolidated direct from a fiery magma, yet the minerals of which they are composed did at one time exist in a molten and fluid state. These, however, have undergone such subsequent changes, by various physical causes, that almost all trace of their igneous origin has been obliterated. The first land surface was probably uniformly spherical, and without elevations or depressions of any kind. Hence the first sea must have been universal, and until a subsequent period there was no dry land. It is supposed that, owing to the close proximity of the moon at this period, the universal sea was subject to tidal waves 500ft. or 600ft. high, and these must be taken into account in estimating the forces operating for the destruction of lands which subsequently appeared above the waters. Simultaneously with the formation of a solid crust or shell round the molten earth, and with the formation of the sea covering it, extensive earthquakes and huge volcanic eruptions set in. Mountain chains were upheaved, and corresponding areas depressed, by a force to be presently explained; the newly-formed solid crust was rent and fissured in every direction. This disturbance, which commenced, possibly, about 500,000,000 years ago, continues to the present day, occurring periodically, but reduced in intensity, owing to the resistance offered by the greatly increased thickness of the outer shell or crust of solid rock. The force referred to, as being competent to produce great changes in the earth's solid crust, is volcanic energy; and the causes of this are internal heat and the loss of it by radiation. It is found that as the depth from the surface increases the temperature rises at the rate of about 1 degree Fahrenheit for every 50ft. or 60ft. The depth from the surface to the centre of the earth is 20,923,831ft. Borings have been made to a depth of 4,200ft. only, so that it is not possible to say if the temperature increases above that depth at the same rate, or becomes constant at a certain depth; but that an enormous amount of unexhausted internal heat exists is proved beyond all doubt. From the foregoing fact it is concluded that the earth is gradually cooling from the surface inwards, that the outer layers of the crust have lost their original heat, and that they have, in consequence, ceased to contract. Now, underneath these solid layers, and attached to them, are masses of rock in a molten or semi-molten condition, which, though still retaining an enormous amount of heat, are losing it gradually, and are, in consequence, contracting. Forming, as these molten masses actually do, part of the rocks immediately above, and in contact with them, the effect of this contraction will be to pull the upper layers together horizontally. But, as it is impossible to compress the rocks, the force exerted takes an upward and outward direction, upheaving the surface at right angles to the lines of lateral pressure, forming mountain ridges and valleys, as we find them, for upheaval is invariably accompanied by subsidence. This process of upheaval may be sudden or gradual, affecting extensive areas or limited ones. Sudden upheavals to great heights are generally accompanied by great dislocations of the strata affected, and extensive cracks or fissures are developed, whilst gradual upheaval may take place without


Selby Abbey.
East End
R.A. Easdale: del 1894
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apparently producing any such phenomena. In certain localities volcanic disturbance is not confined to upheaval only, but is marked by eruptive action also. The heat which produces this is probably caused by the arrested motion of lateral pressure, actual eruption taking place only when water in large quantities percolates through to the vicinity of the highly-heated rocks. It is a well-ascertained fact that rocks under enormous pressure may be subjected to intense heat without melting, but if the pressure is removed they liquefy at once. It can be imagined that water in contact with rocks of high temperature will develop enormous pressure, and this will exert itself in the direction of least resistance. The pressure being thus removed, the water will flash into steam, the rocks will assume a molten condition, and be ejected from the fissure with great violence, giving rise to eruptive volcanic action, which will be continued until all the pressure is exhausted. This eruptive action is usually intermittent; but as stream after stream of molten matter is discharged and consolidated, the whole assumes a roughly conical shape around the discharging orifice or crater, which is preserved in the centre of the mass. It was at one time thought that all great mountain chains and other elevations were due to direct upward pressure; but this theory is now abandoned for that of upheaval induced by interrupted horizontal contraction. It was also thought that volcanoes were chimneys, or safety-valves, in the earth's crust, through which the central fiery mass boiled over; but this theory is exploded, for contraction as above described is sufficient to account for all known volcanic phenomena.

The first dry land upheaval was necessarily crystalline rock of igneous origin. With its appearance, forces potent for its destruction came into operation, and sedimentary or stratified rocks resulted. All these latter are, therefore, composed of the waste of the former. The forces referred to were chemical or mechanical. Rain holding carbonic acid in solution fell in torrents on the newly-formed land, disintegrating and decomposing the surface; streams, watercourses, and rivers washed away the decomposed material, and deposited it in the sea; frost, acting on water-saturated rocks, burst them to pieces; rivers deepened their channels and wore away their banks; the sea itself, agitated by storms and huge tidal waves, washed away the ancient coasts; all the waste produced by "denudation" being carried away by water or moving ice, to be finally spread in layers or "strata" over the bottoms of the ancient seas or lakes. The materials deposited in this manner consisted of clays, sands, and gravels. Subsequent pressure and the infiltration of cementing matter caused the various beds to consolidate, and in this manner sandstones, slaty rocks, and some limestones were formed. The rocks so-formed were in their turn up-heaved, then worn down again, "denuded" in geological phraseology, and spread over the sea bottom; and this incessant round of destruction and reconstruction continues. At the present rate of denudation, it is estimated that in 5,000,000 years, all our present continents and islands will be worn down and buried beneath the waves. It is obvious that, as the sedimentary rocks were deposited in water over large areas, and in beds or strata of nearly uniform thickness, these must have been laid down to a "dead level," or nearly so. Upheaval has, in many cases, tilted these beds at various angles with the horizon, and sometimes even set them up on end—that is, at right angles to the original plane of deposition. It is, therefore, certain that rocks, such, for instance, as the lower oolites, now found on the tops of the Cotswold Hills, were once some hundreds of feet under the level of the sea, and that the beds of these rocks, no matter what their present angle with the horizon, were then parallel with it.

SELBY ABBEY—EAST FRONT.

THIS well-known abbey has just been restored as regards the chancel, and now the tower is about to be taken in hand. There are some beautiful small Norman windows in the tower, but the unsightly and incongruous balustrading and cornice, to say nothing of the pinnacles, spoil what is otherwise a splendid specimen of an English Gothic abbey church. The sketch we publish to-day is by Mr. R. A. Easdale.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE sixty-first session of the Institute was inaugurated on Monday evening. Mr. F. C. Penrose, F.R.S., the President, occupied the chair, and there was a large attendance of members and visitors, including some ladies. It was announced that, in accordance with the by-laws, Mr. Francis Lennox Canning, of Johannesberg, had been reinstated as a Fellow.

THE PRESIDENT'S OPENING ADDRESS

was then delivered. Mr. PENROSE congratulated the members on the fact that the Institute had continued to gain, both in position and in members; but he regretted that, while the roll of Fellows and Associates was steadily growing, that of Honorary Associates was diminishing, having fallen from 115 in 1878, to 60 in 1894. Some had thought that, as an hon. associate paid a subscription of two guineas, and an entrance fee of like amount, the title was anomalous, because the term "honorary" should imply that such member was not a subscriber, but the President contended that the word honorary was used in the sense of the English word "lay," or the French "libre," as a conferring of honour. He also thought the class of Honorary Corresponding Members should be strengthened—it had fallen from 55 in 1842 to 49—and called attention to the fact that at present there was not a single representative of the architects and archæologists of Russia on the list.

It was now generally recognised that the examination in architecture had fully justified its establishment; at any rate, it had become a great fact. The present month brought the former and partly tentative arrangement to a close, and from henceforward begun the system of progressive examinations. The President considered that these examinations could not but have an excellent effect: first, and directly, in securing to future members of the Institute the reputation of having satisfied a certain standard of proficiency; secondly, and indirectly, by excluding from the Institute in the first instance, and by reaction from the profession at large, young men whose abilities would have been more advantageously directed towards the pursuit of some other calling. A summary of the examinations of the past official year gave the following results—namely: (1) In the Preliminary examination 165 attended: only one was "plucked," 28 were relegated for a term, and 136 passed; (2) in the Intermediate examination 55 attended: not one was rejected, 19 were relegated for periods, and 36 passed; (3) in the Qualifying examination 176 applied, but only 150 attended: 3 were rejected, 84 were relegated for periods, and 63 passed. He welcomed also the signs of useful examinations in building construction inaugurated by other bodies. The revived guild action of the City companies was a circumstance favourable to sound execution. He had had pleasure in following in the steps of their former presidents, Messrs. Anderson and Waterhouse, in assisting at examinations conducted by the Worshipful Company of Carpenters. The President drew attention to the present position of district surveyors in London, remarking:—A new Metropolitan Building Act has passed the Legislature, with so many new provisions that it seems to require much study on the part of those who have to enforce it as district surveyors, or to obey it as architects. For some of the enactments, at any rate, we may be thankful. I refer particularly to those which impose limits—lofty enough, indeed, but still limits—to the height to which houses may be carried both in front and back. For amendments in many provisions of the new Act, made after long and careful consideration, the metropolis is largely indebted to our Practice Standing Committee, as also to Mr. Arthur Cates, Mr. T. M. Rickman, and Mr. Edwin T. Hall, who, with representatives from the Surveryors' Institution, attended a prolonged conference on parts of the original Bill with the London County Council. I will not, however, enter into the subject, but await the abstract of the Act which our Fellow, Professor Banister Fletcher, is preparing, and the publication of which is promised before the end of the year. Under this measure—the London Building Act, 1894—which comes into force on the first day of next year, the Institute still remains the examining body for granting certificates of competency, without which no person can become a candidate for the office of district surveyor in London. This stautory examination, until the present London County Council imposed a condition that a district surveyor shall not practise as an architect, was always well attended, and those who presented themselves for examination were generally men who had not only received the education of an architect, but had practised as such. Not long ago this statutory examination was held quarterly, and the examining board had then much to do in order to finish the oral part of the examination on one day. But now, very few persons apply to be examined, and during the last official year the two examinations announced to be held did not take place, owing to the want, or perhaps the paucity, of candidates. Yet a district surveyor, if he is to do his duty by the London Council who appoint him, as well as by the architects whose buildings he has to inspect, should have that knowledge of architectural science or building which can only be acquired by an architect who has been engaged for, say, seven or ten years in the active practice of his profession. I will not go into the question whether a district surveyor ought or ought not to be allowed the right of private practice, but I am certain that he ought to have practised as an architect before attempting to fulfil the duties of a district surveyor under the London Building Act. Is there, then, anything unreasonable in the thought that the London County Council would be wise in including among the conditions of such appointments the proviso that every candidate for the office of district surveyor in London shall have previously qualified for admission to the class of Associates of this Institute, and have either passed thence to the class of Fellows or have become admissible, by length of practice, to that class? We have lately seen brought to completion by our honorary Associate, Mr. Wolfe Barry, the Tower Bridge, a great engineering work with which the late Sir Horace Jones was originally associated as architect. If he had lived to superintend the completion of the design of such parts of it as lay in his department, he would probably have left the towers more massive than they are. It is, indeed, greatly to be wished that association between architects and engineers, in cases where their provinces overlap, were more frequent than it is. I well remember Professor Cockerell regretting a lost opportunity of the kind in the case of Waterloo Bridge. Sir Robert Smirke had offered his assistance to Mr. Rennie in profiling and adjusting the Doric columns which formed part of the engineer's design; but the latter declined. The baldness of those columns is a serious defect to the beauty of the bridge, which, indeed, would have been handsomer if the columns had been omitted altogether; and one of the good results of the Tower Bridge is that it relieves us from the necessity of tampering with the noble simplicity of London Bridge. In contradistinction to works which are satisfactory for their actual or hoped-for achievement, I feel called upon to mention one, of which the stoppage would, it seems to me, be matter for congratulation, and to express the hope that no further progress may be made with it, unless it be to convert what already has been done into something far less pretentious than the original intention, calculated to spoil the scale of everything else for miles around it. I need not explain to anyone here present that I refer to the incipient structure of the huge steel tower at Wembley Park in the north of London. Possibly, if its lower story were turned into something of the nature of the hanging gardens of Babylon, it might be an interesting and unobjectionable structure; but if the original scheme is to be carried through, you will, I think, agree with me in wishing confusion to a new Tower of Babel. Again, with regard to another point, which is not, I fear, so much attended to as it ought to be. It cannot be too strongly insisted upon, that in the case of old buildings of established architectural merit, when new buildings are erected by their side, the utmost care should be taken that the new works do not injure the effect of the older. I think many of us must have been often much pained in witnessing such injurious treatment of old venerated monuments. A case of the kind has occurred, but not recently, at Exeter. There was till comparatively lately, as in the case of several of our cathedrals, immediately contiguous to the west front of Exeter Cathedral, a small church, of no remarkable architectural value certainly, but which by its very smallness gave valuable scale to the cathedral. At a later visit I found it had been replaced by a church of much larger proportions, and the merit with reference to the cathedral which its predecessor had was entirely lost. In my opinion, though the wants of the parish may have required the enlargement of the church, there was no occasion for the architect to have so raised the tower and spire as to overtop the venerable cathedral. I shall not attempt to meddle with the controversy which some time since was raised as to whether architecture is an art or a business. The two elements are no more separable than are faith and works; and our teaching to students properly takes cognisance of both. To the art element, and the thoughts more immediately connected with it, I propose to confine myself in what I have still to say to-night. The original sources from which we derive our art must always have an intense interest for us, and whilst we are in hopeful expectation of new light being thrown upon Greek archæology from the researches of the French architects at Delphi, under the experienced and skilful guidance of M. Homolle, the Director of the French School at Athens, we are not indifferent to grievous tidings which come from Egypt—a strange proposal which, having been more or less vaguely in the air for some time, has recently assumed alarming consistency. I refer to the proposed Nile barrier, to be built across the river at Assouan for the purpose of storing up the waste waters of the annual inundation in a huge reservoir, in such a manner as to submerge and ruin a series of the most beautiful and interesting remains in the country. The deluge which is threatened would extend from Assouan as far as Korosko, a distance of fully 100 miles, forming a lake of which there would be no parallel in Europe, submerging the Island of Philæ, with its celebrated group of temples of the highest beauty and artistic value, and eleven or twelve other important sites, particularly the fine and very perfect temple at Kalabsha. In addition, moreover, to what we know would be lost, it should be noticed that, as the region of Nubia, in which they occur, has not been so carefully examined as most other parts of Ancient Egypt, it is more than probable that many objects which would otherwise reward future exploration if they remained, as now, accessible, would be lost for ever. Again, if anything happened to the dam, what would be the fate of Lower Egypt, and all its inhabitants and all its treasures? We need not fear but that the engineers would do their best to make it secure; but sad instances of the failure of reservoir dams, where everything ought to have been well constructed, are not unknown to us, and the region has been subject to earthquakes so violent as to throw down even Egyptian structures. The proposal has, unluckily for one point of view, much that is tempting to utilitarian minds, and we are not as a nation exempt from the reproach of yielding in cases where men of business have had to choose between sentiment and prospective gain. In the case of the Nile barrage, we must do the Egyptian Government the justice to say that they would seem to deplore the injury to art and history which would follow; but the premium which is held before them is so large that we may feel sure that any attempt to oppose an absolute negative to the scheme would be simply futile; nor would it be right. Our own Government, again, is doubtless in no enviable position in the matter. If by an exercise of power we were to prevent the work from being undertaken, it is easy to see what a deep and, maybe, dangerous feeling of disappointment would arise in Egypt; whilst if they consent to it, our rulers, both at home and abroad, would incur much obloquy. It has been suggested that a dam of less elevation, placed above instead of below the Island of Philæ, would for a long time answer all legitimate demands for water storage, and would involve a much smaller sacrifice of valuable antiquities or disturbance of inhabitants; and if at some future time the demand should arise for a larger supply, other means not now available—new sites, for, instance, above Wady Halfa—might be found. We may, at least, hope for the escape of Philæ and some other of the Nubian antiquities, and this gradual method of procedure would seem to fit in with the expectations of the proposers of the barrage, for the supposed profits on which the scheme is based are not to flow in at once, but, as Mr. Garstin himself says, the *great expectations* are founded on an eventual increase "which it will take years to arrive at." As regards the main proposal of this barrage, we have, indeed, no resource but hope; and in this I am encouraged by the remarks of Sir John Fowler, who presided at a recent meeting of the Egypt Exploration Fund, when he took occasion to state that there was now little danger of the destruction of Philæ; that further inquiry had shown that the material necessities of Egypt and the claims of archæology were capable of reconciliation. Turning homewards, it may be useful to institute a comparison between some of the results of architectural work of the present, as compared with an earlier period in this country. In making this comparison, we must not lose sight of the great differences in the two periods, both in respect of the demands upon the architect, and of the materials available to his hand. The greater complexity of the conditions of modern life is unfavourable to the modern architect in some respects. It requires him to spend a large portion of the funds available for a building in work which, however important, can produce no æsthetic effect, and the many calls upon him to satisfy a variety of wants must necessarily make it very difficult to secure that charm of simplicity and proportion which is an essential ingredient in work of the highest quality; indeed, with so many importunate claimants for attention, the time which must have been devoted to rhythm and harmony by the older architects can now seldom be spared. There is, therefore, a great temptation to accept a premature solution of the problem, provided the requirements of the plan appear to be satisfied, and provided the resultant grouping, however haphazard it may be, accords with some ideal of picturesqueness which natural or acquired taste can generally secure. I do not, however, venture greatly to blame this result. It is far better that a good plan should command the obedience of the elevation than that a preconceived symmetrical elevation should force the plan into inconvenience. Nevertheless, a more excellent way is almost always possible where the plan shall still rule, but with all the difference between marching order and broken ranks; and it may require more time for working out than can be spared in any particular case. Genius has been defined as a power of indefatigable study. Such genius is indeed very necessary for the highest achievements of architecture. There are certain buildings, such as club-houses, theatres, town halls, and, above all, ecclesiastical structures, which lend themselves much more than others to be treated by the rules of Art; but there are none, not even the most humble, which may not be improved through study with an eye that loves proportion. It is a duty the profession owes to the public to do this on every possible occasion. To return to my comparison between the older and later architectural works. There is a point which seems to be deserving of attention, but whether it admits of being to any great extent brought into operation I do not venture to say. The modern architect, owing to the way in which drawings, specifications, and bills of quantities are prepared, and the exactness with which contract works are expected to follow out those documents, has seldom if ever the same freedom in studying his design as it develops itself, and in making improvements which suggest themselves as the work goes on, that our predecessors had two hundred years ago. The designs made by Sir Christopher Wren for St. Paul's Cathedral underwent great changes during the progress of the building, as there are many extant working drawings to show. Some liberty, of course, we have by the usual conditions of contract, but the greater rapidity of modern construction, and the fear of additional cost to the employer, limit considerably the free use of those conditions; and this want of elasticity, so to speak, in availing ourselves of opportunities offered by the study of our works whilst in progress, is one of the points on which the older architects had a great advantage over us. Let us now compare the works of some of the older with those of more recent architects. But before doing so I would urge upon those in whose hands rests the power of developing the means of architectural study to consider the possibility of forming a permanent exhibition of drawings representative of English architecture. The suggestion, indeed, is not new, nor is it mine; but I have received a letter on the subject from our Fellow, Mr. W. Howard Seth-Smith, which is so much to the point that I propose to read a portion of it. He says:—

> If we are to look for real and permanent progress in architectural design we must in some way create public interest and enthusiasm for beautiful building. A permanent exhibition would be the very best means of gaining public interest in our art. It is the Galleries which have made art more popular. It may be true that the public do not understand geometrical drawings such as are annually exhibited for three months in one small room at Burlington House, but there is a very considerable and increasing number of persons sufficiently interested in architecture to appreciate keenly, and to compare critically, the merits of buildings if represented by photographs and other perspective views. It is on the face of it unfair to subject an exhibition of architectural designs (largely geometrical) to competition with a mass of popular pictures, as is the case at the Royal Academy; but this is the only opportunity existing in London for a person to watch the progress of English architecture. While the amateur's opportunities are confined to the ancient buildings themselves, his prejudice against all modern work is likely to be as invincible as it is unreasonable, and therefore fatal to progress. Nor is he, as a rule, capable of studying modern work profitably by perambulating the streets; his knowledge will be too small to enable him to distinguish the good from the bad. The choice specimens (alone worth the attention of the student) are, with few exceptions, scattered too widely or hidden too deeply amid this utilitarian wilderness of London to make this practicable. I would propose that a permanent exhibition be organised of most carefully chosen architectural illustrations of the best ancient and modern designs, classified under all the great divisions of building, such as Civil, Ecclesiastical, Domestic, Scholastic, &c. There should be one department for photographs of selected ancient work, chronologically and topographically arranged and carefully described. This would supply the urgent and often-expressed want of an illustrated lesson on the characteristics and developments of the great architectural epochs and styles of the past. Such an exhibition would at once be popular among the rapidly extending connoisseurs of art, would be patronised by persons of enterprise and intelligence desiring to build, and would doubtless be largely visited by Americans and other foreigners.

I certainly consider Mr. Seth-Smith's proposal one of great importance. To be of any service it would require to be carried out in an effective manner, and if this could be done, it could not fail to be advantageous both to our profession and the public at large. Returning to my proposition before stated, the list of the architects I propose to refer to begins with the two greatest names on our record—namely, Inigo Jones and Sir Christopher Wren. Inigo Jones had settled at Copenhagen, and the King of Denmark's sister, who married our James I., brought him back to his native country. He then travelled for further study in Italy. The beautiful fragment at Whitehall is, as you know, only a small portion of the magnificent palace which he designed for King James, preserved to us, no doubt by the liberality of Lord Burlington, in Kent's fine edition of Inigo Jones's works. Besides the Banqueting House, there are but comparatively few remains of Inigo Jones's buildings in London. We have lately lost a very interesting work of his in Lord Shaftesbury's house in Aldersgate-street, which was taken down about ten years ago. It had already suffered much, but was still a noble fragment. There is also the much-mutilated east front of St. Paul's, Covent Garden, and the Piazza on the north side of the market; and there is the water-gate at the bottom of Buckingham-street. This gate, although it retains its beautiful proportions, has lost much of its interest now that it no longer gives access to the river; but its preservation under any circumstances is a thing to be grateful for. A house on the west side of Lincoln's Inn-fields still shows the handiwork of Inigo Jones. Ashburnham House, Little Dean's-yard, Westminster, built by him, has been much altered, but there are remains of his work in the interior. There are probably a few others, but a good deal has been attributed to him on insufficient grounds. Sir Christopher Wren's first work of any importance was the Sheldonian Theatre, Oxford, designed by him in 1664—a building which still admirably answers the purpose for which it was constructed. At this time Wren was busied with various designs for altering old St. Paul's, which had survived in a very ruinous condition the ill-treatment of the 16th century and of the Commonwealth. The Great Fire in 1666 put an end to all attempts to repair and alter it, and made a new building necessary. I am not intending to dilate upon the existing Cathedral, which you all know so well, and in which there is so much to admire; but I should like to call your attention to a design which is even more distinctly Wren's than the existing Cathedral. I refer to his first and favourite design, for which an elaborate and large scale model was prepared. This model still remains, though, unhappily, it suffered from neglect during many years, and I am glad to be able to inform you that it is undergoing restoration, though progress is necessarily slow. It is, however, in quite a sufficient state of preservation to enable Sir Christopher Wren's merit to be fully appreciated. We have at this Institute, by Mr. Goodchild's kindness, two splendid drawings representing the interior of the Cathedral as it would have been if Wren had been allowed to execute this design. I do not say that it competes on equal terms externally with the existing structure, especially when we consider the height of the surrounding buildings, which gives the value of greater loftiness to the adopted design. But when we consider the two interiors, the balance altogether preponderates in preference of Wren's favourite design. As for certain defects in it which Fergusson discusses, we must remember that Wren had not, in the case of this design, as he had in the adopted one, thirty years of study and improvement to give to it as the work proceeded; but this marvellous production was the outcome of necessarily a very rapid incubation. The late Rev. J. L. Petit, in discussing Saint-Front, Périgueux, and what has been and still might be derived from it, observes that Wren—who, though he may not have known Saint-Front, must have known St. Mark's, Venice, from which Saint-Front was derived—"had conceived a design" (namely, his favourite model) "on similar principles, which, "had it been carried out, would have given his cathedral the noblest interior in the world." It is evident that Sir Christopher Wren's designs embodied the result of much study and many approximating revisions in preliminary sketches, carrying out in this the precept of Horace, "Sæpe stylum vertas," which may be familiarly translated "Use your india-rubber freely"; and when the final result was attained we find that he considered rhythmical proportions as essential to completeness in architectural design as they are to poetry. I find the same thing in the two buildings of Sir Christopher's I have chiefly studied—namely, St. Paul's Cathedral and St. Stephen's, Walbrook—and I have no doubt it obtains also in his lovely creations of Bow Steeple, St. Vedast, St. Martin's, Ludgate, and others of his works, which possess admirable qualities of elegance combined with simplicity. The most conspicuous of Wren's followers were his pupil and assistant, Nicholas Hawksmoor, and Vanbrugh and Gibbs, to whom may be added, as an associate, Dean Aldrich, who built the church of All Saints, Oxford, and the Peckwater Court of Christ Church, in a style much in harmony with that of his friend, Sir Christopher Wren. The three first named have left stately monuments. To mention only one work of each: Hawksmoor has given us, in his church of St. George, Bloomsbury, a monument worthy of the Classical feeling he had imbibed from his master; James Gibbs, in his church of St. Mary-le-Strand, a work of great elegance; and Vanbrugh at Castle Howard, a noble pile, more pure than Blenheim. Vanbrugh, however, failed to impart—as Wren did—sufficient elegance to his powerful masses. The above-named architects represent in date the middle of the 17th and the dawn of the 18th century, and they are the authors of standard works with which it is hard for the modern schools to compete. The middle and end of the 18th century witnessed performances, many of which were not wanting in dignity; but they offer a less uphill match to our own time. We must, of course, accept a common ground of comparison; for Gothic architecture was almost unknown in the 18th century, though an exception to this statement ought to be made in the case of the architect Essex. Limiting the inquiry, therefore, to the revived Classical styles, the names of Lord Burlington and his friend Kent, and Kent's pupils, Flitcroft and Vardi—the latter the builder of Spenser House, in the Green Park—the younger Dance, Sir William Chambers, and James Gandon, the architect to the Four Courts in Dublin, and distinguished as being the first to receive the architectural gold medal of the Royal Academy, stand out pre-eminently. There are a simplicity and fitness for the purpose about Dance's principal works, Newgate and St. Luke's Hospital, which are worthy of being carefully noted. Sir William Chambers's great work, Somerset House, notwithstanding many effective new buildings on the Embankment, maintains its pre-eminence, and the Strand front and entrance may still be said to "hold the record" of similar combinations. A little later in the century lived Wood, the architect of Bath, whose palatial building of Prior Park is one of the ornaments of the 18th century; and James Wyatt, a man of versatile genius, and Robert Adam have left works of merit. At the turn of the century came Sir John Soane, whose most remarkable design, the Bank of England, has the merit of being thoroughly characteristic of the purpose of the building, following in this the spirit of his master, the younger Dance. When we come down to more recent times, by which I mean the first quarter of the present century, I find among the names of the architects some whom I myself remember when I settled in London as a pupil to Edward Blore in 1836. One of my first memories was the exhibition of the designs for the new Parliament Houses. They were exhibited in the rooms in Trafalgar-square, which had only lately been completed, and had not yet been assigned to the Royal Academy, whose exhibition for that year was still held at Somerset House. Sir Charles Barry's design was approached by no rival. Some drawings were indeed sent in by Cockerell, but he had evidently not entered seriously into the struggle. Blore did not compete. So far as my judgment at that time can be trusted, the best of the unsuccessful designs was by Basevi. Besides the four just mentioned, the names I recall as the leading London architects were Samuel Angell, Tite, Hardwicke, Sydney Smirke, Donaldson, Salvin; and, as a writer, Gwilt. For Sir John Soane, Sir Robert Smirke, Wilkins, Inwood, and Decimus Burton, though living, belonged to an earlier decade; Thomas Henry Wyatt, Sir George Gilbert Scott, and Sir James Pennethorne had scarcely at that time made their mark; and William Burn was just migrating to London from Scotland. I omit Augustus Welby Northmore Pugin, who, as far as the competition for the Parliament Houses was concerned, was, as it was already known, giving his assistance to Barry. At the time to which I refer, I consider that, with the exception of Pugin, Blore was the only architect who was quite at home in the detail of Gothic architecture. The full development of the Revival had not come in, and it was the "day of small things"; but whilst we may reasonably complain of a want of massiveness for the most part in his works, there is a sense of elegance about his buildings which raises them above the level of the majority of the contemporary works of Gothic revival. There are not many of his buildings in London. The exterior of the Church of St. Thomas Charterhouse, in Goswell-road, may be cited as a good specimen, allowance being made for the decay of the Bath stone used in the decorative parts, the inability of which material to resist the London atmosphere was not so fully recognised then as it has been since. Among the best buildings of the same period are two works by Shaw—the hall of Christ's Hospital and the tower of St. Dunstan's-in-the-West; fortunately a better stone was used in their construction. The first place in the period which I am considering—for I purposely do not refer to the names of men who, like William Burges and George Edmund Street, attained such distinction during the second half of this century—must be assigned to Sir Charles Barry, not only on account of his great work, the Parliament Houses, in which, whatever amount of freedom in detail he may have allowed to his coadjutor Pugin, his great power of dealing with the masses was conspicuously his own. But independently of this, the Reform and Travellers' Clubs, and Bridgwater House, to mention no other of his works, suffice to secure him this position. Barry was a man of extraordinary energy, of unwearied industry, and of a powerful presence, qualities of the utmost importance to anyone engaged in works of such a scale as those which were intrusted to him, especially when combined with a courteous manner, of which I personally had the highest appreciation when he was on the committee assisting Dean Milman in the works intended for the completion of St. Paul's Cathedral. The man of greatest distinction after Sir Charles Barry was unquestionably Professor Cockerell, a name deservedly revered and honoured, whose buildings include some of very great merit. Cockerell laid the foundation of the Classical expression found in his works by an exhaustive study of Greek remains, of which he was an eminent and ardent explorer in days when such investigations were rare, and attended often with "perils from waters" and with "perils from robbers," in days when communications were very difficult. His fame would be considerable if it rested only on his published works. When he returned to England he entered heartily into the then fashionable Greek revival; and, so far as it was possible to adapt the limited range, not of its teaching, but of its available precedents, to modern practice, he succeeded—a claim which can be made for no other architect of our time but one, Schinkel, of Berlin. Cockerell excelled as a draughtsman, and was no mean sculptor. He himself modelled much of the ornament which he introduced into his works, and his mouldings are always examples of appropriate profile. These details, and the propriety of their subordination to the whole, in addition to the sense of harmony and proportion which prevails throughout, are objects particularly worthy of study in his works. In London, the Sun Fire Office near the Bank of England, and at Oxford the Taylor Museum, are buildings which will preserve his reputation as an architect. His admirable lectures delivered at the Royal Academy cannot but have produced good results on those who heard them. Both in Cockerell's works and in those of Barry will be found the same qualities of proportion and subordination of ornament which are conspicuous in the works of Sir Christopher Wren and architects of his school. Nearly contemporary with Cockerell as a Greek explorer was Donaldson, the chief pillar of the Institute at its commencement. There is not much of executed building by him, but he was an admirable instructor; and many of our present members owe much to him from his lectures at University College. He, too, has left a long-enduring memory of a kind and sympathising nature; and, while mentioning Donaldson, I cannot but refer to the three Papworths, father and sons, the last of whom has been borne to his grave since we met in this room. To continue: Gandy Deering, himself a Greek explorer, having been engaged in that service by the Society of Dilettanti, exhibited much skill in his use of Greek elements; but for the most part the Greek revival did not, and could not, succeed, and it helped to bring on the Gothic revival, which apparently is also losing its vitality. Some good works, in which Greek detail is not so evident, were, however, produced about the same time, such as Arthur's Club-house, and Basevi's Fitzwilliam Museum at Cambridge—the latter being left unfinished when Basevi met his death by a sad accident in Ely Cathedral. The building was then completed by Cockerell, but the interior has been much altered since those days. The most remarkable building of this period (if we exclude the Houses of Parliament, the style of which does not lend itself to the comparison) is St. George's Hall, Liverpool. The younger Elmes, who was the architect, did not live to finish the building, and after some delay Cockerell was appointed to complete the work. It appears that Elmes had left full instructions for its completion, but these documents had been lost or mislaid, so that when Cockerell came upon the work he had nothing to guide him but the shell of the building. The entire finishings as executed are by Cockerell's hand; but there can be no doubt that in every respect he loyally carried out Elmes's intentions so far as they could be gathered, and the harmonious result shows that he must have succeeded in practically doing so. The external approaches to the hall were worked out and finished with great care by Cockerell; these, however, have been since subjected to considerable alteration by others. I have now carried the summary far enough, and shall not particularise any very recent buildings; and for the purpose in view—that is, the comparison of what was done in the 17th and 18th centuries with the works of the present time—there is no necessity for my doing so. Carried down to the extent it has been, we have found in Sir Charles Barry's and Professor Cockerell's works the same loyalty to the principles of subordination and proportion that prevailed in the days of Inigo Jones and Wren. But, latterly, they seem to have been too much lost sight of. Both the Greek and Gothic revivals have had the effect of bringing into contempt the precedents of Palladio and the great Italian authorities, and, misinterpreted as the spirit of their rules often was, there was some reason in this reaction, for, as far as such rules were supposed to supply the place of genius and thought, they were indeed fetters instead of helpers. That genius and thought could be replaced by rules of any kind was certainly a mistaken view. Followed as Palladian precedents and principles were by men like Inigo Jones, Wren, and Chambers, as the language with which their thoughts were to be clothed, they had the same value in architecture that metre has in poetry. The license which is now too frequently taken with forms and features long recognised as essential, in favour of a treatment of which the final aim is picturesqueness, can hardly ever produce a satisfactory effect from all points of view. I do not hesitate, however, to allow that pleasing effects do, as it were, accidentally occur; and that we do not, in streets where architects have scope allowed them, see monotonous frontages of the class of Gower-street and Wimpole-street—such as were general at the beginning of the century, though even to them some excuse must be granted. Those were hard times, when the country was struggling in a great war for very life, and severe economy in building was then much more insisted upon than it has been of late; and had that restriction not happily been relieved, there could not have been employment for more than about one-tenth of the number who are at present enrolled in the profession. The relaxation of architectural discipline, however, was not a necessary element in the result referred to, for quite sufficient variety, and of a better quality, can be obtained by proper study without ignoring accepted precedents, or neglecting principles of still greater value—namely, proportional relations of contiguous parts and subordination of details to the purposes for which they serve and to the general effect.

At the close of the address a cordial vote of thanks was passed to the President, on the motion of Dr. GREGORY, Dean of St. Paul's, seconded by Mr. L. ALMA-TADEMA, R.A.

STAINED GLASS.*

THE subject is perhaps too wide, and has too many ramifications, to allow of justice being done to it in the course of a short paper; therefore I propose to limit my remarks to its relation with architectural features, and to the description of the inception and execution of a modern window, referring, from time to time, to examples on the walls which seem to me as bearing somewhat upon the particular point under discussion. It is most probable that the greater part of matter of this paper will be already well known to most of you, so I must address myself to the younger and least experienced portion of my hearers. Ignorance of the methods of the glass-painter is so common, that possibly I may be able to remove some misconceptions, and throw some light upon what, to gentlemen in your profession, must be an interesting subject. Ignorance is the wall against which glass-painters are so often bruised and broken. Ignorance of the origin, limits, methods, and subjects of the art on the part of clients is the great cause of the prevailing pictorial attempts—attempts which, in the nature of things, must fail. For our purpose to-night I will suppose that a possible client has asked for a preparation of a design. Theoretically, therefore, it is necessary for the painter to ask himself some questions before commencing. First, what is the purpose of a window filled with painted glass? Indubitably, to give light, and at the same time to hang, as it were, between earth and heaven, representations, in brilliant colours, of men or incidents in the life of the Christ militant, expectant, or triumphant, for the education and consideration of the living, and to form a worthy adornment to what should be a worthy Palace of God. The question of light puts out of court entirely those heavily-painted and coloured windows of German origin so frequently seen in our churches, and which at one time we considered the acme of good taste. Whatever else may be, the glass must admit light; this was felt in the first period of the revival of the art, and thin glass was used with this object in view. A little study of many remaining examples of old glass in England—and it is quite unnecessary to go further—such as York, Malvern, Fairford, Oxford, and elsewhere, would have shown that most obvious fact, that the object was attained by using white glass, for certainly the greater portion in all old works—perhaps two-thirds—was white, or white glass stained yellow. Our immediate predecessors made windows of thin coloured glass, with here and there a little white; now, in the light of fuller knowledge, we make windows of white glass, with here and there little pieces of colour. Here, if I may digress for a moment, I may say that the tardiness of the revival in recognising the true principles of the art is to be charged against the architects of the time: they neither understood themselves or encouraged others to learn the true path to walk in, but intrusted glorious buildings—the heritage of the past—into the hands of men who chose, for purposes of commerce, to call themselves glass-painters—men who were mere shopkeepers, who bought and sold the untrained labours of others, and who founded that school of art which has but to be named to be condemned—viz., "the so-much-a-foot school." I will quote from the catalogue of one of these manufacturers:—"Single figures, 25s. per square foot; groups and scenes, 35s. per foot; Calvary groups and angels, 50s. per foot." What ignorance! Another firm have descended a step lower even. I quote again:—"If without borders on edge, 2d. per foot less." How are the mighty fallen! That reasonable people should expect that art, a delicate flower at all times, could possibly flourish under such auspices, passes human knowledge; but they did, and some do. To return. We have now fully decided that the window must be light. The next question applies to the stonework: Is the stonework to be ignored by the painter, or is it to be looked upon as one of the main factors, and the glass treated as an embellishment of deliberately designed tracery? This question is one which is self-answering, for no architect would spend time, thought, and trouble on designing stonework only to ignore it when the glass painter appears on the scene; but, in result, look around you, and you will find window after window, many with the full approval of the architect, with a picture running through all the lights, the mullions being simply necessary evils and making blots on the work. In one church of my acquaintance a magnificently-designed seven-light window, with elaborate and beautiful tracery, is filled, with one picture of the scene of the Crucifixion, trees, and sky, ascending from the lights through the tracery to the very point—all the stonework, which was the fruit of much thought from an artistic mind, treated as non-existent, or, at most, as a sort of screen, standing in front of the picture, having no sort of a connection with it, through which the window is viewed, instead of being a most beautiful setting for and a blending of a series of separate works. No matter how skilful the painter be, one of the fundamental conditions of his art has been neglected, and failure, to an extent, must result. If it be insisted upon by the donor that one subject only be depicted, it is sometimes possible to overcome the difficulty by using a series of single figures. Say "The Crucifixion" is chosen—a very usual subject. The crucifix in the centre light, with the B.V.M. and St. John in the side lights; or, if five lights, St. Mary Magdalen and the Centurion, or Joseph of Arimathæa, might be added. An example of this may be seen on the walls—viz., the east window at St. Cuthbert's, Blyth. This mode conveys all the teaching of a picture without departing at all from the canons of art, and remaining, as stained glass always should, a decoration. Where a picture under canopies running through all the lights is insisted upon, the artist must comply, for he is but human and wants to live, but he cannot make a satisfactory work. He can, however, if skilful, break up his composition into groups, each complete in its own light, with none of the figures cut by the mullions. This has been done with some success in our two windows at Manchester Cathedral; but, in all cases, the tracery openings are so distinctly treated as to bring out, rather than obscure, the forms which the architects took so much trouble to set out. The next thing to be considered is legibility. It is a very common occurrence that windows fulfilling all other conditions dismally fail in this respect. How many of us can call to mind instances in which we have puzzled ourselves what it was all about. This is not as it should be. No glass should be so reticent as to be practically dumb, though a certain modesty of utterance is desirable; for, clearly, if it be worth anything at all, the painter must have spent time and thought upon it, and all his ideas cannot be given up at a glance of the casual observer. As an illustration of my meaning, take the Newcastle Cathedral window, which can be examined on the walls. There are four lights with two subjects in each. In the first, Our Lord looking over Jerusalem, pronounces the woes against it, and in the smaller space beneath is figured the destruction of the doomed city. In the second light, Christ scatters the money changers in the Temple; under it is the judgment of Achan. The third light contains a representation of the Son of Man denouncing the Scribes and Pharisees, with the barren fig tree in the lower panel. The fourth shows Him prophesying the demolition of the Temple, and in the base the worship of the Lamb in the Temple, made without hands in the Heavenly Jerusalem. All the larger spaces are incidents from the life of Our Lord during Holy Week, and all the smaller types, or ante-types, and are interesting as such; but they are interpreted, or, as it may be better said, they receive a keynote from the angel in the head of the tracery, blowing a trumpet and bearing a scroll with the text, "The hour of his judgment has come." This is called a "judgment" window, and though all the panels tell their own story simply enough, there is enough left to retain interest for succeeding visits. Having now formulated and fixed the unalterable bases upon which the painter must found his work, we come to other and somewhat less important details, in which individual taste and manner have a right to assert themselves. We have just to choose a style, and for our purpose we will suppose the shape of the window to be Gothic of some form. Now, shall the period of the stonework showing itself by the lancet or cusp-shaped heads determine the manner of glass to be inserted? Perhaps at first sight the answer seems naturally to be "Yes." If we look at the subject all round we shall come to the conclusion that at least there should be liberty. For myself, I should be inclined to go further than that. All glass painters are told to study the existing works of Early and Mediæval artists. Why? Is it that we may imitate and slavishly follow what was done at any given period, or is it to educate our tastes by following the art from its beginning to decadence? Learn what to avoid as well as what to use. Take the glass at Canterbury. The first impression is blueness. This, in a cold country like ours, seems a mistake—its opposite would be more appropriate. Perhaps our next feeling is weight and opacity. Climate considerations argue strongly against these points. Our next feeling is wonder. What is it all about? At comparatively close quarters the whole is a kaleidoscope, with here and there a salient point which is readable, such as a crucifix. On close examination, however, this fault disappears; but another becomes painfully apparent—it is the shockingly bad drawing. Given, then, a window of the same shape, are we to fill it in the same manner or not? I say unhesitatingly, No. Why, then, did we study these works? Was our time wasted? Certainly not. We can give these windows unlimited praise. If we consider that they were executed at a time when people were only beginning to draw, when their knowledge of chemistry was so limited that only a very small palette of colours was theirs to choose from, when we think how the figures were cut by means of a hot iron, which, of course, gave them shapes only approximate to their desires—all this we may admire, but not imitate. We have learned to be very careful of our use of blue, to admit more light, to choose our subjects on a larger scale, and to put good drawing into them. Are these lessons useless? I think not. Canterbury is quoted as a very conspicuous example; but nearly all early glass conveys the same moral. The fact is, the art of glass-painting had an infancy, adolescence, a maturity, and a decay, and we should, I think, adopt that period in which the art was at the highest stage of development. There is, of course, still another method of treatment which has lately arisen—viz., to imitate Sir E. Burne-Jones, and not worry ourselvesat all as to what has gone before, but express our own feelings in our own, or rather his, way, and thus form a new school. This I will return to later. In the supposed window before us, the style decided upon is to be Perpendicular, regardless of its actual shape, and doing in our own time, but with fuller knowledge, what the men of the 15th century would have done. These men did not consider that an Early church should have only Early fittings; but continually pulled down parts and re-erected others, added to, inserted, or otherwise altered features already existing, but in their own way. We now come to actual details, and have to decide whether the windows shall depict subjects, each subject filling out the stonework or with canopy and base, or whether a single figure and tabernacle work for each light, or other method would be best. Here one of our postulants applies. The window must tell a story—this is insisted on; but other considerations have weight. The height from the floor and the treatment of neighbouring glass, the traditions of the district, and other matters have to be thought out. Generally, it may be said that on a low level a subject, an actual incident, seems most suitable, and is most generally appreciated; whilst on higher planes single figures in canopied niches tell out best. If the window be large enough, figures in the upper portion of each light and a small picture below, illustrating some incident of interest in the life of the saint over it, make a very instructive and effective window. As a case in point, I may mention our design for the west window of St. Mary's, Crumpsall. As in our opinion, therefore, the figure of the saint with his emblems is as full of teaching as a scene from his life, at least to educated eyes, and gives greater opportunity for display of skill and technique, the window upon which we are engaged shall contain three single figures, but of what size and how shall we fill the surroundings? Generally all figures for an ordinary parish church, whether painted on the walls or in windows, should be kept on the small side, say 3ft. to 3ft. 6in. in height, for this reason—the human figure is the natural scale by which men unconsciously measure a building. The whole window by this means looks more important, and the building itself is aggrandised. Again, as most of the colour to be used in the work must be concentrated on or near the figure, and as, of course, colour absorbs many more rays of light than white glass, for this reason, too, should the figure be kept as small as possible. This, of course, is not a rigid rule, but subject to various qualifications—as size, height, and style of building. We will suppose, if you please, the lights of our windows be 7ft. 6in. by 2ft. 6in.—a common measurement; our figures, therefore, should be 2ft. 9in. high. This may seem a somewhat startling disproportion between figures and ornament; but if the window is to light the church at all, somewhat about this proportion must obtain. We have now to lay out the space between the figures, the actual point of interest, and the stone mullion, and for our choice we have the Early archaic canopies, diapered quarries, screens, and the tabernacle work of the 14th and 15th centuries. The latter, from an artistic point of view, has a strong preference; the many cusps, pinnacles, and crockets of this style give, when freely treated by the hands of the capable man, a delightful crispness and sparkle—surely great desiderata, which are quite impossible in earlier styles. Against this an eminent Manchester architect, recently retired from practice, condemns the 15th-century canopies on account of some necessary perspective, which from some points of view must be false, and says that once allow this, and nothing can logically prevent us dropping into the vagaries of Louis XIV. This is a staggering position to assume, for if glass-painting is to be anything but the various flat-line ornament, eyes, nose, mouth, and limbs must be treated perspectively to bear any resemblance to the human form, and equally the perspective must be wrong from some points. Passing by such criticism, I shall adopt canopy work and the Perpendicular period at that. For optical reasons the canopy should err on the side of height, as all objects seen above the line of sight have a tendency to become dwarfed. This illusion must be borne in mind throughout the work, with reference to the proportion of the figure and other parts. Eight heads is usually considered the normal height for a man; but at considerable distance above the line of sight ten heads is not too much to convey a just idea. We have 4ft. 9in. of space to be divided between canopy and base, and will apportion 3ft. to top and 1ft. 9in. to bottom, and as the lights are 2ft. wide I shall adopt wide shaftings of 4in. on each side, these shafts to be pierced by openings and broken by niches filled with small figures, illustrating persons having some connection with the central figures. This will carry the interest into what to layman would be mere architecture, and give apparent value to what they think the cheaper portion of the work. We come now to the figures themselves, and must take a definite line as to the kind of drawing to adopt, whether the pretty-pretty of the ladies' boarding schools which looks for smiling, amiable faces, and nothing else, the arts and crafts method, or the most robust style, Gothic Renaissance. Among architects I will say nothing as to the first, beyond mentioning the fact that, when a client deals directly with the artist, as, I am sorry to say, many do, this is what they require in most cases, and the heresy is very difficult to eradicate. To pass to the arts and crafts school, this is not to be dismissed with a word, for it has evidently come to stay, and is making itself felt in all directions, whether in fine or applied art. It depends for its existence on form and on grace of line, and does not seem to me to concern itself at all with such details as light, brilliancy, and colour. It draws the whole with the leads, not only the outlines as in ancient works, but in every detail—it says, in effect leads are a necessity! Granted! "Then use plenty of them." To such an extent has this been carried that windows may be heard of which have no colour at all, the forms being drawn with the leads, crosshatched with the leads, and only the nose, eyes, and mouth being painted in black, all the glass white The effect is a sketch in black and white. Sometimes, on the other hand, colour is the "be all" and "end all" of the work. Witness the windows at Birmingham and Torquay; there it is wonderful and compels admiration from the most reluctant; but I often wonder how people can educate themselves to worship, as some do, the mysterious beauties of sensual pouting lips, protruding chins, long necks, each with a wen on it, and the lean, miserable looking figures generally, which are the distinguishing characters of the school. However, when all is said for and against, these men have struck out a line for themselves, and in this age of mediocrity that is something indeed. For myself I cannot bring myself to draw such peculiar stuff, and shall, therefore, look to the study of Albert Dürer, Memling, Schongauer, and Bergmeier to help me as to the manner in which I shall depict my saints. There is no difficulty in finding quantities of their work, and the authorities of the museums and galleries are courtesy itself, and give every facility for their study. We find a squareness of form and a strength of line which, by their sturdiness, are so thoroughly in accord with the English character. The preliminary details being now settled, to the satisfaction of the artist at least, we take the architect's form on tracing paper, and make another on drawing paper on a somewhat larger scale, and commence our work by putting in the canopies and bases. The figures are now laid in, always having regard to the limitations of the medium, only certain colours being admissible, the background or filling between the figure and tabernacle work being made as small and broken as possible. With a skilful man this design can be carried out exactly, and should look glassy and convey the effect of the window itself to the eye. All these things, however, are mere preliminaries; but when the design is accepted the real work begins. Before this is done, however, the architect is usually consulted, and just now we have been told by Mr. Richmond at the Church Congress that this is the very last step of wickedness. What business has the architect to suggest colours or forms, or even dare to criticise in any shape what he knows nothing about? We must do away with the middleman and the tradesman architect, and go to the only person who knows anything about it —Mr. Richmond. No connection with any other establishment. Truly we live in an age of claptrap. This very person, who will have no middleman, architect, or otherwise, employs a firm to do his windows. Mr. Richmond does not execute them with his own fingers, nor does the head of the employed firm; but employed glass painters and employed mosaicists, whose names the public never know. Let us admire this consistency; to me the whole business savours of cant. Who should know, if the architect does not, what is or is not suitable to the building? And, in my opinion, the chief cause of the bad effect of most church decoration art is the want of harmony with the fabric, resulting from the clergy going direct to the decorator, rather than through a trained and capable adviser, who could carry all work through in one key. No! No! Mr. Richmond, we want the architect; we shall require the tradesman when the principals of stained glass firms design, draw, and paint themselves, only employing assistants to assist, and not as now—viz., one so-called assistant designs the window, another draws it, and a third paints it, while the choice of glass is left to an inartistic cutter. Then, and then only, will stained glass become as it once was, an art. To this fact, and to this alone, do I attribute the phenomenal success which has attended the efforts of my brothers and myself. Three years ago, utterly unknown to a single architect or other person of influence in the art world, except the firms to whom we had acted as ghosts, we began to work over our own signature. In those three years we have designed, drawn, and partly painted with our own fingers, 410 different windows. Such is not quoted as an advertisement, though we are only human, but as the effect of the system adopted. There is a great future for any man who, by sufficient study, time, ability, and knowledge of technique, qualifies himself to be a real stained-glass artist. After this digression we will return to our window, and proceed to draw on paper the full size and forms the ornamental portion is to take, introducing, wherever possible, round bulbous shapes like pearls, which, when transferred to the glass, will each become a point of light and sparkle; the lines shown on paper will be the exact thickness desired for the traced lines in the glass. The bars are now set out, that no salient point of the picture may be obscured, and these bars themselves must be so arranged as to give strength to the glass and to the design, for they are one of the limitations of the art. The figures are now drawn in, either in charcoal, bistre, or colour, as the artist may fancy. The faces are made full of character, and without making facial beauty the chiefest consideration, yet there can be no use in ugliness for its own sake. In general pose, the saint should be firm on his feet, and look as though built into the niche. The emblems well thought out—a key, a chain, or a rack can each in its own way be artistic without ceasing to attain its own special attributes, and they should generally be in larger proportion than the figure, as upon them as much as on their bearer will depend the interpretation and interest to the beholder. The drapery will be in square forms, with plenty of sharp points where the glass will be picked out and freed from paint for the sake of brilliancy, and will be broken as much as conceivable by turns and kinks, revealing linings under dresses, and other details of various tones and colours, no large masses being generally pleasant to the eye. Great care must be taken to secure accuracy of form in vestments and other ecclesiastical ornaments. The parts to be stained yellow are indicated with gamboge, and diapers suggested where needed. I think it may be said that a window depends for its effect upon its sparkle and elaboration; therefore borders of pearls and black diapers are lavishly suggested, as by their means this end is best obtained. The first stage is now ended, and nothing remains before starting work but the sanction of the architect. This being obtained, the linen and form of cutting lines must first occupy our attention. It looks uninteresting enough, except as a sort of children's puzzle; all the same, it is very important. Here the shapes of various pieces of glass have to be drawn, and the glass itself chosen, and each space numbered to correspond with a sheet of coloured glass in the bin. The colours we have to deal with are somewhat limited, as most of the tints used by picture-painters look poor and thin in the glass. Roughly, we have red, blue, green, and white, with nitrate of silver as auxiliary, and very useful it is; by it white is converted to all possible tints of yellow, from the palest lemon to the strongest burnt Sienna tones; blue becomes green, and red appears in more golden tones. Another item to the glass-painter's palette more than compensates him for the loss of many shades. Sunlight itself is pressed into his service, and while picture painters imitate sparkle, he has it, and if wise, uses it. By judicious choice of various sheets of glass which differ greatly, and by little tricks, such as staining and plating, a sufficient variety is obtained. Staining is done with the silver, and plating by superimposing a piece of glass in one colour over another. For instance, purple is often obtained by plating ruby over blue. Having now prepared for the cutter the outlines he is to cut by, and numbered every space throughout the window, the master mind steps aside and leaves the workman the use of his experience and skill. He will so pick the glass of any given number that the dark portions shall be where shadow is desired, and *vice versâ*. Sometimes he is able by careful selection to obviate the necessity of painting to any extent; this is specially so with ruby glass, which, being of an opaque nature, is seen to a much better advantage with as little pigment upon it as possible. As the cutter finishes each piece, he places it in a tray and ticks off the corresponding space on the linen form. When all are complete, they are handed to the tracers, who take each piece separately and lay it on the cartoon or working drawing, in the exact position it will occupy when complete, and carefully, but with the freedom born of knowledge, trace the main lines upon the glass, which he can see upon the paper beneath, with a pigment composed of various earths, which will vitrefy when exposed to heat. This colour is mixed with various pigments, such as gum, tar, &c., in order that they may be worked in successive layers, without disturbing the coat underneath. These media all dry out and disappear in the fire. The tracer next proceeds to lay in the deepest shadows by means of a broader brush, always following the cartoon, and then hands the whole thing to the painter proper. He spreads the linen form face up on a table, and over that a sheet of plate glass. On this latter he sorts out and places in position all the glass; when the seeming puzzle is all worked out and all pieces are *in situ*; a margin of about $\frac{1}{8}$in. surrounds each one, the space the leads will presently occupy. Hot wax is poured between the pieces to secure them to the plate glass with the mosaic upon. It is raised upon an easel against the light, and what is technically called matt or film of colour is brushed over the whole, and while still wet is stippled very coarsely. Upon this stippling the future brilliancy of the glass depends. Until lately it was, if done at all, done after the colour was dry. This took off all the pigment in certain places, and gave a hard and dry effect to the glass, and too fine a brush was used for the purpose, weakening the result considerably. It looks now but a huge dark smudge; but with the eye close against it the traced lines are still discernible. When dry, the painter, with the cartoon in front of him for guidance, by means of hog-hair brushes, needles, bits of wood, quill pens, and other odds and ends (never was there good work completed with such cheap and common tools), proceeds to pick out, scrub off, and rub down, or otherwise dispose of the superfluous pigment; he is really engraving on a soft surface. This is probably the reverse of the idea in the minds of most. To put the matter succinctly, it is not painted by means of adding shadows to a light surface, but by brushing out lights from a dark surface. When all this is done to the best of the workman's ability, the master workman takes it in hand, going carefully over all, darkening here, lightening there, correcting a bad line, and generally, to use a stock phrase, giving it "artistic merit." The painting pure and simple is now complete, and all the pieces are taken off the easel-glass and handed over to the stainer. He has ground his silver-nitrate with a medium, generally lake, and anoints the back of the glass with the mixture in varying consistency. The man with the diaper has now to take his turn. He has a collection of patterns, accumulated as a result of personal trouble and research on the part of his employers. I have with me some of these, and should like you to look at them presently. I am quite safe in saying there is not such another collection in England. These diapers are all numbered, and are drawn each in many sizes; all the painter has to do is to copy one of these on the obverse of the glass, if the pattern is meant to be clear and sharp, or upon the reverse side if a blurred outline is wanted. These diapers, especially black on white or yellow, by partially obscuring portions of the glass, give great contrast and force to the remainder, and secure the well wrought elaboration so conspicuous in old glass. Nothing remains now but to place the whole on iron trays and slide them into the oven, which is heated until the painted surface fuses. This process requires very careful watching, for if sufficient heat is not given, a short space of time is enough to show the paint going from the window, to the disappointment of all concerned; or if too much heat plays upon it, the paint fires away, and the work must be done again. The cooling is very risky, and some disaster is pretty sure of occurrence, necessitating repainting some portions. When all is cool, the linen form comes out again, and is spread upon the glazier's bench, and the pieces again find their place in the puzzle, and this time finally. Grooved leads are placed between each, and a smart tap of the hammer knocks it firm. All the joints of the lead must now be soldered, and cement must be rubbed into the grooves to give rigidity, and to make all weather-proof, and our window is ready for its permanent home. I trust this short description may induce the younger portion of my hearers to reconsider any notions they have entertained as to the high price of stained glass. A picture-painter has but his colours and canvas to pay for, while the glass-painter has glass, lead, cutting, cementing, and glazing; and to add to these bills for materials, and very heavy items they are—all demands much more care and attention in detail than a pictorial artist would care to give; but to one who loves it, no pains are too much; such a one lives in his art, and for it and by its multitudinous duties lightens his own life, and has the inestimable happiness of brightening his fellows'. He may not be a good tradesman, not a hard man, grinding down his *employés*; he may not be good at a bargain, and wanting in push, which is unusually the faculty for pushing down his neighbours; but let him once fall in love with his art, and no man can end his pleasure; life shall be one constant striving and attainment—the highest reward an active man can attain to. If you will allow me to preach for one moment—Never be tempted to accept the unworthy; only the best can ever be entirely satisfactory to the men who have raised, and are raising, in our midst glorious buildings which shall go down the centuries, telling their tale of triumph over the difficulty of our time; a standing proof that even in our century witnesses were not wanting to the truth. If you who raise the building will be true to your tradition, you will find an ever-increasing band of decorators only too anxious to work on the lines of truth and to link their own works and names with those on the muster roll of famous architects.

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* A paper read before the Manchester Society of Architects on Nov. 6, 1894, by Mr. HERBERT BACON, of the firm of Percy Bacon and Brothers, of London.

THEATRES.—XLIV.

By Ernest A. E. Woodrow, A.R.I.B.A.

THE demand for a supplemental system of lighting in case of the failure of the gas has been touched upon in my reference to foreign regulations. It is provided for in the L.C.C. rules, which read that :—

"Additional means of lighting, for use in the event of the gas or the electric light being extinguished, shall be provided for the auditorium, corridors, passages, exits, and staircases by a sufficient number of oil or candle lamps, of a pattern to be approved by the Council, properly secured to an uninflammable base out of the reach of the public.

"Such lamps shall be kept alight during the whole time the public are in such premises.

"No mineral oils shall be permitted to be used in such lamps."

Here it must be noticed that oil or candle lamps are specified. If oil is used, the best colza oil is preferable to any other. Candles are, perhaps, better than oil; they are cleaner, and the manager can see when the lamps have been trimmed, and if they are made of a size to burn the number of hours the house is open to the public (with a margin for safety), and are renewed every day, there is no danger of the lamps going out in the middle of a performance, as there is in oil lamps which have been neglected and not been trimmed. It is easier for the manager to see that a new candle has been put in a lamp, than to see that an oil lamp has been trimmed. Candle lamps, too, I understand, will keep burning longer in smoke than oil lamps.

The form of lamp is simply a matter of taste, whether hanging lanterns from brackets or chains, or back lamps fastened against the walls, matters little, but the placing of the lamps is of vital importance.

In arranging the positions for these lights, it is well to bear in mind what their use is, and the architect is naturally the right and proper person to settle where they shall be hung. In making these arrangements, it should be supposed that the gas has gone out, and that the people have to find their way to the streets safely by the aid of these auxiliary lamps. Over each door in the auditorium should therefore be placed a lamp bearing the word "Exit" upon the glass, of a sufficient size to be easily seen and read by the audience. Such a lamp has been recently put up at the Palace Theatre. When the auditorium door has been passed, another lamp should be in view, whether in corridor, passage, or staircase, and so on; as one light is left behind, another should take its place, guiding the audience to the street. On the staircases the lights should be made to shine on the first step of a flight to prevent anyone falling down the stairs by coming unknowingly upon the step. Mr. Buckle recommends that a lamp should be hung to every third gas or electric bracket throughout the building.

The need of providing a lamp-room for cleaning and trimming the lamps was mentioned in full in a former paper.

The most recent German regulation specifies that a service of emergency lighting shall be provided to suit the special requirements of the local authorities. This service must be provided chiefly for the staircases and lobbies, and must consist of candle or oil lamps properly protected against draughts and smoke, a point which I dwelt upon in the last chapter. These rules also demand that, where specially directed, lamps showing a red light must be placed, and conclude that "the emergency lights shall be so hung that the exits can be easily found if the ordinary service happen to completely break down . . . . the lighting of the building (gas is here referred to) shall be so arranged that if any part of the supply or service be out of working order, complete darkness will not ensue." It is clearly part of the architect's duty to superintend and plan out the whole of the lighting of a theatre, whether the permanent lights or the "safety" lamps.

A very important system of lighting employed largely in theatres is the limelight, and the architect who designs a theatre must not forget that it is required, and he must not, therefore, omit to provide for its safe use. The limelight, as most of my readers are aware, consists of the burning together of oxygen and hydrogen gas on to a piece of lime, the light being thrown upon the stage by means of a lens. The storage of these gases in the building being a necessity, it is well to consider how this may be most safely done. The rules of the L.C.C. require that the gases should be stored in fireproof ventilated chambers, such as specified for gas-meters. The tanks or receivers containing the oxygen gas must be in a separate ventilated chamber from the tanks holding the hydrogen gas, to prevent the mixing of the gases and probable explosion. Two fireproof chambers are therefore necessary, both ventilating into the open air. This ventilation must be most thorough, with inlet and outlet; to confine the gases within a chamber without ample means of ventilation would be a most dangerous thing to do.

As in many things connected with theatres, the arrangements made for limelight have vastly improved of late years. All people conversant with the stage are aware of the explosions which used to occur when the gases were brought into the theatre in indiarubber bags, and there are records of deaths having happened through the careless mixing of the two gases in one bag. The methods now adopted are, when carefully attended to, reasonably safe, and accidents could not easily happen without some thoughtlessness or carelessness on the part of the workmen. The gases are now brought into the theatre, under compression, in strong metal cylinders tested to resist the great pressure of the gas. From these cylinders the gases are let off into tanks or gasometers, and water pressure is employed to force the gas through the pipes to the limelight lens. In order to avoid the danger of mixing the gases in the receivers or tanks, the screws and unions on the oxygen tank should be of different diameter to the screws on the hydrogen tank, so as to render it impossible to place the wrong gas into the wrong tank. The manufacturers of the gases provide, I believe, their cylinders with different screws—*a right-hand* thread for oxygen gas, and *a left-hand* thread for hydrogen gas cylinders. In addition to this the cylinders are often painted different colours—black for oxygen, red for hydrogen. With these precautions mixing the gases by accident seems impossible.

To avoid the necessity of transferring the gases from the cylinders to the tanks, regulators have been invented to be placed directly on the cylinders, and to insure what is so absolutely necessary for the safe usage of the limelight, an even pressure of both gases at the point where they ignite. When this arrangement is adopted, the cylinders should be placed in separated chambers in the same manner as the tanks, and not be used from the stage or flies.

The absolute necessity of two gases being used at an even pressure is in no case to be lost sight of, whether the gases are used from storage tanks under water pressure, or from the cylinders with a regulator. In the case of tanks, a glass pressure-gauge should be employed to show how much water and how much gas is in the tank. Under no circumstances should the gases be used directly from the cylinders without a proper regulator to insure even pressure. When the pressure of one gas is greater than the pressure of the other, it is apt to force its way down the pipe of the other gas, where the two supplies meet at the burner in the lens, and so cause a slight explosion. To make myself more clear, supposing the oxygen to be used from a cylinder under a pressure of 120 atmospheres (1,800lb. per square inch), which is the maximum pressure employed in these cylinders, and that there was no regulator to diminish the force of the gas from the cylinder in the supply-pipes, and supposing the hydrogen gas were not under pressure at all, then the oxygen would drive back into the hydrogen pipes, and mix before coming to the point of contact—*i.e.*, at the flame. They must only mix just before they reach the point of combustion. Such a supposition is, of course, far-fetched, as it is probable the pipes could not stand such a pressure from the oxygen; but if the pressure on one gas is greater than on the other, danger must arise, and I use this extreme illustration simply to explain the danger of unequal pressure. It is, therefore, for the architect to see that the apparatus is as perfect as possible.

I may here mention, although it is rather a technical matter, that in the lantern or limelight box the gases are generally conveyed to the lime for combustion by two kinds of jets—the blow-through and the mixed jet. In the former, they are conveyed separately up to the point of combustion; while in the latter the gases mix just below the flame in a small receiver, from whence, by a short length of pipe, they are in a mixed state thrown on to the piece of incandescent lime. The mixed jet is the more dangerous unless absolute even pressure is obtained; it, however, is said to give the finest light, and is therefore the more popular with skilled operators.

In times past oxygen used to be manufactured in the theatres, and this custom was the cause of many accidents. The introduction of the cylinders above described by the Brin Oxygen Company has done much to advance the safe usage of the limelight in theatres, and for those of my readers who care to make a deeper inquiry into the question of compressed gases and the safe use of the limelight, I refer them to Mr. Kenneth S. Murray's admirable handbook upon "Compressed Oxygen,"* which deals with the whole subject, and is made comprehensive to the most uninitiated by means of clear and simple diagrams and illustrations.

I have one word still to say about the fittings. A stopcock should be provided in the supply pipes of both gases used for the limelight, in such a position on the stage level that the gasman or fireman may have complete command over the limelight operators, and be able in case of accident to shut off the entire gas supply and thus put out the lights. The tubing leading from the main pipe (which, I should have said, must be iron barrel) must be of such a substance that, when pressed or trodden upon it will not extinguish the light and thus cause an escape. The joints between the flexible tubing and the iron barrel main must be screw unions, with stopcocks in the main and in the flexible tubing; stopcocks and screw unions must also be provided at the lens. There is a flexible metal tubing, as well as one of rubber and canvas with a wire core, which is much used for limelight gases. Soft rubber tubing should never be allowed.

It will naturally be said that the arrangements and installation of the electric light are more matters that concern the electrician than the architect, and this is true to a very great extent; yet even in this point there is much that must come under the immediate supervision of the architect. The placing and grouping of the lamps for decorative effect is entirely the architect's business. The spacing out of the lights on staircases, corridors, and passages also must be decided by him. It is to him that his client will look for the due carrying out of the authorities' regulations.

Many of the precautions mentioned for gas-lighting are applicable to the electric lighting. The switches for turning on and off the lamps in the parts of the building frequented by the public should either be out of reach of the public, or inclosed in glass cases under lock and key. This, as in the case of secret taps to gas brackets, is to prevent any unauthorised person turning off the light. The lamps on staircases, especially to the gallery and pit, should not be placed where they can be handled or broken by the public. Where they must be placed within reach of persons they should be protected by strong wire guards, or inclosed in glazed cases in recesses let into the wall.

Arc lamps are not permitted as a general rule inside a theatre. Where, however, under certain circumstances they are employed, they must be protected by strong wire guards of a close mesh, to prevent falling glass or particles of incandescent carbon.

As in the case of the gas indicating-plate, the electric light must also be governed by a switch-board fixed on the prompt side of the stage, with each switch distinctly labelled as to the portion of the system it governs. The L.C.C. rules say:—

"A switchboard, containing all the necessary switches, cut-outs, and other fittings for the control and regulation of the stage lighting, shall be fixed in some convenient position overlooking the stage.

"This board shall be inaccessible to all but the persons employed at such premises to work it."

These are all matters in which the architect must concern himself, as he must, in conjunction with the engineer, arrange the "planning" and position of the fittings. He has also to consider and to provide for the carrying out of this rule, and must design the chamber herein mentioned:—

"Resistances for regulating the power of the lights shall be mounted on incombustible bases, and shall be so protected and placed at such a distance from any combustible material that no part of the resistance, if broken, can fall on such material.

"Principal resistances shall be placed in a fireproof room reserved for the purpose."

Again, the regulation as to the battery-room must be one to which his attention must be called, as well as the chamber for "transformers":—

"Primary or secondary batteries shall be placed in rooms so adequately ventilated that no fan shall be necessary.

"The batteries shall be well insulated.

"Transformers used to transform either direct or alternating currents, together with the switches and cut-outs connected therewith, shall be placed in a fire and moisture-proof structure.

"Where the primary current is of high potential, such structure should be preferably outside the building.

"No part of such apparatus shall be accessible except to the person in charge of its maintenance."

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* Compressed Oxygen. By KENNETH S. MURRAY, M.I.Mech.E. London, 1893. Ede, Dearberg, and Co., 40, Queen-street, Cheapside.

It is for the architect to provide these several chambers on his plans, and not for the electrician, after he takes possession of the building just on its completion, to have to devise out of the existing structure such chambers as the exigencies of the case will allow, which, more likely than not, will not conform to the requirements of the regulations. Where the electricity is generated on the premises, the architect must design an engine and boiler-room, with a dynamo chamber attached. These rooms must be approached from the street only, and not from a door leading out of the theatre; they must, in fact, be outside the walls of the theatre, and entirely separated therefrom by thick brickwork, so that should an explosion occur in these rooms it will not be felt or heard in the theatre. The design of these rooms, construction of engine and dynamos, beds, &c., require a great deal of thought and attention, as defects in the construction and arrangements may cause accidents with the lights, and consequent darkness.

The Council's regulation on this point is that:—

"Boilers, steam-engines, gas-engines, and dynamos, when used for the supply of electricity to such premises, shall be placed in such positions as shall be sanctioned by the Council.

"Gas-engines shall be placed in rooms so adequately and continuously ventilated that no explosive mixture of gas can accumulate by any leakage through the engine in the event of any of the gas-cocks being left turned on.

"A hood, connected with a pipe carried into the external air, shall be fixed over the ignition tube when this is used."

The rules of the L.C.C. for electric light in theatres appear fuller than those of any other country. I have, however, only referred to those which I think immediately affect the architect, leaving such details as wiring, conductors, circuits, switching, &c., as affecting the engineer only.

Before concluding this brief reference to electric light, I must not omit mention of the provisions made by these regulations for the stage lighting, where there is so much temporary and movable lighting employed, as in the case of gas. Perhaps the shortest way will be to quote the rules referred to:—

"Where there is a stage, special care shall be taken that all works in connection with the lighting of the stage are carried out in as substantial a manner as possible.

"No metal-work in connection with the circuits shall be exposed or so fixed or constructed as to be liable to cause a short circuit.

"Lamps on battens, footlights, &c., shall be protected by stiff wire guards, so arranged that no scenery or other inflammable material can come in contact with the lamps.

"No readily-combustible material shall be used in connection with any lamps on the stage in such a manner that it might come in contact with the lamps.

"No soft or readily-inflammable wood shall be used in connection with the lamps on the stage, and all wood shall be protected by uninflammable material from the possibility of ignition by an arc between any two parts of the two conductors, or by heated particles from any conductor or part of a conductor which may connect together the two main conductors.

"Where a number of lights, as in the footlights, battens, &c., are supplied under control of one switch, and protected by one single or double pole cut-out, as the case may be, the conductors shall be maintained throughout of such a section that they will be effectually protected by the cut-outs against heating.

"The leads to the battens shall be specially guarded, particularly at the points where they join on to the battens, and a sufficient length shall be allowed to prevent the leads receiving any injury through any movement of the battens.

"The battens shall be suspended by at least three wire ropes attached to insulators on the battens.

"On no account shall the same battens be adapted for both gas and electric light."

I would call attention to the last item in these rules, which shows that the same fittings should not be used for the electric light as for the gas-supply. Most of the other rules above quoted are drawn up on somewhat similar lines as those for the protection of the stage from gas-lights, and they should all be subjected to the architect's control, as well as the engineer of the building.

Where the electric light is the only system for the chief illumination of a theatre—that is to say, where gas is not also employed—it is as well to cause a dual installation of wires to be laid, so that every alternate light is lit from a different source. The engines, dynamos, and accumulators must also be in duplicate, one set supplying one circuit of lights, one the other. Frequently in buildings where the light is brought in from the street, and not from power generated on the premises, the dual system of lighting is obtained by connecting the mains with two different supply companies, so that should one fail the other is available.

The oil safety-lamps required to supplement gas lighting are equally necessary for a house lit by electricity, and the lamps should be arranged in the same manner as described above.

Sir Eyre M. Shaw, in the preface to the last edition of his work, mentions that as the practicability of illuminating theatres by means of electricity has been so distinctly proved, that it would seem to be a duty of licensing authorities to make electric lighting compulsory, and he draws attention to the general order issued in 1888 in the *Madrid Gazette*, making the establishment of electric lighting in the theatres of that capital obligatory, and forbidding absolutely the use of gas. A period of six months was allowed to carry out this order, and at the end of that period this decree was carried out without a single difficulty.

It must not be supposed that no fires ever arise from the electric light. On the contrary, statistics show that many do occur; but they arise from faulty materials or carelessness and ignorance in putting in the installation and manipulating the light. It is needless to add that every care must be taken to avoid these accidents, and that where every care is taken such accidents are avoided.

JERRY BUILDING AT CORK.

THE town council of Cork have received a joint report from Messrs. Robert Walker, P.P.S.A., and William Henry Hill, F.R.I.B.A., as to the foundations, footings, and superstructure walls of the new east and west wings of the municipal buildings. Messrs. Walker and Hill report that the superstructure walls, owing to the subsidence of the ground under the footings, which yielded in different places from 2in. to 4in. and 5in., cracking and crushing the weak and imperfect concrete footings, have been shattered more or less for their entire extent. The extent of the fracture is in part due to the inferior quality of the materials and workmanship of the rubble masonry. The vibration from the street and quay traffic is very considerable, and tends to promote fracture in the walls and footings, and subsidence in the foundations. The experts add: When instructions were given to reduce the cost of the scheme from £10,000 to £8,000, the three sheets of original drawings and specifications were still used, and no new drawings and specifications were prepared, the reductions being arranged for by a list of omissions and substituted works, without particulars being attached to the priced bill of quantities, instead of a new specification being written. We examined the city engineer, contractor, and clerk of works, separately and in each other's presence, with a view to fixing the date of commencing the works and discovering who was responsible for the reduction of the concrete in the footings. We also examined witnesses produced by the contractor and city engineer. The parties on each side did not agree in any particular as relating to these matters. The city engineer said he "was not on the works until the footings were just completed, owing to his being so taken up with committees." The clerk of works says, "the concrete was all finished when he arrived, and the only concrete executed after his arrival was a strip to add to the width of a cross-wall footing, so as to make the wall centre on the footing." On the other hand, the contractor stated that "he did not commence work until the contract was signed." There was no written order given for the reduction of the dimensions of the concrete footings. The city engineer says the contractor commenced three or four weeks before his contract was signed, but has no record of the time, and did not verbally, or in writing, warn him that he was doing so on his own responsibility. Nothing could be more injurious to the interests of the building than that such unhappy relations should exist between the contractor and the city engineer and clerk of works. Messrs. Walker and Hill give details of the bad workmanship and poor foundations, explaining that "the walls are not solidly built, properly hearted, crossed, or bonded. We find that the foundations relied on from the first consist of city refuse and rubbish thrown in on the slob formed by the river *detritus* and sewage deposit." In conclusion, they say: "No. 1.—The foundations relied on originally were not sufficient, having regard to the fact that they consisted of made ground formed of rubbish and city refuse laid upon the slob deposit of the river. The footings, however, provided in the drawings originally—and which we cannot find to have been altered in the amended scheme—would have tended to resist the subsidence and rendered it more uniform, and in its results less injurious to the superstructure. No. 2.—The footings of concrete are shown in the contract drawings to be 3ft. thick throughout. They have been reduced to 1ft. 6in. thick, and in parts to a less thickness, and are reduced in breadth also—namely, the footings to main walls have been reduced from 3ft. 6in. by 3ft. and 3ft. by 4ft. to 4ft. 6in. by 1ft. 6in.—that is, within a fraction of one-third of their specified dimensions, and their strength reduced to one-fifth of their original strength. The concrete is inferior in quality; its component parts are not in the proper proportions, being specified to consist of 3 parts of washed gravel, 1 part of broken stones, to 1 part of cement; no sand specified, which is a serious omission. No. 3.—The footings, in their present condition, are utterly insufficient, being reduced to nearly one-third of their original sectional area and to one-fifth of their original strength. No. 4.—The footings, in order to insure the stability of the buildings, must be reconstructed, and be properly formed of adequate dimensions, resting on a sound foundation. And it will be necessary to rebuild the superstructure walls, both as a contingent necessity and owing to their defects and shattered condition."

CHIPS.

Extensive house-building operations are in progress in the suburbs of Leeds and Bradford. The Hawkesworth Wood estate at Kirkstall, of over 200 acres, is being laid out for the erection of detached and semi-detached residences, with gardens.

Additions recently made to a wool store at Pyrmont, Sydney, N.S.W., were formally opened on Sept. 26th. The extension covers an area of 140ft. by 300ft., and has been carried out from plans by Mr. H. C. Kent, M.A., Messrs. Strutt Brothers were the contractors, and Mr. W. McDonald was the clerk of works.

Sir John Gilbert, R.A., has promised to present to the art gallery of Blackburn his well-known painting, "The Baggage Waggon," and a landscape entitled "Keston Common, Kent." The Hon. John Collier's picture of "Hetty Sorrel" has also been presented to the same collection; and the portrait of Mr. A. N. Hornby, the Lancashire cricketer, also by Mr. Collier, has been presented by his brother, Mr. W. H. Hornby, M.P. for the borough.

An accident occurred in Dundee on Friday, which resulted in the death of one man and the injury of two others. In the morning five masons were working upon a scaffold erected 40ft. from the ground, and on the inside dividing gable of a tenement in course of erection in Scott-street. Without any warning part of the gable gave way and fell inside, carrying the scaffolding and men with it. William Lyon, residing in Lochee, was killed instantaneously, and two others were badly injured.

The engineering staff of the Furness Railway Company are at present surveying the route of a railway from Bardsea, on the shore of Morecambe Bay, to Barrow-in-Furness. The new line will strike off from the present main line about two miles below Ulverstone, and, after skirting the shore for some five or six miles in the direction of Rampside, strike across the country in the neighbourhood of Roose to Barrow, a distance of about nine miles. The new line will enable the traffic to be carried from Carnforth to Barrow and Whitehaven almost at a dead level.

Some bronze gates have just been erected, at a cost of over £700, at what is now the main entrance of Newnham College, Cambridge, under the archway of Pfeiffer-buildings, and on Saturday were formally presented to the council on behalf of the students of the college, by whom they were given as a memorial of Miss Clough, the late Principal. The work has been executed by Mr. Thomas Elsley, from designs by Mr. Basil Champneys, the architect of the College buildings.

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ILLUSTRATIONS.

LLANDUDNO TOWN HALL: SELECTED DESIGN. — NEW THEATRE, LLANDUDNO.—NATIONAL GOLD MEDAL DRAWING OF THE CLOISTERS, GLOUCESTER CATHEDRAL.—EXAMPLES OF PEN DRAWING, BY JOSEPH PENNELL.—SELBY ABBEY.— A HOUSE AT BRIGHTON.— POPLAR UNION OFFICES AND DISPENSARY.

Our Illustrations.

LLANDUDNO MUNICIPAL BUILDINGS: SELECTED DESIGN.

The design here shown is that by Mr. T. B. Silcock, of Bath, which was selected by the assessor, Mr. T. M. Lockwood, F.R.I.B.A., out of about 50 designs submitted in the recent competition. The design may be characterised as a free treatment of English Renaissance, and an attempt has been made to express the arrangement of the plan upon the exterior. The walls will be built of Yorkshire stone, and lined with brick, and the roof will be covered with green slates. The council chamber occupies the whole of the first floor of the centre block, and immediately adjoining are the committee-rooms and clerk's office. The room is lighted by three large windows, and the interior is elaborately treated with engaged columns and arcading supporting a coved ceiling. A feature of the design is the large public hall, which is placed at the rear of the building, and inclosed by the wings. This room will be lighted by ten semi-circular side windows and a large window at the end. The walls will be panelled, and the whole covered by a large ornamental timber roof, ceiled at the collar. Ample means of exit are provided, so that the room may be cleared instantly. This hall is so arranged, and provided with distinct cloakrooms and lavatories, as to enable it to be let for entertainments, entirely apart from the municipal portion of the building. One wing of the building is devoted to a suite of offices, two stories in height, which are proposed to be let, and for this purpose they are provided with a separate staircase and sanitary arrangements, and are entirely cut off from the municipal offices. The estimated cost of the building is about £10,000.

NEW THEATRE FOR THE PIER COMPANY, LLANDUDNO.

This new building, which it is proposed to erect on the angular piece of land in front of the pavilion at the entrance to the pier, is from the design of Mr. Daniel Arkell, architect, Birmingham. The interior arrangements are to be made as near as possible complete, the pit and stalls being placed below the level of the promenade to the pier, and approached by wide, inclined roadways, access also being obtained from the marine drive above. By means of a large staircase from the entrance lobby access is obtained to the dress-circle and balcony. This main central entrance will form a feature, and will be used as a lounge, the floor being on the same level as the pier promenade. Two gallery entrances are on the marine drive side, also an exit staircase is provided, and in all cases advantage has been taken of the different levels of the roads to avoid long flights of stairs, so as to facilitate the means of access to and egress from each floor of the building. There are entrances at each side for the private boxes, also arrangements for transfers to all parts of the house. Refreshment rooms are also provided to each floor. The dressing-rooms have been placed at the sides and rear of stage, leaving room for further extensions to the stage if desired. It is proposed to face the exterior of building with red Ruabon bricks with red Runcorn and Bath stone hammer-faced dressings. The structure will be kept as low as possible, so as not to obstruct the sea-view from the houses behind, and the roof will be flat. For the erection of the new works the Pier Company have provisionally accepted the tender of Mr. Henry Willcock, of Wolverhampton. The want of a good theatre has been long felt in Llandudno, there being at present only one place of amusement in the town, and a new theatre would add to the popularity of the place as a holiday resort.

THE CLOISTERS, GLOUCESTER CATHEDRAL.

Some of the earliest and most beautiful specimens of fan-vaulting are to be seen in the cloisters of Gloucester Cathedral. According to Professor Willis, the fan-vault was first used in this district, and he considered these cloisters to have been the prototypes of all other examples. The "great" cloister as far as the Chapter-house was built by Abbots Staunton and Horton, 1337-77, and finally completed by Abbot Froucester, 1381-1412. Our double-page plate is reproduced from the National Gold Medal drawings by Mr. Alfred J. Dunn, of Gloucester.

PRIVATE RESIDENCE AT WEST BRIGHTON.

This house is now in course of erection in The Drive, West Brighton. The fronts are built in red brick, with Box Ground dressings; the roof is covered with red tiles, from the Keymer Brick and Tile Company. Electric light will be used, and sea-water laid on; the dadoes and ceilings in hall and sitting-rooms will be panelled. A lift is provided from kitchen to dining-room. The upper floors contain eight bedrooms and bath-room, and w.c.'s on every floor. This drawing was exhibited in this year's Royal Academy. The architect is Mr. G. Warren Cooper, of 34, Hart-street, Bloomsbury.

POPLAR UNION NEW OFFICES.

(See description and sketch plan on p. 661.)

In our description of the Swedish Houses of Parliament in our last issue, p. 605, the name of the architect should have been given as Herr Helgo Fettervall.

The town council of Longton, Staffs, have instructed a joint committee to recommend a site for buildings which shall serve the purposes of a free library and science, manual, and art schools.

The dedication of the stained-glass window in memory of the Rev. Robert Henry Cobbold (rector of Ross, 1873-93) took place in the parish church of St. Mary, Ross, on Wednesday week. The window is situate on the south side of the chancel. It has three lights, on each of which is represented a figure of one of the Apostles, in the centre being St. Paul, on the right St. Barnabas, and on the left St. Luke.

The following orders have been made in the case of applications for discharges from bankruptcy:—James Hollingsworth, Morland-road, Beckenham, S.E., builder, discharge suspended for two years, ending October 9, 1896; William Marriage, Croydon, builder, discharge suspended for four years, ending October 9, 1898; Edward Franck Wyman (trading as A. Osborne and Co.), Nirvana, Bellaggio, Surrey, and Orpington, Kent, builder and contractor, discharge suspended for three years, ending October 9, 1897.

On Thursday in last week Colonel Ducat, R.E., on behalf of the Local Government Board, held an inquiry at Walsall with reference to an application on the part of the town council for sanction to a loan of £12,450, to meet an expenditure of £7,300 for kerbing, channelling, and asphalting of footpaths, £297 for the construction of sewers, £370 for the widening of Shaw-street, £780 for a new fire-engine and engine-house, and £300 for a gardener's cottage at Reed's Wood Park.

Major Davis, F.S.A., the city surveyor of Bath, who has been conducting further excavations, has reported to the corporation that he had unearthed undoubted proof that the Romans drank as well as bathed in the mineral waters. Old drinking vessels had been discovered, together with numerous Roman ornaments and coins of the period of Nero.

Engineering Notes.

Birmingham.—Good progress is being made with the tunnel scheme of the London and North-Western and Midland Railway Companies under the principal streets of Birmingham. The destructive portion of the work is practically now quite completed, and, extending side by side with the present railway for a distance of 622 yards, a space about 66ft. in width has been taken in hand. Throughout this tract, between New Bartholomew-street and Worcester-street, demolition of buildings has been going on apace, simultaneously with the work of constructing the brick arch of the new tunnel. The new line will tunnel on the cut and cover-in system side by side with the old. In the purchase of properties, in compensation to owners and tenants, in pulling down buildings, and in propping and underpinning others, an expense of £80,000 has been incurred; but as nearly the whole of the line will be covered, and the ground again utilised for buildings, the preliminary outlay will not be altogether a dead loss. The new railway works will consist of a double set of rails running through a tunnel 10ft. to the south of the present line, the rails being from 10ft. to 31½ft. below the street surface. From New Bartholomew-street the extension is carried out on the north side of the old line, and that section of the work begins which has for its object the substitution of viaducts for the level crossings of one railway over another, which hitherto have so complicated and hindered the North-Western and Midland traffic in and out of Birmingham.

CHIPS.

The foundation-stone of St. Margaret's memorial Roman Catholic church will be laid at Dunfermline on November 16, by Lady Margaret Crichton Stuart, daughter to the Marquis of Bute.

The Abercromby Liberal Club in Hope-street, Liverpool, has recently been enlarged by the addition of a billiard-room at the back of the premises. The new room, which is 30ft. long by 26ft. wide, was planned and designed by Mr. N. Proctor, and Messrs. J. and T. Crosby, of Chatham-street, Liverpool, were the contractors. The formal opening took place on Monday.

The new church of St. Gabriel, Huyton Quarry, was consecrated by the Bishop of Liverpool on Thursday, the 1st inst. The church and site have cost £4,000. The building is Early Perpendicular in style, the window dressings of terracotta, and there is a large half-timbered porch. Accommodation is provided for 350 persons. Mr. G. Bradbury was the architect, and Mr. I. Dilworth, of Wavertree, was the sole contractor.

A new parish school was opened at Keynsham on Tuesday week. The cost has been £650, or £3 12s. 8d. per head, exclusive of furnishing and fencing, &c. Mr. Lingen Barker was the architect, and Mr. T. Hyde the builder.

Mr. C. Hawksley, who was called in as arbitrator in the Torquay water dispute, has recommended the town council to purchase the whole of the watershed from which the town derives its supply.

At Middlesbrough to-day (Friday) Alderman William Lockwood Taylor, painter and decorator, who has been a member of the corporation since 1877, will be elected as Mayor.

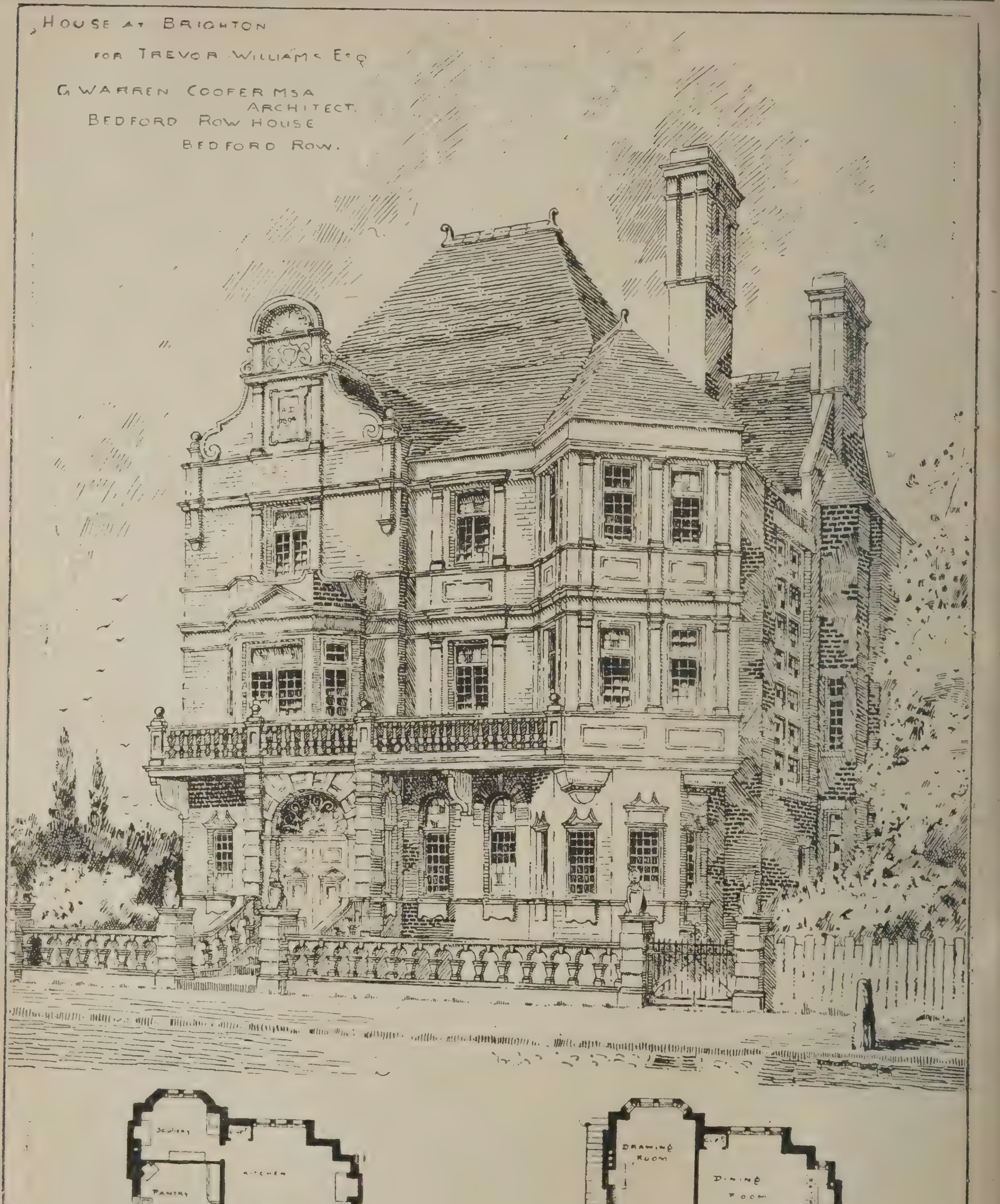
The parish church of Freeby, near Melton Mowbray, was reopened last week, after restoration at a cost of £1,300. Mr. W. H. Harrison, of London, was the architect, and Mr. E. Clarke, of Melton, the contractor.

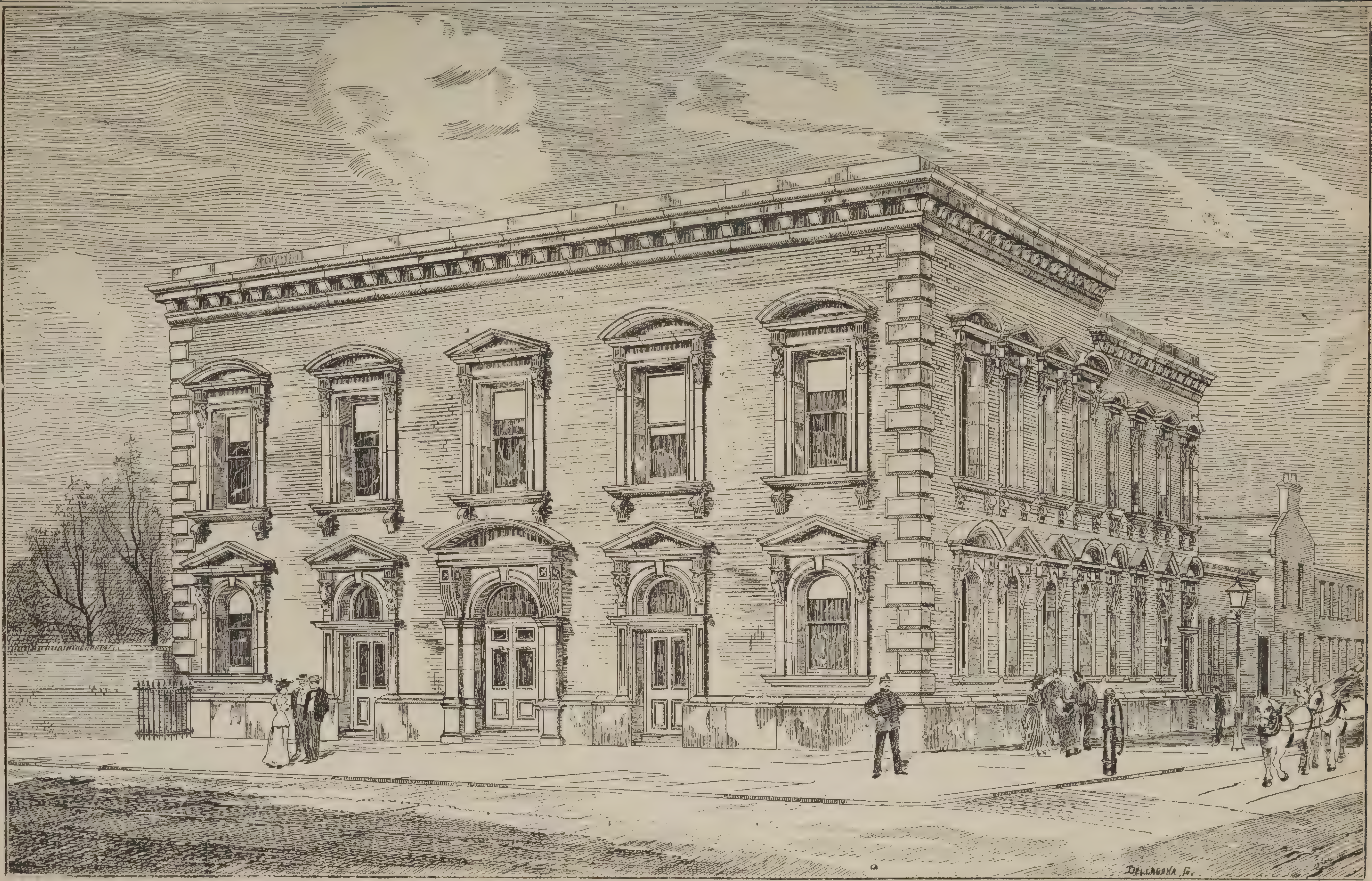
Mr. Macdonald, at present surveyor to the local board of Gainsborough, has been appointed to a similar office under the Rugby local board.

The electric-lighting installation at Bolton was formally inaugurated on Friday. It has been carried out at a cost of £23,000, Mr. J. H. Rider being the electrical engineer, and the system is that of an alternative high-pressure current, with transformers.

Colonel E. M. Lloyd, R.A., Local Government inspector, held an inquiry on Wednesday week at the Retford Town Hall as to the application of the town council to borrow £2,000 for the erection of baths.

The formal opening of the electric works established by the corporation of Southport, at a cost of about £13,000, will take place to-day (Friday). The installation will be equal to 4,200 8-candle power lamps, while already applications have been sent in for 4,700 lamps. The generating station is adjacent to the gas-works at Blowick, two miles inland from the centre of the town.


HOUSE AT BRIGHTON
FOR TREVOR WILLIAMS ESQ
G. WARREN COOPER MSA
ARCHITECT.
BEDFORD ROW HOUSE
BEDFORD ROW.
Scullery
Kitchen
Pantry
Dresser
Larder
Wine Cellar
Beer Cellar
Boots
W.C.
Servants Hall
Coals
BASEMENT PLAN
Drawing Room
Dining Room
Hall
Servery
Hat & Cloak
W.C.
Library
GROUND PLAN
DELLAGANA Sc.


DELLAGANA Sc.

POPLAR UNION.—GENERAL AND RELIEF OFFICES AND DISPENSARY.—Messrs. W. A. Hills and Son, *Architects.*

OBITUARY.

Mr. C. G. H. Kinnear, A.R.S.A., F.R.I.B.A., Colonel of the Midlothian Volunteer Artillery, died very suddenly from heart-disease at his residence, 12, Grosvenor-crescent, Edinburgh, on Monday afternoon. There was to have been a mess dinner of the Volunteer officers on Tuesday night, at which Colonel Kinnear would have presided, but it was at once abandoned. Charles George Hood Kinnear was the younger son of the late Mr. Charles Kinnear of Kinnear and Kinloch, J.P. and D.L. for Fife. His elder brother is Mr. John Boyd Kinnear, for some time M.P. for East Fife. Born in 1830, Mr. Kinnear was trained for his profession in the office of the late Mr. Bryce, and thereafter, at first, practised on his own account. Subsequently he entered into partnership with the late Mr. Dick Peddie, M.P., and for five-and-twenty years no firm was better known in the profession, says the *Scotsman*, than that of Peddie and Kinnear. Later its designation has been Kinnear and Peddie—a son of Mr. Kinnear's old partner having taken his father's place in it. A number of important public buildings were designed by the firm, among which might be mentioned the University Club, Edinburgh, the Scottish Provident Institution, the St. Cuthbert's Poorhouse, the municipal buildings, Aberdeen; the Sheriff Court-house, Glasgow; and the Royal Bank, Glasgow. The firm were also the architects of Cockburn-street. One of their latest works was the new West End station, Princes-street. Mr. Kinnear, however, was known as the designer of a large number of mansion-houses in all parts of Scotland, many of them in the Scots Baronial style. Two years ago the Royal Scottish Academy paid Mr. Kinnear the compliment of electing him an Associate, and three years since he joined the R.I.B.A. as a Fellow. Of the smart regiment of Artillery Volunteers of which he was colonel, he was, it is believed, save one, the oldest member. Mr. Kinnear joined the Midlothian Coast Artillery, as it was then called, in the end of 1859 as a gunner. As he stood over six feet in height, he was selected for a commission in a grenadier company which was formed in July, 1860, and he was gazetted colonel of his old regiment on the 20th June, 1884. Since then Colonel Kinnear had devoted himself assiduously to further the interests of the regiment. He was successful in getting the Commander-in-Chief to sanction the dropping of the word "Coast" from the designation of the corps, and to change the headquarters from Leith to Edinburgh. He was chairman of the Local Defences Committee under the National Defences Mobilisation Scheme, an active member of the Council of the Scottish National Artillery Association, and a member of the East of Scotland Tactical Society. Colonel Kinnear married, in 1868, the eldest daughter of Mr. Maxwell, of Munches, by whom and their family of two sons and five daughters he is survived. The funeral took place yesterday (Thursday) afternoon at 2.30 from St. John's Episcopal Church, Edinburgh, of which he was a vestryman, and full military honours were accorded to the deceased.

Mr. Philip Gilbert Hamerton, the editor of the *Portfolio*, and author of many works on art, died on Sunday at his villa, Parc des Princes, Boulogne-sur-Seine, at the age of 60. Born at Laneside, Lancashire, he was educated at Burnley and Doncaster Grammar Schools, and in 1855 went to France to study landscape-painting and French literature. From 1866 to 1868 he was the art critic of the *Saturday Review*. In the latter year he published his "Etching and Etchers," and "Contemporary French Painters," and from that time forward Mr. Hamerton was a prolific author. He established the *Portfolio* in 1869, and continued to edit it down to the present month's issue, though the form of it has been changed of late months. He also published a technical primer on drawing and engraving, "The Etcher's Handbook," a biography in French of Turner, and was part author of "English Painters of the Present Day," and, with Mr. W. Clark Russell, of "The British Seas."

Mr. John Francis, C.E., of Easton-on-the-Hill, died last week from apoplexy and paralysis. As a young man, Mr. Francis took a part in the erection of the Crystal Palace, and also in the erection of many of the great railway-stations in London. He then went to Italy, where he pursued his profession, his greatest achievement there being the erection of a bridge over the River Tiber at Rome, and afterwards lived in India, where he laboured for 23 years in carrying the Great Indian Peninsular Railway far into the interior, and in constructing many of the bridges on that company's system of railway. Of late years he had lived in retirement at Easton, Lincolnshire.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Birmingham Architectural Association.—The president of this association (Mr. William Henman) delivered an address to the members on Friday, Nov. 2, upon the programme for the coming session. In referring to the education of public taste in the matter of architecture, he said that some advance in this direction had during the last few years been undoubtedly made, but that "love of money, which is the root of all evil," and the bane of good architecture, not only stifled the art, but disfigured every building with hideous signs and letterings. The time had come when the public should protest against the display of this vulgarity, and local authorities should obtain powers to suppress it, as in old times Acts of Parliament were passed to curb the excessive display of signboards, which, compared with modern advertising methods, were greatly to be preferred for their generally artistic treatment and effect. If, instead of detaining students for hours together in overheated and badly-ventilated classrooms of our schools of art, daubing paints and laboriously stippling, they were frequently conducted through the streets of our cities and towns under the guidance of men of taste, and taught to appreciate the good in architecture, to despise what is base and degrading therein, to observe the inartistic design of our lamp-posts, street-name plates, and other efforts of officialdom, we might hope that the next generation would not be oppressed by so many impecunious painters of mediocrity, or the exhibitions flooded with their puerile productions. Such a revolution in popular artistic perception and work could only be brought about in the course of time. It must necessarily be of slow growth; but if never a voice be raised against the present deplorable state of things, it would go from bad to worse. In this age of hurry it was well that some things moved slowly, in the hope that when times were ripe and ideas matured men might rise endowed with power worthily to carry out desired objects. Might this be the case with regard to the much-talked-of Birmingham cathedral, so that when, some years hence, it is decided a cathedral shall be built, public appreciation of architecture may be so far advanced that the question will never be raised, as it had been during the last few days, whether it would be practical to "convert a Grecian (?) church into a Gothic cathedral." If the taste and demands of that day determined that the site of St. Philip's Church should be that of Birmingham's cathedral, then although he gave place to none in reasonable reverence for work of the past and much admired the tower of that church, he sincerely hoped it would not be allowed to influence the style of a building which must necessarily be of greater importance, nor that it would simply make way for a "Gothic cathedral." He would rather that the inhabitants of the city and neighbourhood would, with one voice and open purse, demand that the building should be worthy its position, designed by able hands in the best style of the period, whatever that may be—so long as it was neither a mere archæological compilation of dead bones, nor an eccentric novelty devoid of all traditions of architectural propriety. A hearty vote of thanks was proposed by Mr. H. R. Lloyd and seconded by Mr. John Goodman, Messrs. Harrison, Silk, Percival, Cox, Buckland, and C. E. Bateman supporting the motion, which was carried with acclamation. Upon the proposition of Mr. Henman, seconded by Mr. Harrison, a vote of congratulation to Mr. W. S. Till, the city surveyor, was passed upon his recovery after his long and severe illness, at the same time acknowledging his uniform courtesy in all matters brought before his notice by the profession.—The annual report of the council just published states that the acquisition of the new rooms in the Exchange Buildings has proved of great benefit in extending the work of the association. The class of design is permanently arranged for at the School of Art under the immediate direction of Mr. W. H. Bidlake, M.A. The meetings have shown an increased attendance, and the change of the time for visiting buildings from Saturday afternoons to Friday evenings led to a great increase in the number of members attending. The syllabus for the ensuing session is as follows, all meetings being held at 6.45 on Friday evenings:—Nov. 16, "Architectural Education," E. R. Taylor; Nov. 30, "Preparation for R.I.B.A. Examination," F. R. Farrow; Dec. 14, "Restoration of Ancient Buildings," J. A. Cossins; Jan. 11, "Treatment of Architectural Modelled Ornaments," Wenlock Rollins; Jan. 25, "Preparations of Drawings for the R.I.B.A. Prizes," H. R. Appelbee; Feb. 8, "The A.A. Excursion to Italy," Robt. Hamilton; Feb. 22, "Small Houses: Treatment of Plain and Decorative," T. W. F. Newton; March 8, "School Planning," Hy. Beck; March 22, "The Sketching Visit to Broadway," with the lantern, H. R. Lloyd.

Glasgow Architectural Association.—The usual monthly meeting was held on Tuesday evening in the Rooms, 114, West Campbell-street, the president, Mr. A. N. Paterson, in the chair, when Mr. J. Kennedy Hunter (Messrs. Morris and Hunter, Ayr) delivered a lecture entitled "On Tramp," being the description of tours in Northamptonshire, from Kettering as a centre, undertaken in September of this year. Photographs from Mr. Hunter's camera of many interesting parish churches, and some Domestic work, were exhibited by means of limelight, the lecturer adding a running commentary. Among others, views were shown of the Eleanor Cross at Geddington, St. Sepulchre's at Northampton, one of the few circular churches in England; the famous Saxon tower at Earls Barton, and several different views of Peterborough Cathedral.

Philosophical Society of Glasgow.—The following is the syllabus of the Architectural Section for the current session:—To-night (Friday), Nov. 9: Opening meeting; conversazione. Nov. 19: Presidential address by Mr. T. L. Watson, architect, F.R.I.B.A. Dec. 3: Mr. Thomas Gildard, architect, on "An Old Glasgow Architect on Some Older Ones." Dec. 17: Mr. Alex. N. Paterson, M.A., architect, on "Some Principles of Decoration." Jan. 21, 1895: Mr. Francis H. Newbery, Head Master, School of Art, on "A Look Into the Workshops, Past and Present." Feb. 4: Mr. James Paton, F.L.S., Curator, Corporation Galleries, on "Mosaics." Feb. 18: Mr. Richard Ferris, sculptor, on "The Relation of Modelling to Sculpture and the Industrial Arts." March 4: Sir William Arrol on "Iron Construction in Modern Buildings." Wednesday, March 6: Col. R. W. Edis, F.S.A., F.R.I.B.A., London, on "Internal Arrangement and Decorative Treatment of Town Houses." March 18: Mr. Lewis R. Crosskey, of the Glasgow Technical College, on "Industrial Art, with Special Reference to the Training of Artisans."

CHIPS.

At the London Consistory Court, on Tuesday, a faculty was granted for restoring the parish church of Northwood, Middlesex, and adding a north aisle.

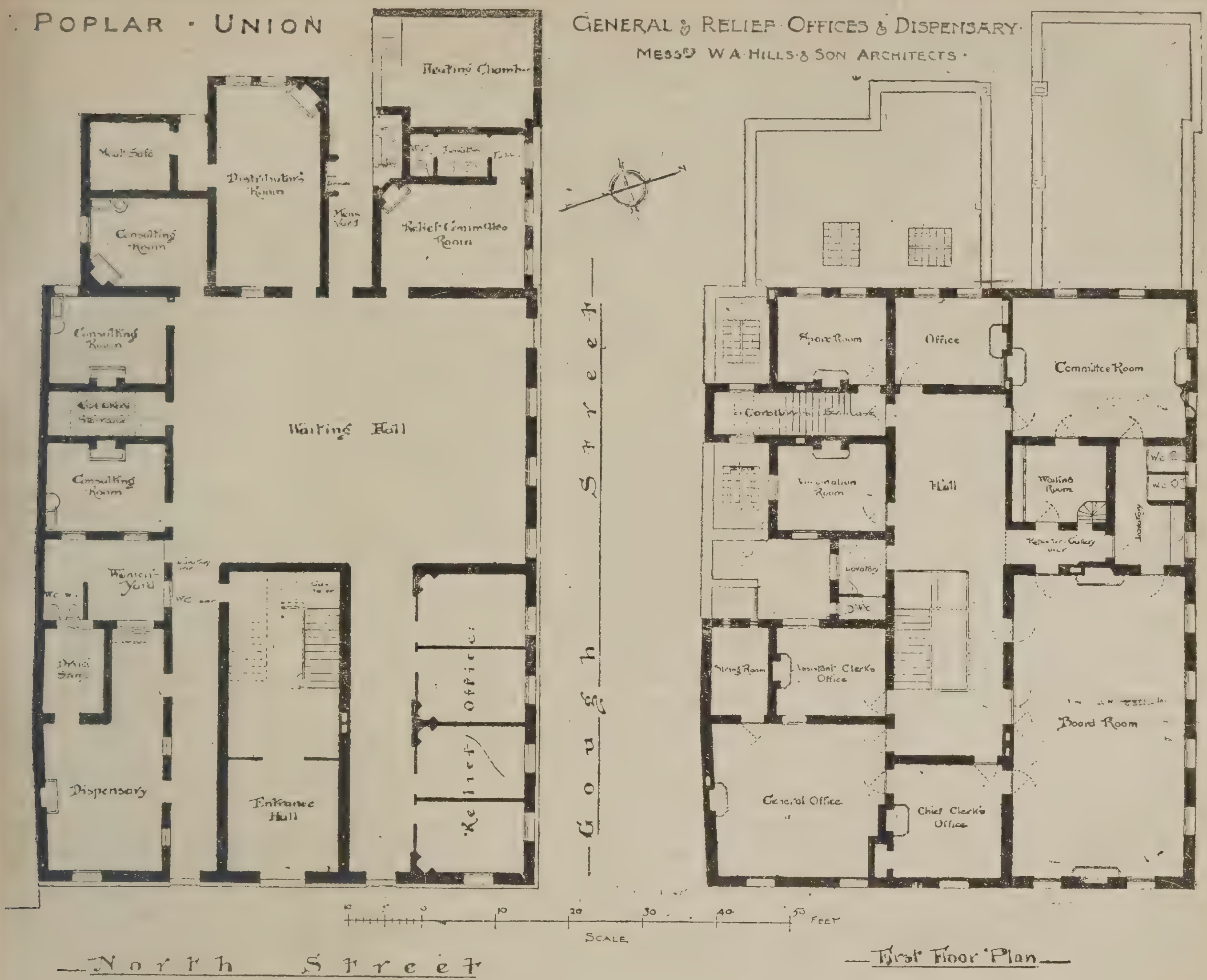
The Lancashire county council discussed at their last meeting a resolution requiring all contractors to adopt a "fair contracts" clause. It had been negatived on the last occasion, and was now again rejected by 39 to 25 votes.

Mr. Matthew Piers Watt Boulton, of Yew Park and Haseley Court, Oxfordshire, who died on the 13th June last, aged 74 years, left personal estate valued at £62,071. Mr. Boulton was a grandson of Matthew Boulton, of the Soho Works, Handsworth, the improver of the steam-engine and partner of James Watt.

A new spire, 150ft. in height, and built of Bath stone, has just been added to St. Luke's Church, Maidenhead. The architect is Mr. John Oldrid Scott, F.S.A., and the builders were Messrs. Silver and Sons, Limited. The carved heads are by Mr. H. Turner Hems, of Exeter, of the firm of Harry Hems and Sons.

A Government inquiry, held at Liverpool on Friday, to consider the application of the corporation for a loan of £26,000 to enlarge the Netherfield-road Hospital, provoked much opposition on the part of residents in Everton, the main objection being that the presence of the institution had depreciated the value of property.

The Sedgwick Memorial Museum Syndicate report to the Senate of Cambridge University that the cost of the building proposed to be erected exceeds the architect's calculations by the sum of £4,500. They therefore recommend that they be empowered to reconsider the plan approved by the Senate, and, if necessary, to substitute a new one for it, and that they report to the Senate before the end of the ensuing Lent term.



POPLAR UNION.—NEW BOARD ROOM, ADMINISTRATIVE BLOCK, DISPENSARY, AND RELIEF OFFICES.

THESE new buildings have been erected upon the site of an ancient residence, lately used as a small infirmary, which, until the beginning of this year, stood upon the west side of Upper North-street, not far from the East India Dock-road, in the parish of All Saints', Poplar. For the past fifty years the house had been used by the guardians for the isolation of persons suffering from infectious disease. The new buildings occupy a corner position, with street frontages of 67ft. and 120ft. respectively, and were built with red brick and Portland stone by Mr. William Shurmur, of Clapton, from the designs of Messrs. Walter A. Hills and Son.

PEN DRAWING AND PEN DRAUGHTSMEN.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

WHEN Mr. Joseph Pennell's sumptuous book was first published in 1889 we gave a somewhat extended notice of his very comprehensive and exceedingly interesting volume, and we printed with our remarks some specimen illustrations,* which were much appreciated. Nothing succeeds like success, and to-day we are enabled to draw the attention of our readers to the second and enlarged edition of the same admirable work which Messrs. Macmillan and Co. have just issued,† as one of the leading art books of the present publishing season, with more than double the number of illustrations of the first edition. The accompanying specimens, reproduced among our lithographic plates, will serve to show how varied a choice has been made in this representative collection which Mr. Pennell has compiled for the information and amusement of his readers. The author, always inclined somewhat to ride the high horse, naturally enough, and perhaps with good reason, takes to himself the credit of having discovered the faults of his original volume, it having been left to him, he says, to correct and amplify his own facts. Nothing appears to him more patent than the imbecility of those who ventured to criticise his book, and in all cases, seemingly, he finds, after mature reflection, that he was right, while "stronger arguments than cheap sneers and poor sarcasm from anonymous writers" are needed to prove him to have been wrong. Whatever the value of Mr. Pennell's remarks and theories, as he calls them, it is certain that the leading merit of his book, and manifestly the main reason of its success, is to be found in the admirable collection of leading men's work which, with the aid of the publishers, he has been enabled to get together. The only three artists who declined the benefit of the advertisement thus to be obtained, judging from the preface, were Messrs. Charles Shannon, Charles Ricketts, and Professor Herkomer. Mr. Pennell claims to have been as liberal and broad as he could, and we must admit he praises with ingenuous expediency a great diversity of styles, and illustrates a wide variety of methods, although, after all is said and done, he does not feel able to consider Spanish illustration among the final expressions of art, neither does he pin his faith to the methods practised by Mr. Morris and his school. Anyhow, it is abundantly clear that it would be impossible to please everybody, even when one is disinterestedly actuated by so wholesome and stimulating an object as that which Mr. Pennell says limited his ambition in this matter—viz., to help artists only. It would be difficult for anyone to gather together so comprehensive a series of examples of pen-and-ink draughtsmanship within the covers of one book, as that which we see before us, without producing an object lesson of the first importance, and on the whole the critical remarks with which the samples of work are accompanied are, we dare say, much to the purpose, and often are certainly cleverly expressed; but tall talk, wherever found, is appraised at its actual value, and it does not really enhance the permanent worth of any treatise. The inference, too, that only since this work of Mr. Pennell's was published, five years ago, "all intelligent art criticism has come to be written by working artists," is as gratuitous as the statement that the second edition of the book has been rendered possible by the spite, envy, and malice of those who ventured to criticise it originally. It is because we were among the foremost to acknowledge the cleverness and enterprise which rendered such a book possible, that we regret the airs assumed in this instance by the editor, whose hectoring style is not more graceful than it is convincing. The chapter on Architectural Pen-drawing which, at any rate, widened the interest of the original book, has now been entirely omitted, and the few examples of the pictorial representation of architecture which figure in the volume are grouped with other artistic work which is considered from a perfectly different standpoint, only about a couple of dozen lines being devoted to the chapter on "Architectural Illustrations," with four drawings from *Harper's Magazine*. One of the new plates in the book is an over-delicately toned and harmonised reproduction of our old friend, "St. Simeon Stylites," drawn in pen and ink by the late Wm. Burges, A.R.A. (see BUILDING NEWS for April 17, 1874), whose study is described by Mr. Pennell as one of the best architectural drawings he has ever seen. He knows, however, so little about architects as to describe its author as "E. W. Burgess, R.A.," a statement sufficiently inaccurate to make poor Burges turn in his grave, for he was conspicuous as a "stickler" over the spelling of his name. Oddly enough, in the suppressed article wherein Burges was quoted as an authority on architectural drawing, his name was given correctly. However, we should not have referred to what, after all, may be thought a trifle if Mr. Pennell had not accorded to infinitesimal items in other directions an undue importance, thereby narrowing his view and unduly enhancing mere casual details of pictorial mannerisms affected by comparatively unheard-of draughtsmen, whose merit at best is but of transitory interest, and whose work can only be justly estimated, of course, by time. The book has been brought up to date by the inclusion of the last contemporary artist of any consequence in vogue at the date of its issue, and much of the material thus garnered from Europe and America is extremely clever and very beautifully printed. To single out any individual specimens for special remark from so vast an assemblage is not easy, and, moreover, seems somewhat invidious; but we may venture upon one or two such references. Among these we may name Mr. F. H. Townsend's behind-the-scenes sketch called "Silence," originally printed in *Pick Me Up* from a block by Dawson. The drawing is excellent, and so is Mr. Phil May's "Old Parson," wherein every line tells, and the sense of humour is well-nigh perfect. Mr. Raven Hill, too, has this same faculty, coupled with a due care for accuracy in matters of local detail. None surpass, of course, the exquisite skill displayed by Mr. Bernard Partridge, whose drawings in *Punch* have made his name familiar. Charles Keene holds his old place as one of the few men who deserved a good word from every one, and in contrast to his honest, healthy studies, some of the mad follies of Mr. Aubrey Beardsley are shown with a too ample notice, expressed somewhat in qualified terms, it is true, but still over-laudating such vagaries in which gross extravagance passes for merit, and the impossible ranks as subtle invention. The same old subjects, well advertised already several times, figure here as specimens of this arabesque manipulator in black and white. From France and Germany, as well as from America, Mr. Pennell has included much that we are glad to see, and his practical remarks about process-work are very good indeed. We will, in concluding our perhaps too brief remarks, direct attention to the subjects, which by the courtesy of Messrs. Macmillan and Co., we are enabled to group together among our lithographic plates to-day. The central design of "Diana," from the *Hobby Horse*, is by Mr. Herbert Horne, and its thoroughly decorative character seems, in many respects, quite admirable. The Guild publication, from which it comes, deserves the condemnatory remarks which Mr. Pennell has made concerning it. "The Old Garden Gate," by Mr. Alfred Parsons, to the right-hand of our plate, like all this capable artist's work, is perfect in its completeness, thoroughly suggestive, and true to nature. Note the grouping of the sunflowers: how naturally they grow, taking their place in the composition with grace and ease of line, while they assume, notwithstanding, a distinctly decorative aim, clearly intended by the designer. On the other corner of the double page is a direct reproduction of Dürer's "Big Horse," from a print in the British Museum, which we have chosen to show the advantages of the process block over the wood-engraver's art in cases where facsimile copies are desired. The automatically correct photo-engraving reproduces the actual lines—defects and all, of course—whereas the wood-engraver has to cut around and produce new ones for himself, which never can be perfectly done. Mr. Pennell exhibits a wonderfully good block engraved in this way by Mr. R. Paterson of the same subject, and so a complete comparison is readily instituted. The view of Mushrabiyehs shown from Old Cairo is a copy of a drawing by the American draughtsman, Mr. H. D. Nicholls, and, like the corresponding architectural study in the right-hand upper corner of the plate in illustration of the dormer and chimney from the Chateau de Chambord by Mr. H. Hawley, is taken from *Harper's Magazine*, in which journal buildings are often represented with a proper respect to their detail, without any loss of pictorial interest and quality. The sketch of "Heron Court," by Mr. E. H. New, follows the restrictions peculiar to the rest of the Birmingham school in his treatment, which is rigidly conventional, the idea being that all illustrations, after the theory of Morris and Crane, must be made to harmonise in colour and in line with the type, and that they must be printed simply and naturally with it. All realism, they say, is out of place in a book, and pictures which these worthies contend are not decorative—that is conventional, in black and white—are to be kept in portfolios or hung on walls. The "Arabian Nights Genii" study by Mr. J. D. Batten is marked by a keen appreciation of humour, and it is well befitted to the fancy of legendary art, to which this artist has with so much originality devoted himself and found imitators. The book is beautifully printed and artistically got up, with the illustrations admirably disposed throughout the volume. The numbering, of the pages in many places is not completed, unfortunately, so that reference to the index is frequently a matter of no little difficulty.

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* See BUILDING NEWS, December 13, 1889.

† Pen Drawing and Pen Draughtsmen: their Work and their Methods. A Study of the Art of To-day, with Technical Suggestions. By JOSEPH PENNELL. London and New York: Macmillan and Co. 1894.

CHIPS.

M. Quellencé, at present consulting engineer to the Greek Government, has been appointed chief engineer to the Suez Canal Company, in succession to the late M. Lemassan.

Another park has just been secured for the densely populated south-eastern suburbs, the £36,000 required for the purchase as an open space of some 17 acres of vacant land adjoining the Lower-road at Deptford having been secured by grants and subscriptions.

The ancient parish church of Whitfield, near Dover, one of the smallest in England, has been restored and enlarged, and was reconsecrated on Friday, by the Bishop of Dover.

The foundation stone of the Wintringham Higher Grade School, Eleanor-street, Grimsby, was laid by Mrs. Wintringham last week. The building, with the site, will cost £11,500. Mr. Herbert C. Scaping, of Grimsby, is the architect, and Messrs. Hewins and Goodhand are the builders.

A bronze torque, found in 1837 in the garden of Tower House, Wraxall, by the late Mr. C. L. Coathupe, has just been presented to the museum at Bristol by his son, Mr. E. W. Coathupe, who is now retiring from the post of chief constable of that city.

The vestibule at Windsor Castle, which contains the gifts presented to the Queen upon the occasion of her Jubilee, has just been redecorated. The whole of the State apartments, with the exception of St. George's Hall, have been gradually renovated during the last five years, under the supervision of Mr. Leonard Collman, her Majesty's inspector.

By 103 votes to 4 the London County Council decided on Tuesday to give the necessary notices for the acquisition of the section of tramway, 2¼ miles in length, between Kennington-park and Great Dover-street, Old Kent-road. It was also determined to reintroduce into Parliament next session the Bill relating to the southern approach to the Tower Bridge, the line of route previously decided upon being adhered to.

Mr. James Fraser Redgrave, late chief clerk in H.M. Office of Woods and Forests, died at Eltham on Sunday, aged 70 years.

The Duchess of Albany paid a visit to Deptford on Tuesday, and opened the newly-erected St. Luke's mission hall in Gosterwood-street. She drove from hence to the Goldsmiths' Company's Technical and Recreative Institute at New Cross, to inspect the various classes at work.

The first sod of the Manchester, Sheffield, and Lincolnshire extension to London line will be cut in the Alpha-road, St. John's Wood, at noon on Tuesday next, the 13th inst. The ceremony will be performed by the Countess of Wharncliffe, and a luncheon will be afterwards given at the King's Hall, Holborn Restaurant.

The parish church of Aughton was reopened last week by the Archbishop of York, after restoration of the chancel, nave, and tower.

Alterations and improvements have been effected in St. Margaret's Church, York. Mr. W. H. Tarran, of Fishergate, York, was the contractor.

Mr. George Jacques, of Silsden, has given instructions, along with his architects, Messrs. Bailey, of Bradford and Keighley, to Messrs. Wm. Potts and Sons, clock manufacturers, Leeds, to provide and fix a new Cambridge quarter chime clock, with four illuminated dials, and five new bells, in the tower of Silsden parish church; while Messrs. Bailey, the architects, are also raising the tower, and adding a spire to the same, at Mr. Jacques's cost.

The Carlisle City authorities have given instructions through the city surveyor, Mr. W. Howard Smith, C.E., to Messrs. Wm. Potts and Sons, clock manufacturers, of Leeds, to place a four-dialled illuminated turret clock, which will be a great boon to the inhabitants, in the tower of the Fine Art Gallery, Tullie House, which is considered one of the finest in the kingdom. Messrs. Potts made the clock at the new markets, which has given every satisfaction.

WAYSIDE NOTES.

The latest big advertisement for London—the capital, not the newspaper—of the London County Council has not proved worth much. Not many people ever thought Boadicea was buried in Parliament-hill. The "tumulus" has been searched, but the only relics found in it were a bullet, which could not possibly have any relationship to the British warrior-queen, and a few 17th-century pots and sherds. It seems that not far from the large tumulus there is a small one, and enthusiasts who live in the neighbourhood, and are loth to see Hampsted lose one of its most cherished Royal associations, are hinting that, perhaps the little mound may be the real one, and propose that it should be explored also. But among experts a pretty strong idea exists that both the small and the great are quite modern affairs. Perhaps some favoured excavator can now get a job out of the L.C.C. on Primrose-hill? An enthusiastic archæologist of our acquaintance has always protested that it was there the British warrior-queen was finally disposed of—with a prophetic eye doubtless to the ultimate propinquity of the Zoological Gardens.

Very likely many readers of this column look out year by year for the interesting collection of drawings which Mr. Mendoza gathers together for his annual "Black and White" exhibition in the St. James's Gallery, King-street, S.W. The twelfth of the series was opened last Monday, and, as heretofore, the class of work shown is interesting, if not entirely representative. I dare say the best has been made of the material contributed; but the show, somehow or other, did not strike me as being up to the average. The architectural subjects, too, with a few exceptions, hardly merit attention, and some very old friends among other classes of subjects put in an appearance. Mr. F. G. Kitton's pretty pen sketch (59) of the Shrine of St. Alban, from St. Alban's Abbey, is from his big book, and this drawing was illustrated in the BUILDING NEWS for March 23rd last. "Winchelsea," by Mr. G. C. Haité, is the title of a slight study of a slight subject, dashingly suggested; and the same draughtsman's vignetted washed view of Dorking, with the church spire in the centre of the picture, looks suitable for a family magazine, for it is picturesquely handled in a popular manner. Mr. T. R. Macquoid is more serious in his faithful portrayal of the Rathhaus staircase at Lübeck; while Miss Marion Logsdail, ever diligent in her sketches of architecture, is capitally represented with good subjects from Barcelona and Old Yarmouth. Whether at home or abroad, the same sun and shadows intensify her delineations, which are, generally speaking, lacking in half-tones.

Following the lead of illustrated newspaper sheets, Mr. Holland Tringham rather overcrowds his paper, to the detriment of artistic effect; but his drawings are clever and crisp, without being scribbled about with meaningless twiddles and conventional impossibilities introduced with a notion for chousing colour, mere trickery of fashion both temporary and trivial. The sketches from Tangier, Morocco (157), are fair specimens of his work. The sheet from Shepperton and Richmond is too high up to be seen. "The Old Gateway, San Remo" (198), by Mr. William Thomson, is a bright, sunlit pen-study of a florid archway of graceful and rich Renaissance detail. Mr. Claude de Neuville sends "St. Nicolas, Pyrford, Surrey" (207), a small countryside church seen in winter. The microscopic dotted method adopted suggests the limitations and mannerism of a photograph, insuring accuracy, to the loss of dash and artistic style. The pulpit and pewing from All Hallows Barking, by Mr. Hanslip Fletcher, is a small, truthful drawing, hung badly for inspection, while the sunless and scrubby pencil sketch of St. Martin's-in-the-Fields, by Mr. Wm. Cowley Stevenson, occupies a large space on the line without doing justice to this well-known church. "The Middlerow, Croydon" (138), by Mr. Edwin F. Parks, is a brightly-touched-in outline sketch of an ordinary street view.

The water-colour drawings now on view at the Fine Art Society's Galleries in New Bond-street, from the pencil of Mr. Charles Sainton, are, of course, exceedingly minute and clever, with all the delicacy of his silver-point studies, by which he has made a name. Lady Colin Campbell has written an introduction to the catalogue, in a very supermundane and rapturous style, about the Godhead of Beauty in the Elysian Fields, where the worship of the Eternal Feminine is many sided, "poised on the prow of her conquering galley, with the wind rustling through her outstretched wings." This sort of thing, and more about the ballet-girl's winsome face and arms "among the billowing petals of her rosy lilac skirts most charmingly relieved against pale blue," may "look like some lovely orchid," but the description is exceedingly stupid. Mr. Sainton knows how to draw a stage-dancer in the most *outré* of costumes, or a "Maiden of the Mist" with a due recognition of female charms, aided by suggestive pose and indications of the nude, while he paints with miniature grace the most attractive of models, calling his productions "Daughters of the Gods," "A Pair of Eyes," "Water Nymphs," "Outside the Café Chinois," "Flowers of the Ballet," "At the Wings," and the like. In this way his collection no doubt will attract attention, even if the "Snark-like New Woman," or "The Chanting Boojum" does not approve. This seems likely.

Those who admire "wild animals" will do well to visit Mr. Dunthorne's gallery in Vigo-street, at the sign of "The Rembrandt Head," where Mr. J. T. Nettleship has a veritable "Zoo" on view, drawn in Pastel, including lions and tigers, sleeping and fighting; leopards and Sœmmering's antelopes, bears and koodoos, the ocelot, the python, and the growingly-scarce giraffe, eagles and owls, with studies of water-fowl. The "go" and variety of these "studies from the life," as might be expected from such an experienced draughtsman, may be taken as undoubted, while the colour is often brilliant and decorative. Whether the "big game" depicted always justify this amount of colour is another question. There is always something to see of note in this charming little gallery, and few exhibits please us more than Mr. Axel H. Haig's exquisite etchings of architecture. The Conventual Church of San Juan de los Reyes, Toledo, is one of the last of his admirable productions.

I cannot say I was much impressed by the exhibition of examples now on view of the coloured photographs, or heliochromes, as Bacquerel used to term his chromo-photos produced by the Mathieu process. The first of these methods by Mathieu, about which so much fuss is now being made, consists in rendering an ordinary paper photograph transparent, and after varnishing it at the back, it is painted according to taste with body oil-colours, which show through the print in moderated intensities, according to the shading of the silver print photograph. The paint can be roughly applied provided the various outlines of the picture are maintained. The second process, though not entirely new, is more ingenious, and may be described as consisting of three gelatine films, each stained or coloured after the principle of the three primary colours, only that the red assumes a very pink or almost magenta shade. The yellow film is superposed by the blue and the red, and the various shades and blendings of the colours required in the photograph are thereby obtained. It is curious to note how the modifications result as the three negative tints cover each other. The principle differs, however, from the Lippmann's process, on which it is based. As the gelatine or film composition dries it shrinks somewhat unequally, so that in the total result the tints do not register exactly in parts, resembling in consequence a chromolithograph under similar circumstances incidental to printing. The effect no doubt will please some people; but when I was told that it would be hardly possible to distinguish between the original colouring of the "Assumption of the Virgin" in the National Gallery by Matteo de Giovanni and the little Mathieu print shown in Messrs. Lombardi's gallery with the others on view at 13, Pall-mall, I thought someone must be at fault, for I happen to know the old master fairly well, and should hardly have recognised his colouring in this otherwise clever print.

There was a Lord Mayor once who, when a petulant king threatened to remove the capital to another city in the kingdom, replied, with respectful sarcasm, that "he hoped His Majesty would leave his dutiful citizens of London the Thames." At the present moment the apparent intention of the Thames is at no late date to leave London. The condition of the river below Richmond has, at any rate since the construction of the lock at that place, become such as to call for prompt remedy in the interest of the health of the capital, and a conference of a hundred delegates, representing various authorities in the counties of London, Middlesex, and Surrey, was held on the subject last week at Hammersmith. The river is much lower now at ebb tide than it was before the use of the new lock. It is urged that the Richmond corporation should be compelled to enforce the 24th section of the Richmond Lock, &c., Act, 1890, which provides for the sluices being kept up to protect the river. This would doubtless mitigate the evil, but it is doubtful whether the section can be enforced. After much discussion as to the right means of dealing with the question, it was resolved that the conference should appoint a committee to prepare a petition calling on the Thames Conservancy to inquire into the state of the Thames below Richmond lock. Many are in favour of an additional half-tidal lock and slipway being constructed across the river at such a point as may be found practicable upon engineering advice; but if the Richmond lock is damaging Brentford and other places below it, in all probability a lock at Hammersmith would in its turn damage the places lower down. Dredging was touched upon as an alternative, but that is expensive, and not infrequently causes the banks to fall in.

The question of an Hotel de Ville is once again receiving attention from the London County Council, owing to the increasing expense of obtaining adequate accommodation for their staff. Fresh consideration has been given to the question whether it is at all possible to utilise the gigantic building between the Strand and the Victoria Embankment, raised by the Liberator Society, and which the Official Receiver proposes to open early next year as the Salisbury Hotel. The report is that there would be great difficulty in adapting the large room of the hotel for the purposes of a Council chamber, and that many of the smaller rooms would be too dark for offices, whilst the accommodation altogether would hardly suffice for the purposes of the Council. Then the cost of acquiring and adapting the building would be enormous; and, considering the position and the bad approaches, it is felt useless to examine further this particular scheme. Meanwhile, till something more suitable is forthcoming accommodation will be found in the neighbourhood of Spring-gardens for 110 more persons at an extra rental of £1,760. I believe the L.C.C. would be heartily backed up by the ratepayers were they to face the difficulty boldly and invite competitive designs for Municipal Buildings, commensurate in scale and dignity to the status of the Metropolis. Why does not some enterprising and truly Progressive member bring forward a poposition of this character?

With reference to some remarks made by Mr. Penrose on Monday night at the Institute on the appointment of District Surveyors, and some subsequent comments thereon by the *Standard*, a "District Surveyor" writes as follows to that paper:—

> "Mr. Penrose seems to forget that all district surveyors have to pass the statutory examination, which Fellows of the Royal Institute of British Architects do not, as anybody with sufficient friends among the clique forming the majority of the Council can be selected for nomination; and besides, Fellows, being restricted from acquaintance with practical work, are the very last to understand the working of the Building Act. It is odd that Mr. Penrose should suggest the selection of district surveyors from among the Fellows, when the members of the council have practically decided not to admit district surveyors as Fellows."

It does indeed seem a little inconsistent; but although district surveyors may be blackballed by the ruling powers at the R.I.B.A., there is no rule formally excluding them, although quantity surveyors are kept without the pale by special by-law. I should say that presently, when London gets a proper governing body, the whole question of the examination and appointment of District Surveyors will need reconsideration, and will probably get it, especially after the very evident disposition of the "clique" at Conduit-street to monopolise the appointments, at an early date, if possible.

A correspondent of *La Nature* announces the discovery of a buried city in Guatemala, in the neighbourhood of Santiago-Amatitlan, at the foot of Agua, a volcano of the province. At a depth of from 12ft. to 18ft. below the surface, an extensive village, which there is every reason to regard as one of the very earliest civilised period, has been excavated. The cause of its destruction is unmistakable; the ground above it is composed entirely of ashes and lava. Among the ruins have been found many cooking utensils, a quantity of richly-coloured pottery, glass vases of good design, and a collection of stone weapons. The excavators have also unearthed several very curious stone idols, near which were buried necklaces, jewels, and a quantity of pearls and turquoises. According to the opinion of local archæologists, the men who built this village, and left these memorials of the civilisation of the times in which they lived, were of the Stone Age. This view is confirmed by the appearance of the skeletons that have been discovered, nearly all of which are the remains of very tall men.

The Union Steamship Company have added another fine twin-screw steamer to their South African fleet. The *Norman*, now lying in the Southampton Water, has many special features, and as an example of naval architecture may be mentioned for the luxurious fittings and decoration of its saloons. These are lined with wainscot oak relieved by carved panels on gold grounds, and are ceiled with embossed lincrusta, producing a very rich effect, and they are lighted by a tasteful distribution of electric lights. The library and smoking-room is lined with mahogany and satin-wood carved panels, with dado and lincrusta frieze and ceiling. The two tiers of shade decks add much to the comfort and convenience of these rooms. The length of the *Norman* is 490ft., her breadth 53ft., and depth 37ft. 6in., and she has triple expansion engines. She has been constructed of steel, and designed by Messrs. Harland and Wolff, of Belfast. We believe her first voyage out is on Saturday next.

The London County Council having recently erected the asylum at Claybury for 2,000 patients, at a cost variously stated at from £500,000 to £600,000, are now taking measures to build another near Bexley for a similar number of patients, but at a cost of £300,000 (the original estimate for Claybury was under £290,000), and propose to appoint a salaried architect at £800 per annum to carry out the work. It is rumoured, however, that there may be a competition for the preparation of the plans, and that the salaried architect, when appointed, will be the assessor, and prepare the working drawings and supervise the carrying out of the plans of the successful competitor. One of the selected candidates for this post of asylum architect, while admitting that he had never been engaged upon asylum work, is said to have stated *that is my strong point*. On the other hand, one of the rejected has been actively engaged upon the "coaching" of more than one of the selected men prior to their final examination by the committee.

CHIPS.

A new organ, built by Messrs. Nicholson and Co., of Worcester, was opened in the parish church of Whitchurch, Herefordshire, on Friday.

The memory of the late Rev. F. Barham Zincke, successively curate and vicar of Wherstead-on-the-Orwell from 1841 till 1893, has been commemorated by a massive slab of black marble over the grave, and a lych-gate at the entrance to the village churchyard. The gate is of English oak, standing in a sill of Portland stone, and roofed in with Broseley tiles. Mr. John S. Corder, of Ipswich, was the architect, and Mr. Friend, of the same town, carried out the work.

Memorial stones of a new Baptist chapel were laid in Wykes-street, Silvertown, on Wednesday week. The chapel will measure 44ft. by 55ft., and will seat 350 persons. The front will be of red brick with white brick dressings, and the cost will be about £1,200.

The city surveyor of York is this week completing the repaving of High Ousegate with four different kinds of wood. A thousand blocks of each description—red deal, Tasmanian blue gum, Jarrahdale Jarrah, and Karri—are being laid in order to test the wearing powers of the several materials.

It has been decided to place in the parish church of Stoke-on-Trent a pulpit of Penkridge stone as a memorial to the late Rev. W. West. Mr. Robert Bridgman, of Lichfield, will carry out the work.

The present organ in Bristol Cathedral being unworthy of the edifice, it has been decided to appeal for £1,500, the first moiety of the sum required to replace it by an adequate instrument. The existing case will be re-used.

Building Intelligence.

Birmingham.—The markets committee, in a report to the city council, to be considered at their meeting to-day (Friday), state that the council on the 22nd May last authorised them to accept the designs of Messrs. Essex, Nicol, and Goodman for the construction of a new meat market and slaughterhouses, and to proceed with the erection of the buildings in accordance with such designs at an estimated cost (exclusive of refrigeration and pumping machinery, electric-light installation, clerk of work's salary, &c.) of £48,000. The amount sanctioned was arrived at after the original plans had undergone considerable alteration, but previous to the bills of quantities being taken out. The architects apportioned the cost as follows: Buildings, £40,000; gear and permanent fittings, £5,000; architects' commission and sundries, £3,000; total, £48,000. Tenders for the works were obtained from ten selected firms of builders, the lowest tender received being that of Mr. John Bowen. Mr. Bowen's tender being considerably in excess of the amount sanctioned for the buildings and fittings — viz., £45,000, the committee had to consider whether any further variations or modications could be made to reduce the cost, without affecting the efficiency of the buildings. Amended plans and drawings were accordingly prepared by the architects, and the same have been approved by the committee. The principal alterations in the original designs are as follows: The meat market roof is simplified in construction by making it in one span instead of two, and omitting the central girders and stanchions; the height of the side walls is reduced from 40ft. to 35ft. from floor level. The height of the basement for the cold stores is reduced to 13ft. A rearrangement of the buildings is made, by which a considerable expenditure on foundations and excavations is avoided. The tower is reduced from 145ft. to 120ft. in height. The screen walls to the streets are reduced to 20ft. in height. Some of the terracotta embellishments are omitted in the elevations, and also the glazed brickwork in the subway. With the foregoing and other minor alterations, the total cost of the work, based on Mr. Bowen's schedule of prices, will amount to £49,375, to which the committee have added £625 for contingencies, bringing up the cost of the buildings and fittings to £50,000, making, with the architects' commission and sundries, a total of £53,000. The committee recommend the council to approve of the proposed alterations, and to authorise them to have the work carried out in accordance therewith at an additional cost of £5,000.

Peterborough.—Another stage towards the completion of the new church of All Saints, Peterborough, was reached on All Saints' Day by the dedication of the second portion of the building. The cost thus far has been about £5,000, and the tower is as yet unbuilt. The foundation-stone was laid on All Saints' Day, 1886. In the first section accommodation was provided for 300 worshippers, the present extension providing for 200 other sittings. The work has been carried out by Mr. John Thompson, of Peterborough, from the plans of Mr. Temple Moore, of Hampstead, London. The style is that of the Decorated period, a special feature being its lozenge shaped pillars, which carry the arcade separating the nave from the south aisle. The exterior is of Sutton stone, with Clipsham and Bath stone dressings, and the interior work is Bath stone and brick, flat-pointed and distempered for decoration. The nave is 21ft. wide, and the south aisle 19ft., whilst the length from east to west is 104ft. The east and west windows are of Flamboyant character. The roof of the nave and chancel is covered with tiles, and the interior panelled and ribbed with deal, painted respectively blue and cream. The iron tie-rods which run across the nave are painted red. The roof to the aisle is covered with lead, and, on the interior, is panelled with deal. The floors are wooden blocks, deal in the nave and aisle, but oak in the chancel. Round the interior there is a dado with cement panels and wood framing. In the south porch is a figure of the Blessed Shepherd, which has been carved and presented by Mr. Allan, sculptor, of Lincoln-road, Peterborough, one of the sidesmen. The general carving has been wrought in the workshops of Mr. J. Thompson.

Hanover-square, W.—The council of the Royal Agricultural Society, Sir John Thorold, the president, in the chair, entertained the Duke of Westminster, Sir Walter Gilbey, and others to dinner on Tuesday night in Harewood House, Hanover-square, the new premises into possession of which the society has entered. There followed a conversazione, at which upwards of 600 guests were present. Harewood House, 13, Hanover-square, formed a portion of a much larger block purchased by the Duke of Westminster and Sir Walter Gilbey, who gave the council the option of acquiring the portion they wanted, for which —the necessary alterations included—the society have paid £30,000. The mansion was the residence of Lord Harewood, and was built by Richard Adam, one of the famous brothers after whom the Adelphi took its name. All the rooms are of handsome proportions, and are decorated in the Adam style. The whole of the extensive additions, alterations, and restoration have been carried out by Messrs. Holland and Hannen, from the plans and under the direction of the architect, Mr. Arthur Vernon.

CHIPS.

The local board of Felixstowe are in negotiation with the waterworks company of that district for the purchase of the undertaking by agreement or arbitration. They offer 25 years' purchase; but the company ask for 33 years' purchase, on the ground that the population is likely to largely increase, and that the present requirements bear but a small proportion to future receipts.

St. Martin's Church, Castleton, Lancs., was re-opened on Sunday, after renovation and internal decoration, carried out by Mr. W. H. Best, of Rochdale.

The new workhouse infirmary at Kettering was opened recently. It accommodates 63 patients, and cost, with site, about £7,000. Mr. J. Alfred Gotch, F.R.I.B.A., of Kettering, was the architect.

The new Roman Catholic Church of St. Winefride, at Holywell, was opened on Sunday. It has cost £1,500, the Rev. Father Beauclerc having been his own architect.

A destructive fire occurred on Friday at the premises of Messrs. Wylie, Stewart, and Marshall, sawmillers, Firhill-road, Glasgow, damage being done to the extent of £2,000.

Mr. Alexander Siemens, of Woolwich, has accepted the presidency of the Institution of Junior Engineers for the session 1894-5 (in succession to J. Wolfe Barry, C.B.), and will deliver his presidential address on Friday evening in next week, the 16th inst., at the Westminster Palace Hotel.

The Duke of Devonshire, as President of Owens College, Manchester, opened, on Tuesday, the new medical schools which have been added to the college buildings, from the designs of Mr. Waterhouse, R.A.

At the municipal election at Ipswich, Mr. Thomas W. Cotman, M.S.A., and Mr. Fred Bennett, builder, were returned at the head of the poll for the St. Clement's ward. Mr. Cotman, who came forward for the first time, is the only architect on the town council of the borough.

Sir D. A. Lange, F.S.A., civil engineer, of Somers-place, Hyde Park, and Hurstpierpoint, who died suddenly, on Friday, in the shop of a hairdresser in Belgrave Mansions, was appointed, in 1858, by Said Pacha, Viceroy of Egypt, constructor of the Suez Canal, and was for some years director in England of that great work, on the completion of which, in 1870, he received knighthood.

The Great Northern directors have decided to extend their branch to Nottingham from the present terminus in London Road to a point near the centre of the town, where it will effect a junction with the new railway of the Manchester, Sheffield, and Lincolnshire Company. The plans have been prepared, and early measures will be taken for securing the necessary Parliamentary assent to the scheme.

The Altofts Schools, near Wakefield, are being warmed and ventilated by means of Shorland's patent Manchester grates and stoves, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

At the Salford Town-hall on Wednesday, Major-General Crozier and Mr. Burd concluded a Local Government Board inquiry, which had occupied also the previous day, with reference to an application by the corporation of the borough for sanction to their borrowing £34,000 to cover expenditure incurred on public baths and bridges, a fire-station, a refuse destructor, a hospital, and a recreation-ground. Mr. Hempsall, one of the elective auditors, opposed the application, and some matters in dispute were warmly contested between him and Mr. Brown, the town clerk.

"BUILDING NEWS" DESIGNING CLUB.

SECOND LIST OF SUBJECTS.

B.—A hall fireplace in stone, with overmantel in wood, running up to the ceiling level, which is 10ft. 6in. high, and panelled. The width of the composition is to be 6ft., and the level of mantel-shelf proper is to be about 5ft., more or less, above the floor. Style, English Jacobean or Early Renaissance. Scale, inch to the foot; elevation, plans, section, and sketch.

C.—An ornamental model dairy building, suitable for erection in connection with a gentleman's estate buildings. The accommodation to comprise a dairy proper (about 400ft. superficial area), a churning-room (about 180ft. superficial area), butter pantry, and a scullery of suitable size. Fittings to be shown. A marble fountain may form a feature in centre of dairy, and an external verandah may be adopted, but not essential. Material: brick and stone, with tile roof. Scale, 6ft. to the inch: elevations, plan, section, and sketch. Style optional.

Drawings Received.—"Fronte," "Red Rose," "Ivy," "Manetho," "Triagain," "Ictinus 2nd," "Lux," "Heather," "Tamar," "Ageepee," "Esto quod es," "Pallene," "Maori," "Just My Luck," "Creon," "Nyoola," "Stabilitas," "Gryph," "Ledis," "1894," "Petrel," "Quaigh," "Lux" (Scarborough. Change your motto next time, as another competitor has adopted this one).

Correspondence.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

To the Editor of the Building News.

Sir,—The *Standard* calls attention to a statement by Mr. Penrose, in his opening address on Monday last, that he is by no means sure that the district surveyors appointed by the County Council will be all they ought to be, and he recommends that none but Fellows should be appointed.

Mr. Penrose is rather behind the times; but he surely must know that all candidates must pass the statutory examination, and that the County Council will not be likely to appoint men unless they have had considerable experience in building matters.

Most of the appointments or promotions made by the County Council have fallen on members of the R.I.B.A.; but why Mr. Penrose should think Fellows alone eligible puzzles me, as Associates have to pass an examination, while Fellows can slip in if they have enough friends to nominate and elect them.

The Institute promised to assist the district surveyors when the new Building Act was before a Committee of the House of Commons; but, as usual, did nothing, and a very objectionable clause for the profession was struck out, not through the R.I.B.A., but through the agent of the Duke of Bedford.—I am, &c.,

Observer.

"OLD MASTERS."

Sir,—Although so far from your side of the world, I have been a reader of your paper for many years, since long before leaving England, which interesting (to me) event occurred some fifteen years ago, and I look for my News with eagerness every week.

Now although I have no intention of suggesting to you how you should run your paper—editors get a lot of advice in that direction, I believe—I want to know why we have been treated to the reproductions of these unnatural delineations—yclept, "Old Masters"? I, for one, cannot see that there is anything to be learnt from them, and they certainly are anything but beautiful. Take the reproduction of the fresco on the wall of the Riccardi Palace Chapel for instance, which I find with the last number of the "B. N." to hand, that of August 24th, read Mr. Eastlake's scholarly description, and then gaze on the picture. Of course, I am fully aware that justice cannot be done to the colours in a photographic copy; but saw ever anyone such stiff, unnatural figures, such impossible rocks, such trees, such posing, which Mr. Eastlake considers perfectly legitimate if we suppose the procession to be coming down-hill. Note the attitude of the horses, all carefully keeping step, with one leg raised; note that some legs (particularly that of the gentleman with his head on the wrong way) cast no shadow—they are apparently transparent.

See the starfish on the ground, presumably intended for grass; note how the crowd of retainers are carefully grouped in three rows, one above the other, as if they stood upon a stepped platform. I am curious to know, too, how the horsemen in the middle distance descend from their perch into the gully immediately below them.

These are ideas which occur to me on looking at this exhibition of "masterly drawing, ingenious composition and elaborate details"—*vide* Mr. Eastlake's article. I grant the ingenious composition and elaborate details; but I quite fail to discover the masterly drawing, and, although I am fully aware that it is rank heresy to cast even the mildest criticism at an "Old Master," I am emboldened to so do, in an endeavour to ascertain whether I am alone, or if there are others who, whilst appreciating a good painting, refuse to worship any painting or work simply because it is old. I hope some one will take the cudgels for me, as it is utterly impossible to carry on a correspondence in a paper with half a world between.—I am, &c., TASMANIAN.

Launceston, Tasmania, Sept. 29th.

THE SOCIETY OF ARCHITECTS EXAMINATION.

SIR,—May I be permitted to point out an obvious error in the report (contained in your issue of last week) of my remarks on a proposal of the Society of Architects to make membership of that body conditional on passing an examination.

I could not have admitted the desirability of the Society taking this course under any conditions, since my opposition is founded on the principle of a sole examining body, as long as examinations are regarded as constituting a test of qualification to practise architecture.

As the Society of Architects professes to be a body of practising architects, this is clearly the object of their proposed examination.—I am, &c.,

W. H. SETH-SMITH.

46, Lincoln's Inn-fields, Nov. 6.

WATER CARRIAGE AND THE SEWAGE PROBLEM.

SIR,—Probably few will read that portion of your leading article of the week before last, where it deals more especially with the vaunted achievements of modern sanitary science, without first being struck with the truth of the charges it brings forward, and the overwhelming strength of the case made out against our present system; and then secondly the entire absence of any suggestion or reference towards any kind of remedy or alternative treatment. All our faith in the elaborate system which the highest engineering skill has at length accomplished, is thus dashed to the ground without so much as a hint or a word as to the direction in which we are to look for deliverance in the future. To approach so difficult a problem when the voices of light and learning hesitate, is to invite a reminder of the old proverb touching the prudence of angels and the temerity of fools, which is somewhat disconcerting in the present instance. But, Sir, are we always to be left to infer, in the face of such unquestionable facts and logic, that we must either be content to go on as we are (or rather from bad to worse, for this is what it must come to), or be classified among those who have sufficiently taken leave of their senses to advocate a return to sounder principles on a more natural basis, even though it be on more primitive lines, and at some trifling sacrifice to personal comfort?

At the risk therefore of incurring or provoking the smile of pity from the learned, or the frown from the sanitators, I would ask had it not been well to have devoted a little space to the advocacy of some principle that would not be out of keeping with modern habits and usages, but at the same time more in accordance with the first principles which lie at the root of all scientific research or advance. The argument, briefly, is that we are not justified in polluting a larger bulk for the mere convenience in conveying the lesser, and still less so when the poisoning process set up is as indefinite and as far reaching in its effects on the water as in the air. But the policy is even more mischievous or suicidal when, in a time of agricultural depression such as perhaps never before existed, we continue to defile and poison our water with the very elements nature designed to fertilise the land. To state that in nature's circle all putrescible matter must go back to the soil to become in turn the food of vegetable life is so obvious a truism as almost to require an apology for referring to it; but when this same principle is compared to modern practice and methods, one feels little or no excuse is needed for the iteration. The fact is, it appears, we have quietly made up our minds to proceed on precisely opposite lines, with the result that we may rest perfectly assured we shall be worsted in the contest, and that sooner or later nature will exact the fullest penalty for our offences in the future, as she has already done in the past. As the system of carrying sewage by water increases, so must assuredly the difficulty of obtaining pure water increase, and the virtue of the soil from which we draw our supplies diminish, all the feats of engineering skill by way of filtration, precipitation, compression, and electricity, notwithstanding. The question is therefore, Has not the time arrived for a more serious effort to prevent the solid matters from entering the sewers, and deal with them on the more rational methods represented by the dry-earth principle? Now we are so constantly in the habit of letting our habits and prejudices run away with us, that I am aware the bare mention of any modification of the dry system is to court almost universal disapproval; but may I submit, it is surely not because the earth-closets of the ordinary types are open to objections, that we are to conclude no further improvement is possible in the same direction. Neither is it because drains and sewers will always be a necessity in a large city to carry off our waste waters that we should be compelled to use them for everything, and so not only render them a greater nuisance than they need be, but a source of eminent danger into the bargain. If, however, we once succeeded in stopping the excremental matters from entering the drains, the volume of sewage to be dealt with would at once be materially diminished, and the very ingredient which is found the most troublesome to deal with in the treatment of sewage, would be got rid of, as, of course, the thinner its consistency the simpler the filtration process becomes. But it is unfortunately true, just as water is selected for its convenience as a means of conveyance the crux of the earth system lies just in the absence of this very quality, and hence the difficulty arises of distribution and collection which constitutes its chief objection. The real question then becomes, How far this difficulty can be met or overcome by an adequate system of scavenging? Such a system already exists on a limited scale for the daily removal of refuse which is not admissible to the sewers, and if this system was strengthened and properly organised little or no more difficulty would be experienced by the addition of the soil, than at present exists in the periodical removal of ashes or putrid animal and vegetable matter from our houses.

On the contrary, it would probably be found that instead of the earth being offensive, it would more often tend to neutralise the poisonous emanations from the neglected dust-holes. Even the regular distribution of earth would be found to resolve itself more into a question of supply and demand than any serious difficulty in carrying it into effect.

There would, of course, be many difficulties of a minor character relating to the application of the principle to the upper stories of houses, the construction of shafts suitable to the work of dry conveyance as well as those connected with cleaning and easy methods of access and removal; but these again would be matters more of detail than principle, which, in most cases, would only need to be presented to be overcome. They are therefore beyond the scope of my present letter, which is written more with a view of inducing the profession to take the remarks already referred to in your article seriously, and if possible make them the means of leading to some practical reform in the matters under discussion. Thus we may hope to enter on a better state of things when we shall no longer be told by the heads of the medical profession to boil and filter all our water before using it; but we shall help to complete and obey the first principles of nature's circuit, and restore to the soil that which is universally admitted truly belongs to it.—I am, &c., J. DONKIN.

The parish church of St. Swithin, at Bicker, in the Fen country, was reopened after restoration last week. A portion of the church was restored in 1876 at a cost of £1,350. The present restoration embraced the whole of the south aisle and the south transept, and has been carried out by Mr. S. Sherwin, of Boston. The work has cost £1,450.

At the last meeting of the City Corporation, Mr. Deputy Heath, chairman of the Gresham Committee, announced that the new statue of the Queen, by Mr. Hamo Thorneycroft, R.A., for the Royal Exchange, would be completed in a year. Nearly four years had elapsed since Mr. Thorneycroft received the commission, and two-thirds of the fee (2,000 guineas) had been paid.

Intercommunication.

QUESTIONS.

[11242.]—**Ventilation of Public Rooms.**—I should be obliged for information with respect to the best position for the F. A. inlets and foul extracts in the ventilating of large and public rooms. Most works clearly state that the inlets should be at a height of from 5ft. to 8ft. above the floor level, but do not fix the position for the outlets. I have recently read a pamphlet which states that the outlet should be as low as possible, and on the same side of the room as the inlet, which should be at height above named. Is this method the most efficient and satisfactory, or does it apply in special cases only, as the outlets seem to be usually placed at ceiling level?—PROSPECT.

[11243.]—**Charge for Measuring Work at Completion.**—Following up the question recently asked respecting charge made for the preparation of bills of quatities, I should like to be authoritatively informed (1) What is the recognised charge made by an architect for measuring up and preparing final account of the work, when bills of quantities have been previously supplied by him, and a charge of 2½ per cent. made for same, with expenses of lithographing and stationery in addition? (2) An architect agrees to perform the usual architect's duties, including the preparation of bills of quantities, for a remuneration of 7½ per cent. on the cost of a building. During the erection of the building alterations are made to such an extent necessitating the complete measuring-up and preparation of account for the whole of the work at completion. The proprietors disclaim any liability to pay for measuring, &c., on the ground that the terms as agreed, 7½ per cent., cover all their liabilities to the architect, and the builder is equally averse to paying, on the ground that no clause exists in the contract or bills of quantities setting forth his liability to pay charge for measuring up at completion. It is impossible for the architect to properly check the accounts if submitted by the builder without completely measuring the work. Has the architect under these circumstances a claim upon the proprietors for any extra payment for measuring the building at completion, and checking accounts, or otherwise refusing to check and pass the builder's accounts? Or what would be the proper procedure for the architect in this position of affairs? Perhaps Mr. Lovegrove or other correspondents will say. —LANCASTRIAN.

[11244.]—**Pneumatic Malting.**—Will any reader kindly give particulars of pneumatic malting, and of buildings for same? Or refer to any books or other publication upon the subject?—J. H. C.

REPLIES.

[11232.]—**Domestic Hot-Water Supply.**—"Teachable's" correction to my reply is entirely out of place, as one has no intention of including lower class plumbing in replies to this column. I would inform "Teachable," for his information, that 1in. flow and ¾in. return pipes, such as he describes in the houses "in which he is interested," are not used in *good* work, and also that in practice the flow and return pipes are generally made of equal diameter. If "Teachable" desires any further information I would refer him to a series of very valuable articles which appeared in the BUILDING NEWS some time back, which evidently he has not taken the trouble to peruse. He will there see the responsibility which depends on the two pipes in question.—R. J. ANGEL.

[11236.]—**Colouring Deed Plans.**—J. S. Stretonne is right in suggesting the use of ox-gall; but before pencilling-in the drawing, rub the skin with soft india-rubber. After inking-in, scrape some chalk on the skin, and rub with a soft cloth; then, with a little ox-gall in the colour, it will run freely. Tincture of myrrh serves the same purpose as gall, but is not so effective. To prevent ink "running" when being coloured over, scrape some alum in the colour before using same.—G. ANDERTON, Northwich.

[11237.]—**Granite, Stone and Marble.**—I know of no work on the subject sufficiently comprehensive, but suggest consulting Mr. W. Brindley, of Messrs. Farmer and Brindley, Westminster Bridge-road, S.E., who is the great authority on such matters.—H. L.

[11238.]—**Glazier's Charges.**—If I rightly understand this question, there is no question of trade custom involved. Mr. Hobbs answered one of the usual advertisements, and chose the cheapest greenhouse he could find. It is evident that he did not get what he expected, and might have found it better to have had one made for him by a local builder, or to have had a more definite contract. —H. L.

[11239.]—**Open-Timbered Roofs.**—If the roof trusses are properly constructed, the chase is unnecessary. —H. L.

[11241.]—**Ventilating Strong Room.**—"N." should make one or more apertures at the level of the floor.—H. L.

[11241.]—**Ventilating Strong-Room.**—The reason for the failure is probably to be found in the fact that all the openings are near the ceiling. Half should be arranged near the ceiling level and half near the floor level. One set will then act as inlets while the other acts as outlets, the order in which they act varying probably from day to day; but at all times a circulation of air in the apartment will be maintained.—W. H. B.

[11241.]—**Ventilating Strong-Room.**—Shorten the length of two of the four flues by fixing the outlets 2ft. or 3ft. lower than the other two. When strong-room door is shut, long flues will extract as outlets, and short supply as inlets.—WILLIAM OWEN.

The Chester-le-Street union rural sanitary authority have instructed Mr. D. Balfour, M.Inst.C.E., F.G.S., of Newcastle-on-Tyne, to prepare plans for the main sewerage and sewage disposal of Low and Middle Handon Hold, and also Thornton Fold, Urpeth, situate in the above union.

Legal.

DRAIN OR SEWER?

If this legal question were put in the form of an old conundrum, and one was asked, "When is a drain not a drain?" the proper answer would be, "When it's a sewer." The Courts are constantly having to solve these riddles, and in so doing they continually add to the number of cases already decided. The true reason for all this litigation is, of course, because, while the "owners" of property have to pay for repairs and renewals of "drains," the local authorities have to bear the expense of dealing with sewers. Unfortunately, the various Acts affecting the question were not drawn in a way that was either clear or conclusive. The latest case upon the point is that of "Pilbrow v. the Vestry of St. Leonard, Shoreditch." This involved a sum of £200 odd, which had been expended by the vestry as sanitary authority in repairing and amending some drains at Norfolk Buildings, of which the appellant was the owner. These buildings consisted of 46 sets of apartments divided into two blocks, separated by a causeway 20ft. wide. They were erected, and drains put in, in 1882 by the owner, without any plans being submitted to, and without any sanction or inspection by them. This drainage was done by means of 12 branch-drains running into a main drain under the causeway, which itself ran into a sewer within 100ft. of the blocks. The vestry had ordered the owner to amend and reconstruct these primitive drains, to provide a properly ventilated inspection-chamber, &c.; and as he would not comply, they did it at the cost of over £200, and now claimed payment.

The magistrate had held that the alleged main drain was, under the circumstances, a drain only, and not a sewer, and he made an order against the owners. Upon appeal, Justices Mathew and Charles confirmed that ruling. The Act upon which the vestry proceeded was the Metropolis Local Management Act, 1855, s. 250 of which provided that a "drain" shall mean and include any drain of, and used for, the drainage of one building only, or premises within the same curtilage, and made merely for the purpose of communicating with a cesspool or other receptacle for drainage of two or more buildings. It appeared that, in the causeway dividing the two blocks of buildings there was the common dustbin; and on this and the other facts the Court held that these buildings were within the same curtilage, and so that the case clearly came under the definition quoted, and that this drain was a drain for which the owner was responsible, and not a sewer.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Balham.—Ancient Lights.—Abandonment.—As you have in fact given up the old lights, and in rebuilding put lights in different places, this amounts in law to an abandonment. And as the new lights were only some four years old, you have not acquired any right to claim by prescription, and so there seems to be no case.

L. P.—Lease.—Drains.—Liability.—Under the covenant quoted I do not consider that the lessee could be made liable for the new drains now required by the sanitary authorities. The lessee should refer them to the lessor as owner. He will have to do the work, and he will then only raise the question by suing the lessee upon his covenant for the amount he has had to expend.

Lancastrian.—House.—Cesspool.—Sewer.—I do not know how the owner of one house, although adjoining a highway, can make the local authorities build a sewer for his drainage. But it would be as well to send in a complaint to the Local Government Board as to the neglect of the cesspool now used, and see what can be done in that way.

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At St. Luke's Parish Church, Leek, on Tuesday week, special gifts of oaken furniture, valued at £1,375, were dedicated. They included tabernacle and figure work, new fronts to organ and stalls, in addition to a new vestry and organ chamber.

The Council of the Senate of Cambridge University recommend the acceptance of the bequest of the late Mr. Samuel Sandars, M.A., of Trinity College, who left the sum of £2,000, free of legacy duty, to the University, for the endowment of a Reader in Bibliography. The lectures are to embrace the subjects of bibliography, palæography, typography, bookbinding, book illustration, the science of books and manuscripts, and the arts relating thereto.

LEGAL INTELLIGENCE.

Drain or Sewer.—Pilbrow v. the Vestry of the Parish of St. Leonard, Shoreditch.—In the Queen's Bench Division on Friday, Mr. Justice Mathew and Mr. Justice Charles heard an appeal by way of special case from the decision of Mr. Rose, Metropolitan Police Magistrate, who had directed the appellant, Mr. John Smith Pilbrow, to pay £209 7s. 6d., the amount expended by the vestry, as sanitary authority for the parish, in cleansing, altering, and amending drains at Norfolk-buildings. The appellant was in receipt of the rents and profits of Norfolk-buildings, which consisted of 46 sets of apartments. These apartments were divided into two blocks, separated by a causeway 20ft. wide. The buildings were erected and the drains put in by the owner, in 1882, without any plans having been submitted to the local authority, or any inspection or sanction of the drains by them. The drainage was by means of 12 branch drains running north and south from each set of apartments, into a main drain running east and west under the causeway, with a sewer within 100ft. of the blocks. In November, 1892, the inspector of nuisances gave the appellant notice to amend and reconstruct the main drains, but as he did not comply with them the vestry executed the work, at a cost of £209 7s. 6d. The appellant contended that he was not liable to pay the expenses incurred by the vestry, because the alleged main drain was used "for the drainage of more than one building, and not for draining any block of houses by a combined operation under the order of any vestry or district board," and was, therefore, not a drain, but a sewer within the meaning of the interpretation clause of the Metropolis Local Management Act, 1855. The magistrate decided that the alleged main drain in question, draining blocks of houses by a combined operation, was, under the circumstances, and notwithstanding the absence of any order of the vestry, a drain, and not a sewer within the meaning of the act. At the conclusion of the arguments, Mr. Justice Mathew said the magistrate was right in holding that the drain in question was not a sewer within the meaning of the statute. The causeway was within the curtilage of both buildings, and therefore the appellant was liable to execute the works. The appeal would be dismissed with costs. Mr. Justice Charles concurred.

Dispute in the Plastering Trade.—Wright v. Hennessey.—In the Queen's Bench Division, on Friday, before Mr. Justice Wright and Mr. Justice Collins, an application was made in this case, "Wright v. Hennessey," for an injunction. The plaintiff is a plaster manufacturer in London, and the defendant is the secretary of the National Union of Operative Plasterers. The plaintiff has instituted an action against the defendant for damages for inducing his workmen to leave their work in violation of their contract of service, and he now asked for an injunction restraining the defendant from inducing a building firm to break a contract with the plaintiff, and from inducing persons not to employ or make contracts with the plaintiff. The defendant, in an affidavit, alleged that the plaintiff had organised an association in antagonism to that of which he is secretary, and stated that in writing the letters complained of he was simply carrying out the instructions of his own society. After argument, counsel for the defendant gave an undertaking that, until the trial of the action, his client would refrain from attempting to induce persons who had entered or who might hereafter enter into contracts with the plaintiff to break them; and on this undertaking their lordships made no order on the application.

Alleged Imperfect Drainage by a Contractor and Vestryman.—Mr. W. J. Winsford, a member of the St. Saviour's board of works, a member of the sanitary committee, and a contractor, carrying on business at 4, Charlotte-street, Southwark, appeared at Southwark Police-court on Wednesday to a summons charging him with "having constructed a drain at 75, Blackfriars-road, Southwark, so as to be a nuisance and a danger to health." In August the St. Saviour's board of works discovered that the drainage of No. 75, Blackfriars-road was very defective, and they ordered certain sanitary work to be carried out. The defendant sent in an estimate for the work for £49, which was accepted. The defendant executed the work, which was passed by one of the board's officials, who has been called upon to resign for the alleged part he took in the transaction. The ground floor of the house was reopened by order of the board, when it was discovered that the pipes were laid on shingle or ballast instead of cement, and that the joints were so defective as to allow the sewage to leak through into the soil. To test the matter, one end of the drain was blocked, and out of 100 pails of water poured into it 99 leaked out of the joints. Mr. Dodd, for the prosecution, said the defendant could not plead ignorance, as he knew well what the requirements of the board were, and he was actually a member of the very committee which ordered the work to be carried out. Dr. Herron said the work was so badly done that it was dangerous to health. After a protracted hearing, Mr. Fenwick decided to adjourn the case.

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WATER SUPPLY AND SANITARY MATTERS.

Durham and its Sewage.—The Durham County Council has issued a writ upon the corporation of Durham, in connection with the alleged pollution of the Wear by the discharge into it of the sewage of the city. Several months ago the county council gave notice that they would require the city to take the sewage from the river, and the corporation has at present under consideration a scheme by Mr. Fowler, C.E., to effect the desired end by establishing a sewage farm, and diverting the drains into it instead of the river. A meeting of the corporation was held on Monday, when it was decided to defend the writ, which is returnable at the next Durham County Court.

Fowey Water Supply.—At St. Austell rural sanitary authority's meeting, the clerk reported that Mr. Bellamy, surveyor of Plymouth, had written declining to accept £100 in settlement of his account (£147) for preparing plans, &c., for the Fowey Water Works, which the board had declined to adopt, and had terminated their engagement with Mr. Bellamy. The plans of Mr. G. Andrew, of Liskeard, for the Fowey water scheme, were submitted and approved, and estimates for carrying out the work were ordered to be obtained.

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CHIPS.

The records of the Carpenters' Company of Coventry, recently purchased by the council of that city from Mr. William Webb, of Coventry, whose father was the late master, are of considerable interest. There are three volumes, dating from the middle of the 15th century. The first, which is somewhat dilapidated, contains the accounts and transactions of the company, but the entries in the two later volumes are confined principally to accounts. The earlier entries are much obliterated and almost undecipherable.

The free public library at Colchester, built at a cost of £4,000, from designs by Mr. Brightwen Binyon, of Ipswich, was inaugurated last week.

The board of guardians for Newton Abbot, Devon, last week adopted plans for rebuilding the workhouse, at an estimated cost of £5,000.

After much correspondence between the Taunton town council, the engineer, and the Local Government Board, the new highway bridge over the river Tone in that borough has been successfully lowered to its new level, one foot lower than as first fixed, by the contractor, Mr. H. W. Pollard. The weight of the bridge was about 250 tons.

A new board school has just been commenced in Broughton-road, Edinburgh, and will cost £24,000. Accommodation is provided for 854 boys and girls and 512 infants, and the style adopted is Renaissance. Mr. R. Wilson, of Edinburgh, is the architect, and Mr. William Gerard, of the same city, the contractor.

A Local Government Board inquiry was held on Tuesday at the Public Offices, Green-lane, by Mr. W. J. Bird Clerke, M.Inst.C.E., to consider the application of the West Derby Local Board for sanction to borrow £5,300 for works of private street improvement, and £600 for works of sewerage.

Alterations are being made at the workhouse, Driffield, East Yorkshire. New vagrant wards are being erected in accordance with the most recent recommendations of the Local Government Board. The separate-cell system is being adopted, and, in addition, there is an association ward to accommodate 20. Receiving lobby, bathroom, clothes-drying, and disinfecting rooms are provided, as well as a commodious stone-breaking yard and sheds. Boyle's system of ventilation has been adopted, and Messrs. King and Co., of Hull, are executing the heating. The complete outlay will be about £1,000. The whole of the works are being carried out by Mr. M. Gage, of Driffield, under the superintendence of Mr. Joseph Shepherdson, architect.

Lady Northcote cut at Exeter, on Wednesday, the first sod of the new railway, which it is proposed to construct between Exeter and Chagford. The line will open up a portion of Devonshire now accessible only by coaching. It will go through the upper portions of the valley of the Teign—a district abounding in delightful moorland and rural scenery. The line will be about 26 miles in length, and, with one exception, that of a considerable tunnel, presents no engineering difficulties. It will branch off from the Great Western main line at Exeter, and be carried on as far as Teign House, where it will join a branch line from Newton Abbot and continue through the Teign Valley to Chagford. One part of the project is the purchase of the existing Teign Valley line, and this will give an alternative route between Exeter and South Devon. The estimated cost is £240,000, or about £14,000 per mile.

Our Office Table.

The annual exhibition of the Art Society at Sydney, New South Wales, affords unquestionable evidence of local progress in the domain of picture-painting equal to that made during any previous years. On the whole, it is decidedly the best exhibition of the work of Australian artists ever held in Sydney. The average standard is higher than that of any previous exhibition, and whilst some of the best-known artists have on previous occasions exhibited works of more importance than any by which they are represented in the present instance, with one or two exceptions, it could hardly be said that they have this year failed to maintain their reputation; and others, again, are even showing better work than they have shown before. The most conspicuously meritorious feature of the present exhibition, however, is the evidence afforded on all sides of the progress of the younger artists, and especially of some who, a couple of years ago, were known only as struggling art-students. Never before have so many new names been brought so worthily into prominence. Never before have beginners been quite so venturesome and so successful.

At the last meeting of the City Court of Common Council Mr. Deputy Edmeston, F.R.I.B.A., moved that the City Lands Committee should consider what steps should be taken to remove the present unsightly structure which disfigured a large part of the front of the Guildhall. The deputy pointed out that the present architectural features at the entrance to the Guildhall were at variance one with the other, and declared that the only way of making the styles of architecture identical was to remove the portion he referred to and restore it with a form of architecture in keeping with the style adopted in the building of the original portion of the Guildhall. Mr. A. A. Wood asserted that the porch was certainly one of the most ancient parts of the Guildhall. Major Joseph believed that the motion did not go half far enough, as it would be necessary for the display of the original part of the Guildhall to pull down the City Solicitor's and Remembrancer's offices, and even the Art Gallery. He would prefer that the sum of £50,000 should be voted for the purpose. Mr. H. H. Bridgman, F.R.I.B.A., thought a complete scheme should be drawn up by the committee. The motion was adopted.

The City of Liverpool School of Architecture and Applied Arts opened on Monday, the staff consisting of Professor F. M. Simpson, formerly Royal Academy Travelling Student; Mr. Charles J. Allen, silver medallist, Royal Academy; and Mr. R. Anning Bell, silver medallist, Royal Academy. Professor Simpson instructs in architecture, Mr. Allen in sculpture, and Mr. Bell in painting, and each is assisted by practical craftsmen. The aims of the school at its outset thus described are:—"1. To effect a complete union between the different arts and crafts. 2. To establish a thorough course of training for students in the different arts, especially in architecture, sculpture, and decorative painting. 3. To provide special instruction of an advanced kind for skilled craftsmen and artisans, chiefly in those crafts allied to architecture."

After the great earthquake shocks in Greece last spring, a grand committee was appointed to make an investigation of the Parthenon, in order to ascertain what damage the temple had sustained. On careful investigation, the committee reported that the edifice had been seriously injured, and that there was great risk in allowing it to remain in its present dangerous condition. They recommended, therefore, that immediate steps be taken to strengthen the building. It is satisfactory to be able to add that the Archæological Society, at a meeting called to consider the question, have voted an unlimited credit for the purpose of effecting the necessary repairs; but the question of who will superintend the work is one of the highest interest and importance.

Concrete has been successfully used in tunnel lining. A recent paper read before the American Society of Civil Engineers by Mr. Desmond Fitzgerald, M.Am.C.E., describes the lining of a waterworks tunnel with concrete—viz., the Sudbury River Aqueduct—which supplies Boston with water. A track was constructed for cars for transferring the concrete to the linings and for moving the centres; but this was elevated so as to allow the water to run underneath during the operations. Special track and cars were constructed, and are described. The "centres" for the concrete lining were of great strength, as no bracing could be used. These were spaced at 4ft. centres, and were built of three thicknesses of spruce planks, 10in. deep, breaking joint to the curve of tunnel, and were put in in three sections. Upon this Portland cement concrete lining was formed, and the irregular cavity between this lining and the rock was filled with American cement concrete. The concrete lining was about the same thickness as the centres 10in. to 12in., and we believe the work has been a success.

A correspondent of *Indian Engineering* observes that tar is most efficient when applied to fir, beech, pine, and poplar. Chloride of zinc is only reliable for birch, while sulphate of copper is most suitable for oak. As a matter of fact, the efficacy of any process for preserving timber depends on its dryness or seasoning, whether kiln-dried or otherwise, and the manner in which the salts are applied. The relative efficiency of the methods will be found to depend on the natural powers of durability of the wood in their untreated state. Until all the conditions necessary for injecting creosote or other liquid solution are known, it seems arbitrary to say that one wood is preserved better by tar than by any other process.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Surveyor's Institution. Opening Address by the President. T. Chatfeild Clarke. 8 p.m.

Tuesday.—Institution of Civil Engineers. Opening Address by Sir R. Rawlinson, K.C.B., President. 8 p.m.

Wednesday.—Carpenters' Hall. Lecture to students on "Sanitation," by Henry Law, M.I.C.E., 8 p.m.

Friday.—Institution of Junior Engineers. Inaugura Address by Alexander Siemens, President

The Society of Architects.

Founded 1884. Incorporated 1893.

The FIRST ORDINARY MEETING of THE SOCIETY OF ARCHITECTS for the SESSION 1894-5, will be held at St. James' Hall, Piccadilly, W., on TUESDAY, November 13th, at Eight o'clock p.m., when the PRESIDENTIAL ADDRESS will be delivered by Mr. EDWIN J. HAMILTON.

ELLIS MARSLAND, Hon. Sec.
A. MONTEFIORE, Secretary.

CHIPS.

A receiving order has been made in the case of Alfred Carden, of Brighton, architect and surveyor.

A new police-station is being erected in West Ham-lane, Stratford, and special consideration has been given to the ventilation, which will be carried out on the Boyle system, the latest patented improved form of self-acting air-pump ventilators being adopted for the extraction of the vitiated air.

The Bishop of London reopened All Saints Church, Buxton-street, Mile-end, last (Thursday) evening. The church was condemned as dangerous by the London County Council. The stonework has now been removed and a new tower built. The cost of the restoration has been £1,500.

The new free library at the corner of Southwark Bridge-road and Unwin-street, S.E., was opened on Friday by Mr. R. K. Causton, M.P. The building has been erected at a cost of £5,500, exclusive of site, from plans by Mr. J. Johnson, of Queen Victoria-street, E.C.

The foundation-stones were laid at Rhyl, on Friday, of a new chapel for the Zoar Welsh Wesleyans. The old chapel has been in existence for 25 years, and is situated in Sisson-street. The site of the new chapel is in the same street, but on the opposite side. The building is of brick, the front being faced with Ruabon pressed bricks and stone dressings. It will seat about 250 people. Mr. W. Lloyd Jones, Bangor, is the architect, and Mr. Hugh Jones, Rhyl, the contractor, the amount of the contract being £1,604.

The parish church of Whittington, Salop, was reopened, after restoration, on Tuesday week. The works have been carried out under the direction and from the plans of Mr. Corrie Frere, of London. Mr. W. H. Thomas, of Oswestry, was the contractor, and Mr. A. Sanderson the clerk of works. The walls have been panelled in sequoia wood, and a chancel arch of the same material erected. The masonry has been renewed, where necessary, in Shelvock stone, and the roof partially retiled. The windows are fitted with new glass, and the stained-glass memorial windows have been reset, the terra-cotta work being supplied by Mr. J. C. Edwards, of Ruabon, and the glazing by Messrs. Shrigley and Hunt, of Lancaster. A new pulpit of Kaurie wood has been erected as a memorial.

Trade News.

WAGES MOVEMENTS.

Dispute and Strike at Messrs Trollope's.—The dispute which has arisen in the London building trade between the Master Builders' Association and the London Building Trades Federation has already resulted in 300 men employed by Messrs. G. Trollope and Sons leaving their work. At the conclusion of the great strike in 1892, it was mutually agreed, the masters contend, that the unionists should work with non-unionists, and that the employers should make no distinction between the two classes of workmen. The masters allege that, while they have kept to their part of the agreement, the unionists have again and again refused to work with non-unionists, and they have therefore, through the London Master Builders' Association, given the Federation notice of their intention to terminate the 1892 agreement on May 1st next year, thus giving the six months' notice which was stipulated in the agreement. This action on the part of the employers has caused a considerable amount of irritation amongst the members of the various unions connected with the building trade, and when on Wednesday week Messrs. Trollope and Sons, builders, of Grosvenor-road, S.W., engaged some men who were non-unionists for one of their jobs, the unionist carpenters, bricklayers, and plasterers at once left the building. Before the day was out the unionists at work on jobs in Duke-street, Mount-street, Park-lane, and Portman-square had also struck. On Friday there was an extension of the strike, and other jobs of the firm in Cadogan-square, Belgrave-square, and at Stafford House were struck against. In all, nearly 300 of the unionist workmen of the firm have struck.

The Dr. Macfadyen Memorial Congregational church at Chorlton-cum-Hardy was opened last week. The church has been built and furnished at a cost of £5,200; it has been built by Mr. H. Matthews, Manchester, from designs by Mr. F. W. Simon, Edinburgh. The style adopted is Late Gothic. It is seated for 650 persons. The pulpit, choir, and organ are placed in an octagonal-ended apse, and the same form is used for the transepts. Externally the walls are of pressed bricks with Runcorn-stone dressings. One angle of the main façade is emphasised by an octagonal turret, the spire of which is covered with red tiles, which are also used for the roof.

The North British Railway Company, who are rebuilding the Waverley Station in Edinburgh, have adopted plans by Messrs. Cunningham, Blyth, and Westland, of that city, for rebuilding the Waverley Bridge leading to the station. The new bridge will differ only in its length and in strength from the present one. It will have the same levels, and it will occupy the same position and be of the same design. Within a very short time indeed the contracts will be signed and the operations will be entered upon. From considerations of traffic the bridge will be constructed in two sections.

Lord Burton handed over to the corporation of Burton-on-Trent, on Tuesday, a town hall. Fourteen years ago the late Mr. M. T. Bass built an institute in the parish of St. Paul at a cost of £46,000. One portion he set aside for Church purposes, another was devoted to the local Liberal club, and a large hall was at the disposal of the promoters of public gatherings. The buildings were occupied by the respective authorities on a 15 years' lease, and Lord Burton has now converted them into a town hall. To accommodate the Church people and the political party, he erected new buildings at an expenditure of £21,000, while the work of rendering the older edifice suitable for municipal purposes has involved the donor in a further expenditure of £17,000. Included in this latter scheme is a new council chamber. The value of the gift is £64,000.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

ACTON, W.—For the erection of a temporary iron building, foundations, drains, &c., at the Osborne-road Board School, for the Acton School Board. Mr. Edward Monson, F.R.I.B.A., Acton Vale, W., architect :—

For iron buildings, &c. :—			
Humphries, Ltd., Knightsbridge ...	£246	0	0
For foundations, &c. :—			
Arnold, E., New Cross	62	5	0

BIRMINGHAM.—For the construction of the new meat market and slaughterhouses for the corporation. Messrs. Essel, Nicol, and Goodmans, of Birmingham, architects :

Bowen, J. (recommended for acceptance) ... £49,375

(Revised tender to reduced plans, Mr. Bowen's having been the lowest sent in of ten selected firms).

BOURNE, LINCOLNSHIRE.—For providing a galvanised-iron cistern to hold 250 gallons, at the workhouse :—

Clarke, F. J., Bourne (accepted).

CARDIFF.—For works of private improvement, for the town council :—

For Hinton, Marion, and Millman streets, and Moorland-road—

Rich (accepted) £1,328 17 11

For Milford, Swansea, Adeline, Fishguard, Pontypridd, Neath, and Tenby streets, and Portmanmoor-road—

Ellis and Davies (accepted)... ... £4,237 4 11

CANNOCK, STAFFS.—For enlarging the board-room, clerk's office, &c., at the workhouse, for the board of guardians. Messrs. J. R. Veall and Son, Wolverhampton, architects :—

Gough, H., Wolverhampton ...	£328	10	0
Whittome, A., Stafford	307	0	0
Kent, J., Cannock	306	0	0
Guest. J., and Son, Stourbridge ...	305	0	0
Williams, A., Wyrley	298	15	0
Anderson, M. B., Cannock	295	0	0
Reynolds, J., Cannock (accepted)...	280	0	0

CHATTERIS, CAMBS.—For the rebuilding of the rag factory :—

Fletcher, D. (accepted).

CHELSEA, S.W.—For the erection of a doctor's house and nurses' quarters at the infirmary, Cale-street, Chelsea. Messrs. Lansdell and Harrison, 12, Compton-terrace, Highbury, N., architects. Quantities by Messrs. Northcroft, Son, and Neighbour, 57, Charing-cross, S.W. :

		A.
Britton, F.	£10,444	£80
Smith, J. J....	10,300	50
Battley, Sons, and Holness ...	10,347	100
Calnan and Co.	10,148	—
Prestige and Co.	9,970	30
Craske, O., and Co.	9,850	50
Higgs, F. and H. F.	9,875	225
White, F., and Son	9,720	80
Minter, F.	9,670	45
Wave, G.	9,700	120
Norton, W.	9,588	50
Jerrard, S. J., and Co.	9,569	40
Holloway, H. L.	9,643	120
Wallis, A.	9,587	80
Dupont, F.	9,587	150
Lorden, W. H., & Son, Trinity-road, Tooting (accepted) ...	9,469	150

A.—Credit for old materials.

CLERKENWELL, N.—For the erection of a store for books and apparatus in conjunction with a store for furniture, on land adjoining the Bowling Green-lane site, Clerkenwell, for the London School Board :—

Yerbury, R. A., and Sons	£38,320	0	0
Reed, A., and Son	36,426	0	0
Shillitoe, J., and Son	35,000	0	0
Grover, J., and Son	34,753	0	0
Downs, W.	34,570	0	0
Collinson, J. F.	34,510	0	0
Boyce, T.	34,180	0	0
Stimpson and Co.	33,950	0	0
Lawrance, E., and Sons	33,350	0	0
Foster and Dicksee	32,950	0	0
Kirk & Randall, Woolwich* ...	31,324	0	0

* Accepted.

COVENTRY.—For the erection of new board schools at Red-lane :—

Golby, T. G.	£5,113	0	0
Smith, G. F., & Sons, Milverton ...	5,089	0	0
Parnell, J., and Son, Rugby ...	4,984	0	0
Bowen, J., Balsall Heath	4,888	0	0
Hill, C. G.	4,842	0	0
Haywood, C.	4,795	0	0
Isaac, J., Foleshill	4,696	0	0
Liggins and Strong	4,672	0	0
Wincott, A. A.	4,600	0	0
Kelly and Son, Foleshill	4,500	0	0
Worwood, J.	4,218	0	0
Garlick, C. (accepted)	4,180	0	0

DARTMOUTH.—For pulling down and rebuilding the George and Dragon inn, Dartmouth, for Mr. J. Bartlett. Messrs. E. Appleton and Son, F.R.I.B.A., M.Inst.C.E., Torquay, architects. Quantities by Mr. C.S. Appleton :—

Smerdon, J., Torquay	£1,178	0	0
Hawkins, S., Chelston	1,012	0	0
Yeo, R. F., Torquay	960	0	0
Pillar, R. T., Dartmouth	950	0	0
Goss, Bros., Torquay...	898	0	0
Rabbich and Brown, Paignton ...	784	0	0
Pike and Voisey, Dartmouth* ...	780	0	0

* Accepted. Architect's estimate, £800.

DURHAM.—For additions to Aden Cottage, Durham. Mr. H. T. Gradon, Durham, architect :—

Kell, J.	£1,780	0	0
Shepherd, J.	1,725	0	0
Ainsley, T.	1,652	0	0
Gradon, G., and Son	1,566	17	0
Gibson, C. W.	1,564	1	2
Bradley, G.	1,552	3	0
Wardropper, W. (accepted) ...	1,550	0	0
Whaley, J. (withdrawn)	1,490	0	0

All of Durham.

KENILWORTH.—For providing a steam-pump and boiler at the new bore-hole :—

Hatton, of Coventry (accepted).

LEEDS.—For the erection of a retail fish market for the city council :—

Cross and Carter (accepted) ... £2,858 0 0

LONDON.—For the erection of flats and warehouse at Mercer-street, Long Acre, W.C., for Messrs. Pankhurst and Co., Ltd. Messrs. Kidner and Berry, 23, Old Broad-street, London, E.C., architects :—

Scott, S. J.	£7,639	0	0
Foster and Dicksee	7,278	0	0
Colls and Sons	7,248	0	0
Grover and Sons	7,085	0	0
Munday and Sons	7,050	0	0
Gough and Co....	6,874	0	0
Scrivener and Co.	6,723	0	0
Killby and Gayford (accepted) ...	6,636	0	0

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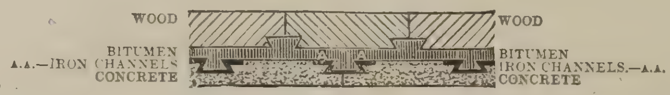

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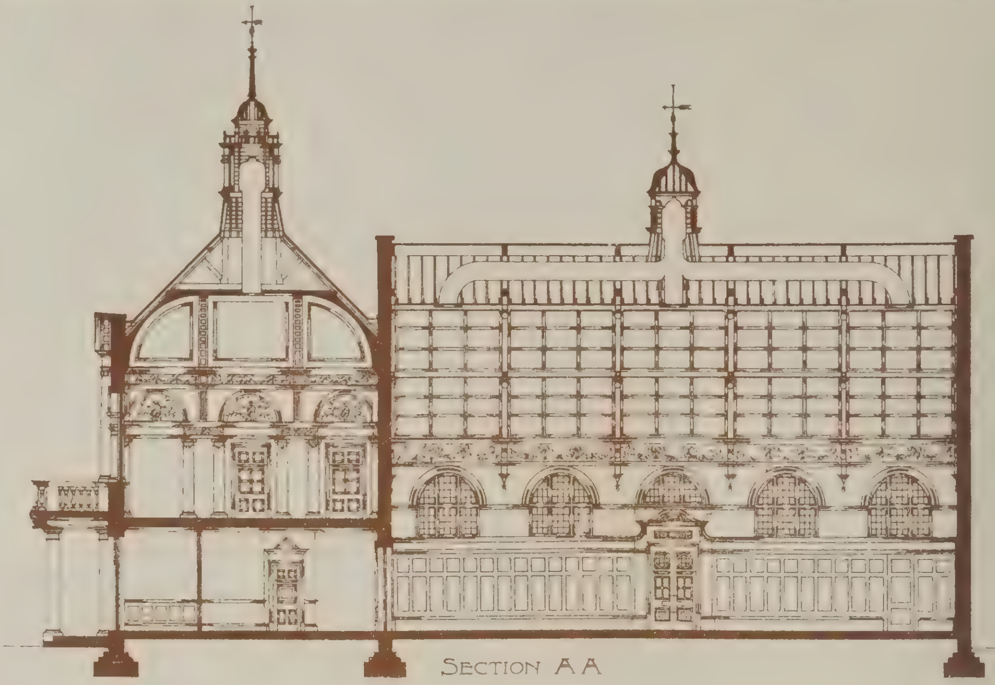

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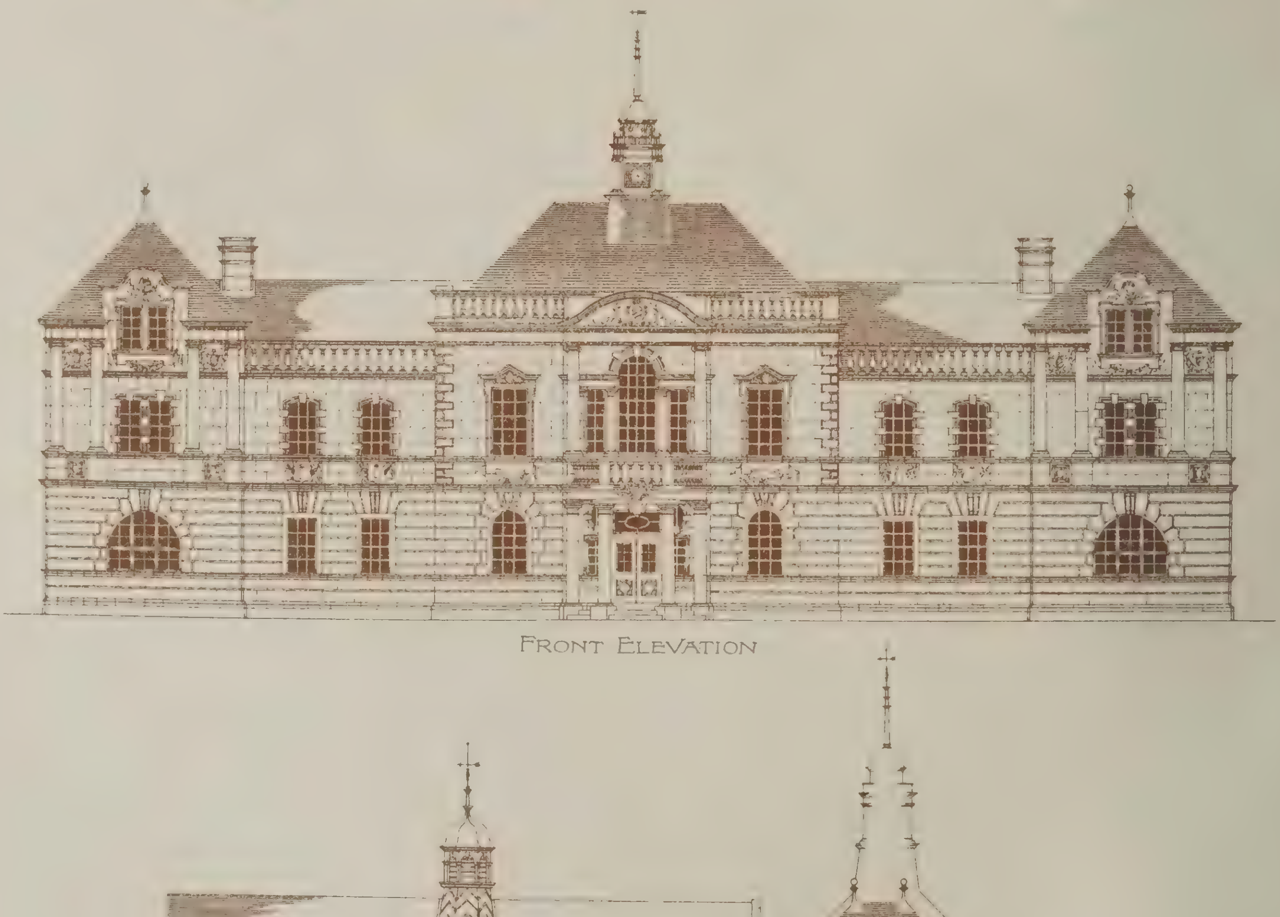
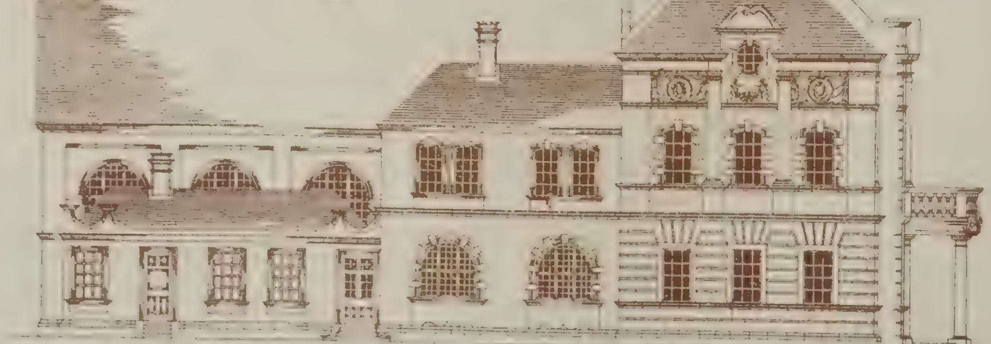


FRONT ELEVATION



SIDE ELEVATION.

Photo Litho [illegible]

LLANDUDNO. TOWN-HALL. COMPETITION. SELECTED. DESIGN BY T. B. SILCOCK. ARCHT.

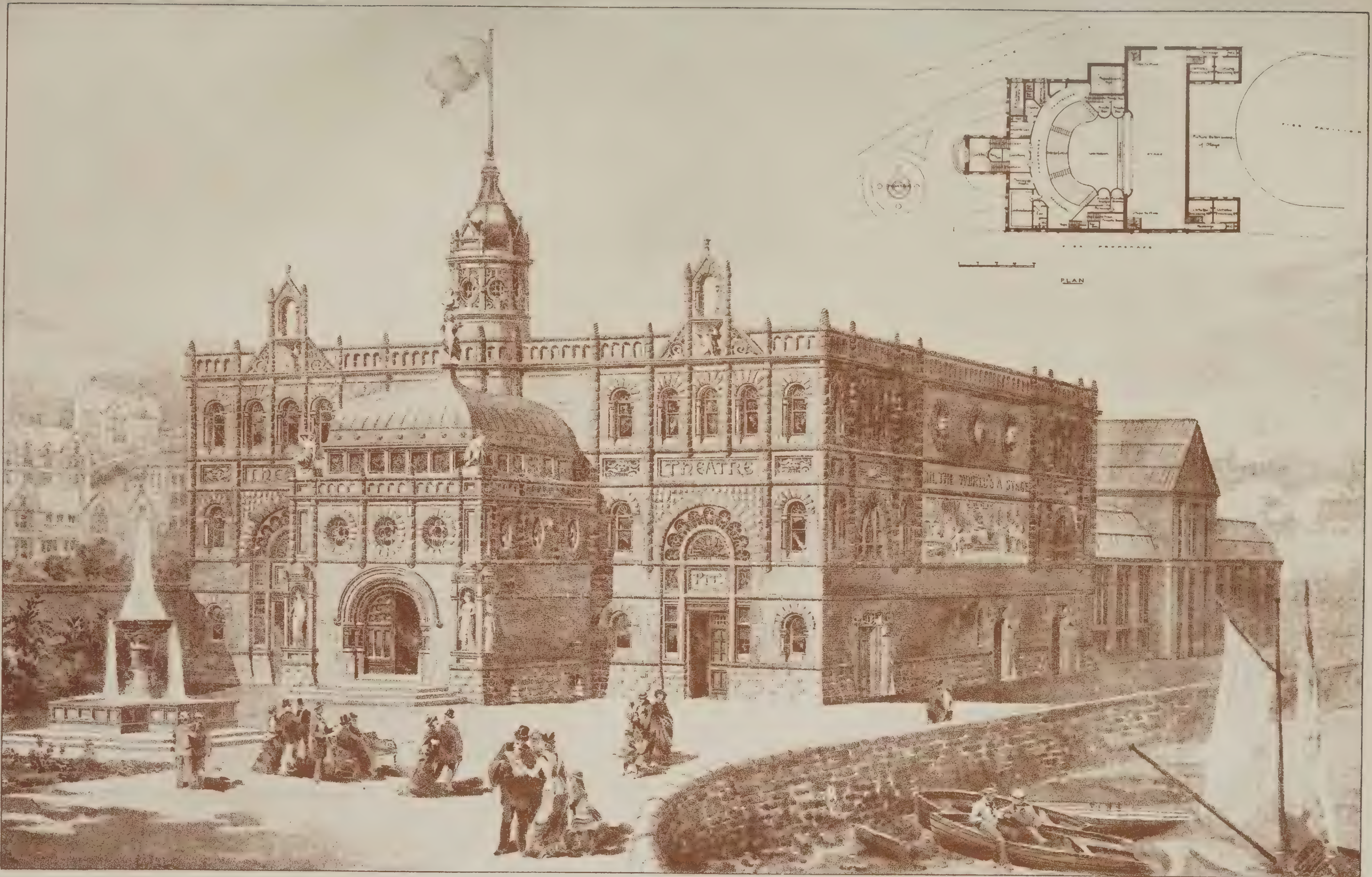
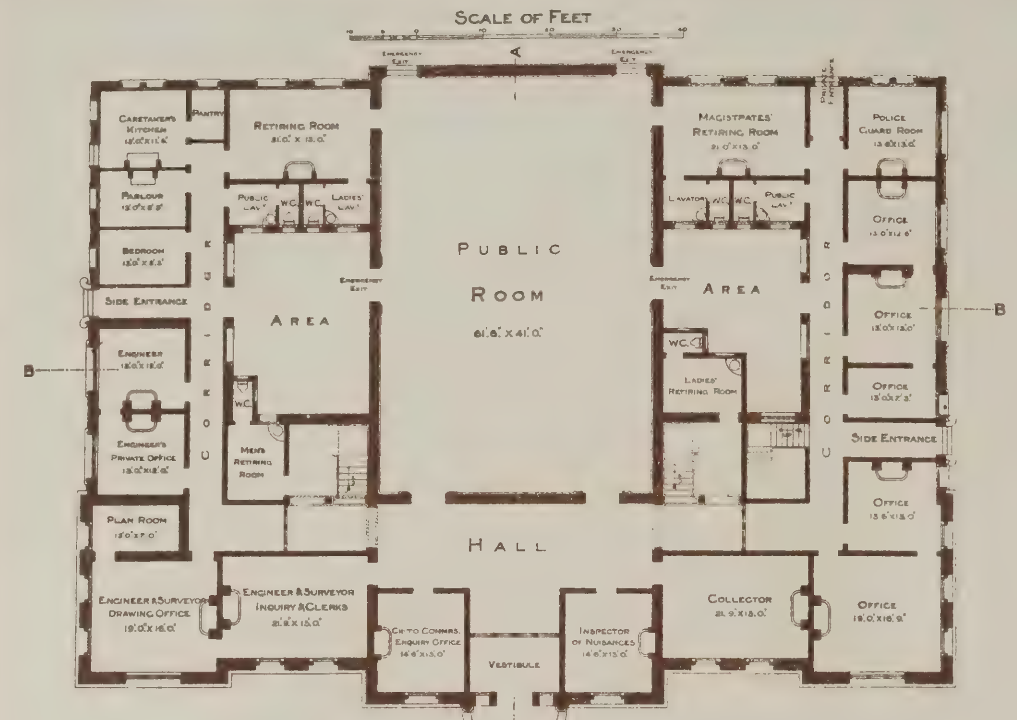

PLAN
THEATRE
PIT
ALL THE WORLD'S A STAGE

PHOTO-TINT, by James Akerman 6 Queen Square London W.C.

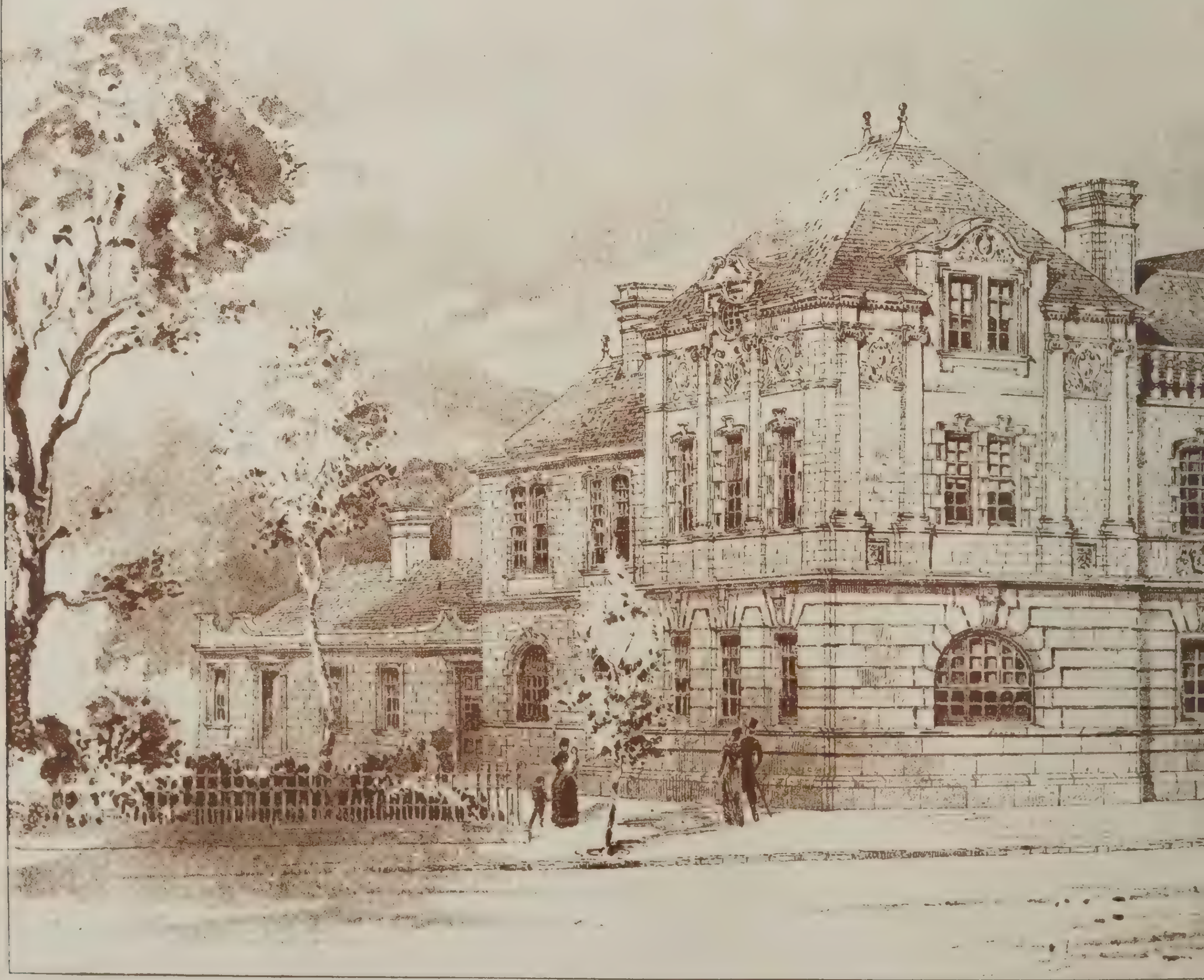
NEW THEATRE · LLANDUDNO · FOR THE PIER · COMPANY · DANIEL ARKELL ARCHT

LLANDUDNO TOWN

SELECTED·DESIG

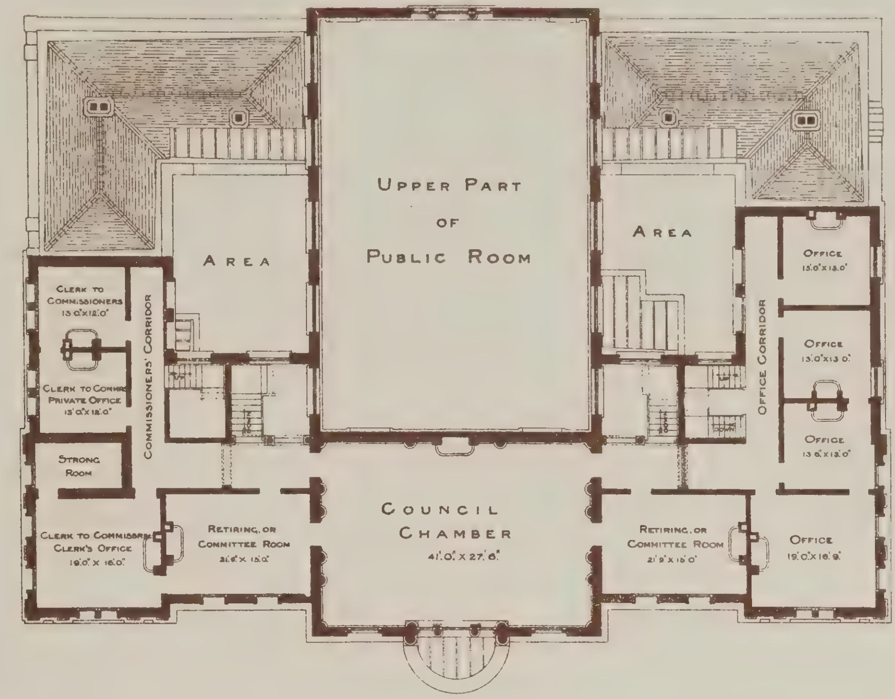


GROUND PLAN

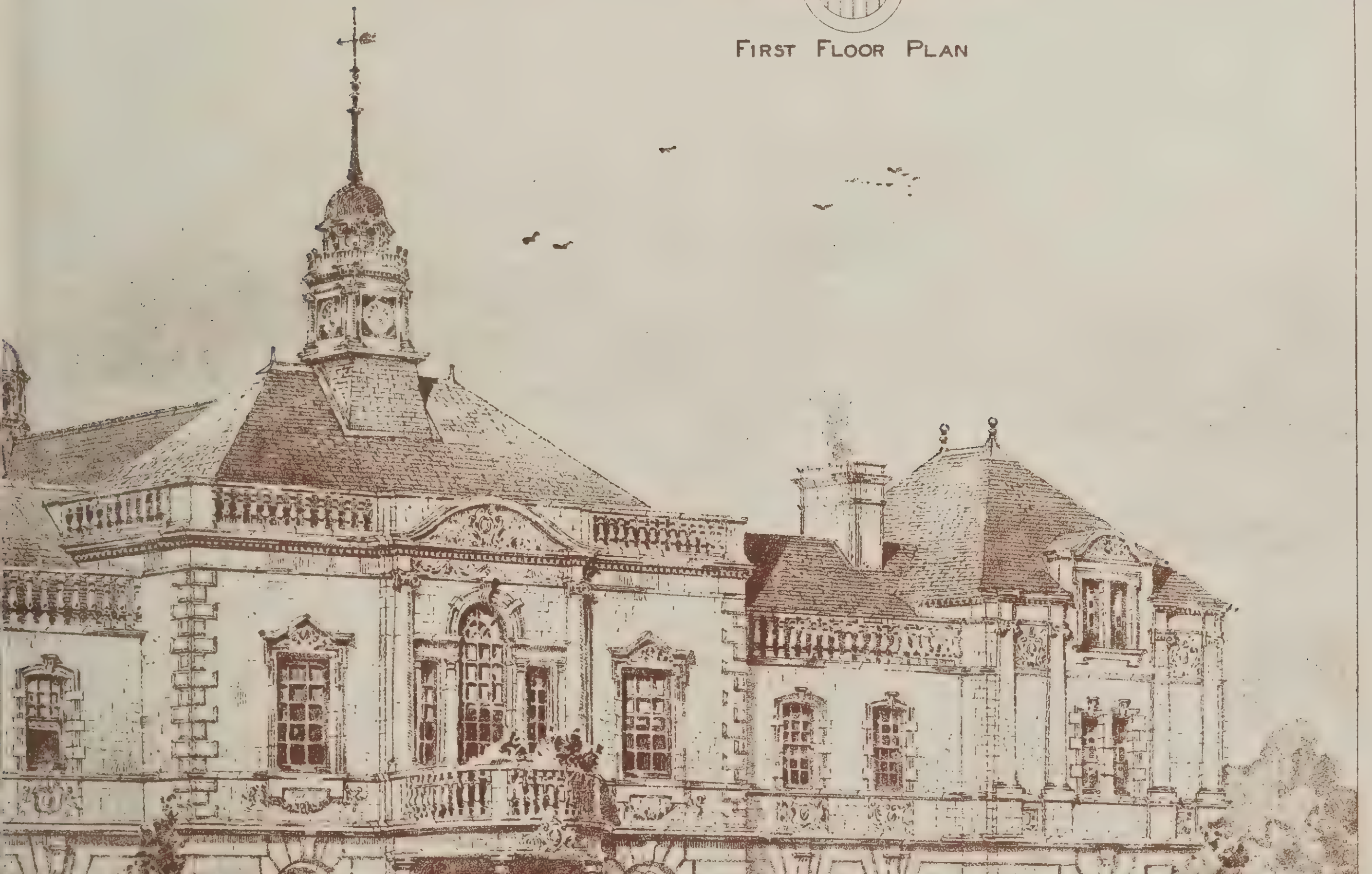


ALL · COMPETITION ·

T B SILCOCK · ARCHT.

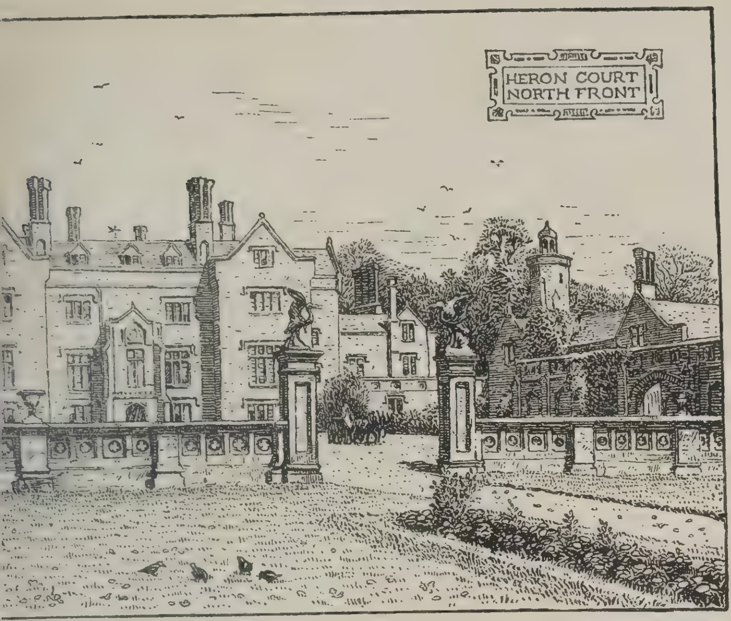

Upper Part of Public Room
Area
Area
Clerk to Commissioners 13'0"x12'0"
Commissioners' Corridor
Clerk to Commrs Private Office 13'0"x12'0"
Strong Room
Clerk to Commissrs Clerk's Office 19'0" x 16'0"
Retiring, or Committee Room 21'6" x 15'0"
Council Chamber 41'0" x 27'6"
Retiring, or Committee Room 21'9" x 15'0"
Office Corridor
Office 13'0"x13'0"
Office 13'0"x13'0"
Office 13'6"x13'0"
Office 19'0"x16'9"

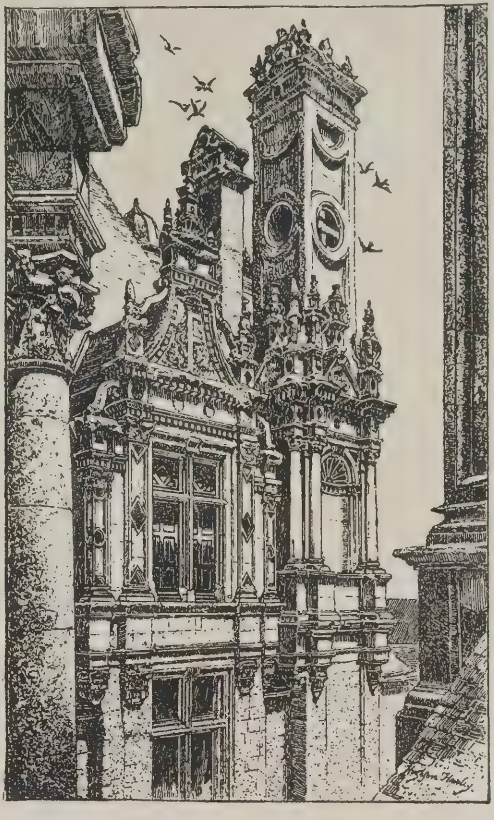
FIRST FLOOR PLAN

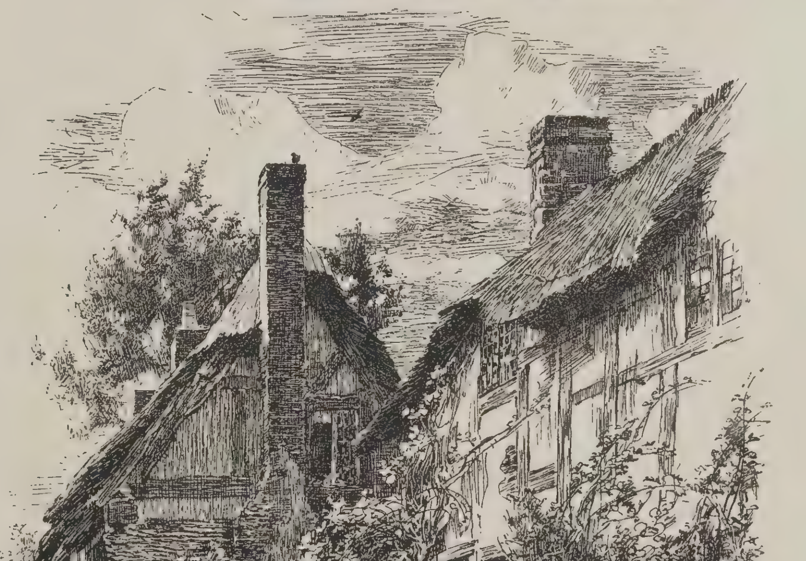


"Photo-Tint," by James Akerman, 6, Queen Square, London, W.C.

EXAMPLES · FROM · “PEN · DRAWING · AN







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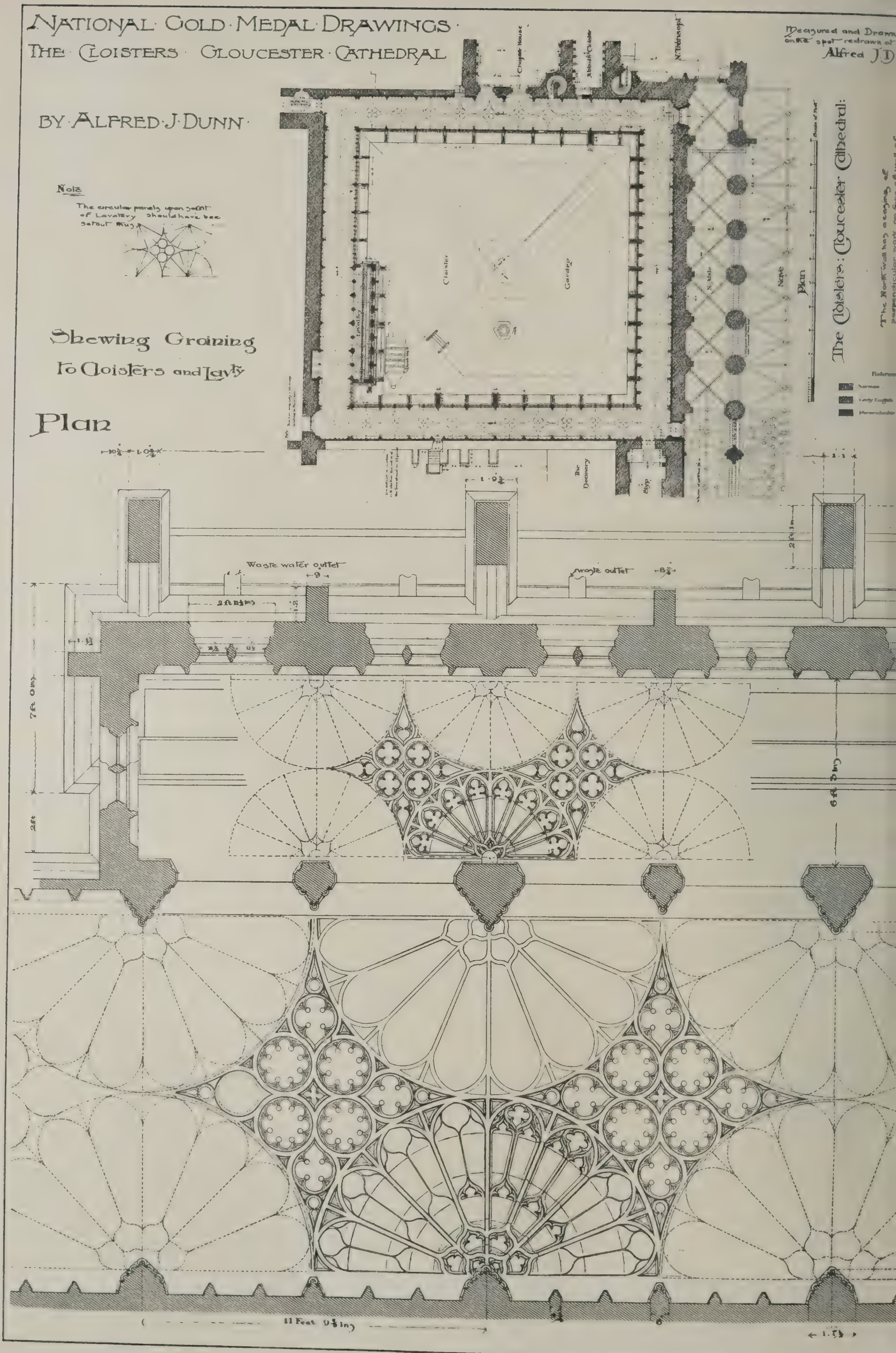
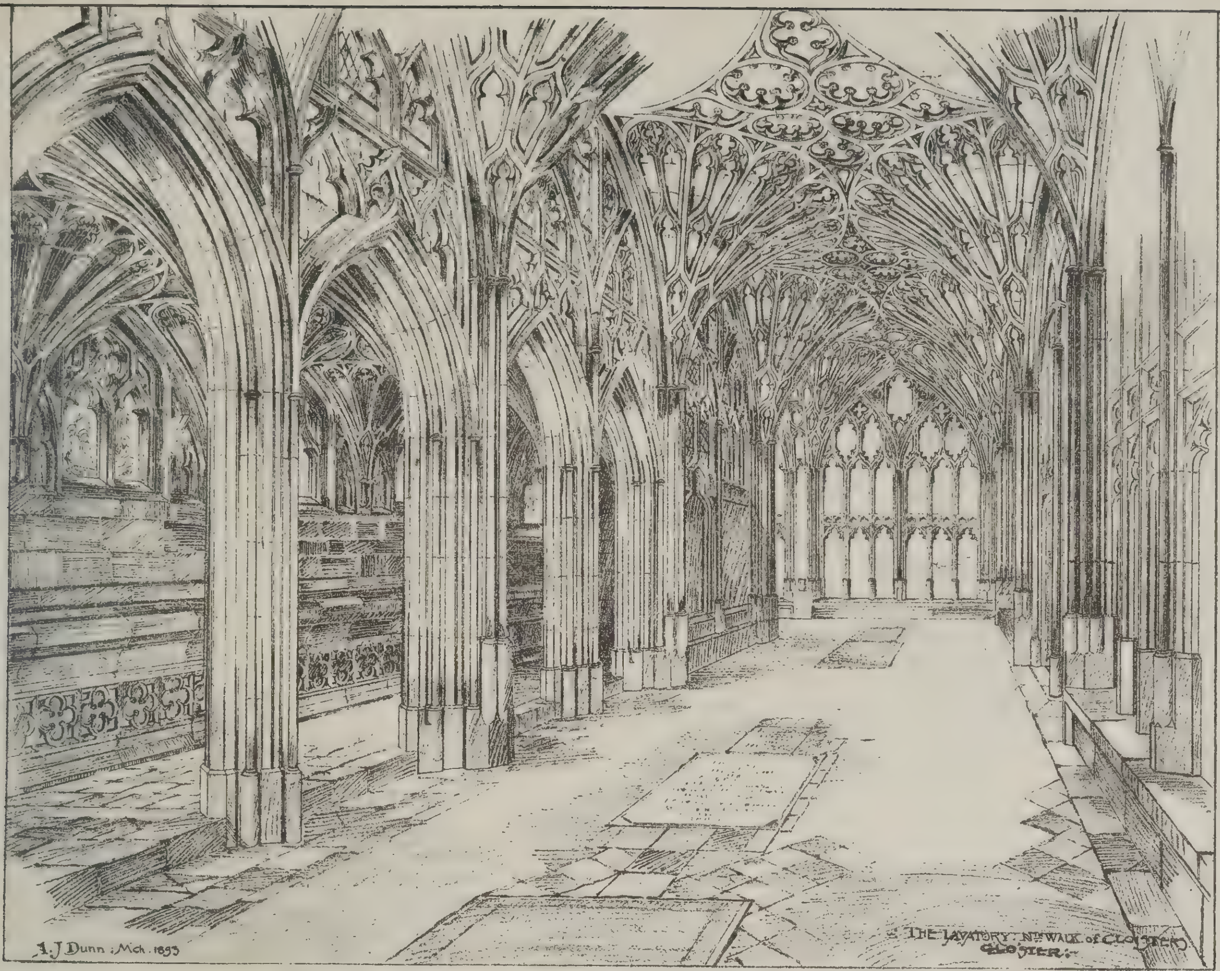
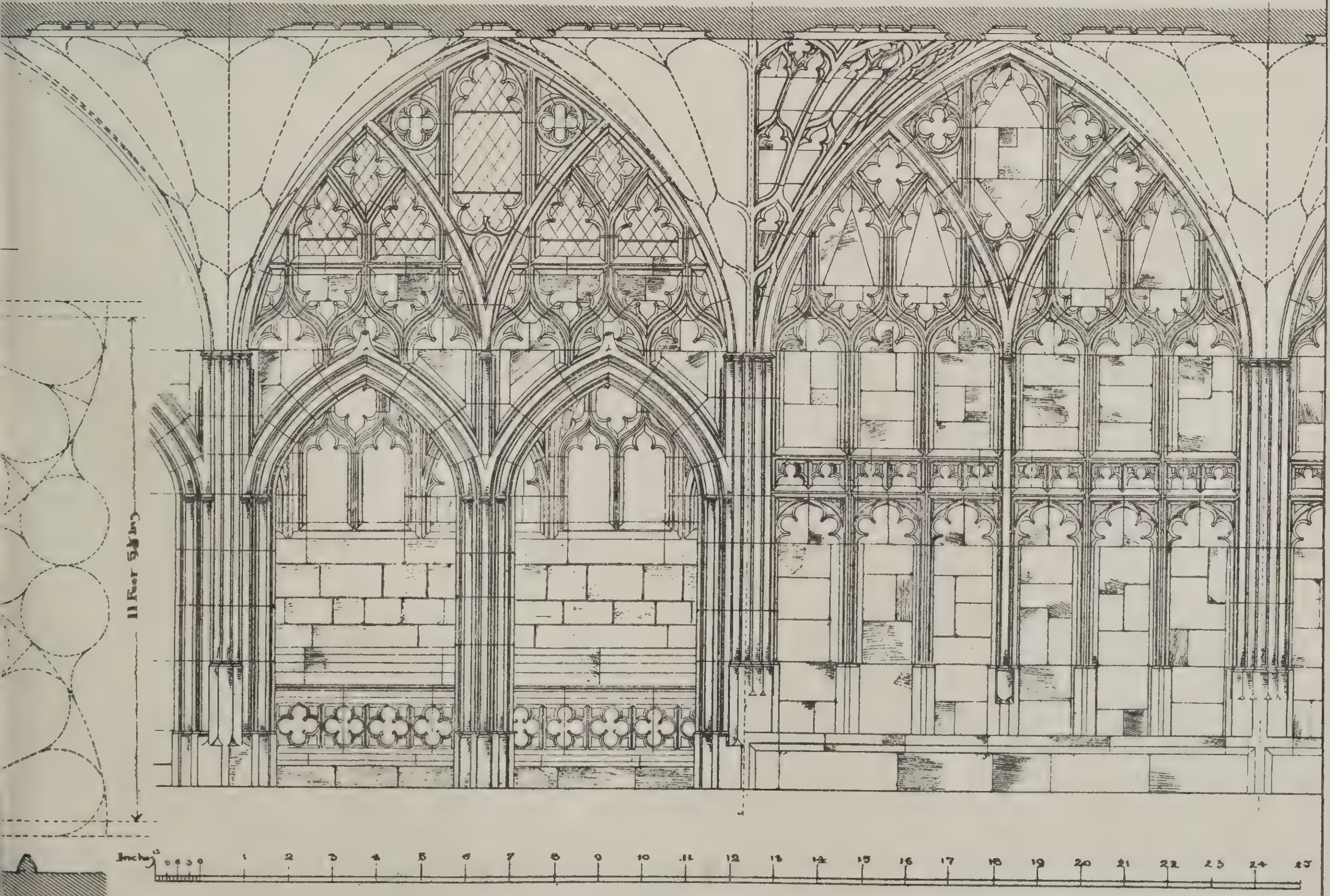
N · DRAUGHTSMEN" BY · JOSEPH · PENNELL ·


NATIONAL · GOLD · MEDAL · DRAWINGS ·
THE CLOISTERS · GLOUCESTER · CATHEDRAL
BY · ALFRED · J · DUNN ·
Note
The circular panels upon soffit of Lavatory should have bee setout thus
Shewing Groining to Cloisters and Lavty
Plan
Measured and Drawn on the spot redrawn at
Alfred J D
The Cloisters : Gloucester Cathedral:
Plan
Scale of Feet
The North wall has a casing of perpendicular work
Chapter House
Abbots Cloister
N. Transept
N. Aisle
Nave
Cloister
Garden
Lavatory
The Deanery
Norman
Early English
Perpendicular
Waste water outlet
waste outlet
2 ft 8 ins
7 ft 0 ins
6 ft 5 ins
2 ft
11 Feet 9 ins


A. J. Dunn : Mch. 1893
THE LAVATORY: Nth WALK of CLOISTERS GLOSTER:-

of the Lavatory Arcade: One Bay

of the Nth Wall: One Bay



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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2080.

FRIDAY, NOVEMBER 16, 1894.

DELEGATION OF DESIGN.

THE present age is beyond any previous distinguished for the separation that has taken place between organisers and workers. In every department of human labour and industry we find this marked division existing. The City business man in every vocation finds it to his advantage to give up his attention to customers and clients, instead of dividing his time between them and the actual work of his office. The architectural and engineering firms find it better to delegate the duties of draughtsmanship and of office labour to a younger partner, or to a staff of managers and clerks, so that their hands may be free for outdoor work, and the more lucrative task of finding clients and negotiating with them. The manufacturing firms in the same way know the importance of separating the official and administrative from the working part of their businesses. Some firms only receive orders, and hand over their execution to outsiders. That commercial transactions have been facilitated by this division or delegation of duties is beyond question; indeed, in the present complex condition of trade, it would be impossible to conduct business on the old system. Competition, too, calls for men who are specially skilled in eliciting orders and in organising business. "Touting" is as necessary a factor in all trades as skilled workmanship. The professions have also been obliged to adopt the same division. Lawyers, doctors, and architects have each found it desirable to separate the business from the working department. The visible representative is generally a glib, if not voluble, individual; he is the "show" member of the firm, both in dress and in manner. Of the other members of the staff little or nothing is known—they may be "ghosts" for aught anybody can tell; they are seldom seen, and remain in the background. Whether as lawyer's clerk, medical dispenser, or architect's assistant, he receives his instructions direct, without any confusing issues, and he is quite exempt from all disturbing influences.

There are two kinds of delegation—that in which the employers or principals' ideas are committed to others to carry out, as when an architect gives a rough sketch of his design to his draughtsman or artist; and that in which he deputes another to prepare a design quite independently, as when an architect puts the work into the hands of an outsider. These two methods stand on quite different grounds. In the first case, the design is really committed to another to work out—the merit or demerit of the work belongs to the principal who takes the responsibility of the design; while, in the second case, the design is entirely the work of another, who becomes a substitute for the architect, and remains in the background. Architects, as a matter of necessity, are obliged to distribute their work amongst their own staff, and our leading men follow the same rule. After the rough sketch-plan and elevation have been made, the draughtsman prepares the contract drawings under the eye of the principal, who is really the designer; or if an outside draughtsman is engaged, the same supervision and alteration can be exercised when the drawing is completed, in pencil. There can be no possible objection to such a delegation of the mechanical part of the work. No man can do all the work himself, and it is no more reasonable to think that an architect should execute his own designs on paper than it is to expect a builder to undertake all the trades with his own hands. Many, indeed, tell us that an architect ought to be able to frame timber, to be able to lay bricks, to carve stone, and to undertake the decorator's work. No doubt he would be all the more skilful if he could do all or some of these things; but the fact is that he could not do them if he wished. It would be a physical impossibility, and would be worse for his client if he did, because such labour would distract his attention, and take his mind off more important matters.

Division of labour, we say, is necessary up to this point; but when it goes to the extent of employing a substitute to do the engineer's work, or the artist's work in the design of a building, then it exceeds its proper limit, and encourages the practice of designing by deputy, of handing over his work to a substitute, yet getting the credit —or, in other words, "sucking another man's brains." There is plenty of this wholesale delegation, and, unfortunately, it promotes the "ghost" system, which has been so justly condemned by all conscientious men. Many of our great buildings have been the work of ghosts, and, as we have heard of late, two at least of the recent competition designs for municipal buildings in London that have been successful are due to invisible hands—to men who are content to be paid a honorarium for their services by those who take all the credit. In nearly every large contest of late years the delegation of this important function has been plainly evident in the marks of draughtsmanship and style. Yet no one cares to interfere. The committees who invite as business men would refuse to be bound by any such declaration as that proposed the other day, not to accept any design whose author could not swear it was his own *bonâ fide* work. Such an interference with the rights of competitors would be repudiated by the employer on the same ground as he would decline to interfere with a manufacturer or contractor who let out his work. It would militate against the freedom of the competitor, and its effect would be to reduce the number of competitors. No doubt a condition of this sort might be desirable in the interests of the profession, by making the competitor responsible for his own design, and in discouraging the practice we are referring to; but the measure would be coercive, and could be overcome by subterfuge. No; the real reform must come from the profession itself, from a higher sense of the functions of the true architect, and from the feeling of degradation which the practice ought to evoke in the mind of every competent member. Men who can resort to the manœuvre to win their spurs must convict themselves of dishonesty and bring disrepute on their profession. Those men who employ others to make their designs for them are sometimes skilful organisers of business, and even clever in planning and construction; they are often men who would make capital active partners in a firm; but when they begin to misrepresent themselves as architects by using the brains of outsiders, they seriously compromise their art. Will examinations and professional tests remove this reproach? If we could, by examination, test the person's qualification as a designer, the difficulty would be solved; but we are afraid this qualifying test will, by affording a minimum passport to practice, encourage delegation of that function which is necessarily excluded from the syllabus. Is there not the risk that the real artist will remain outside, or that a more mischievous hiatus will be created between construction and design? The profession will do well to reconsider this point in the formulation of any examination ordeal in the future. They will have to consider the best means of ascertaining the capabilities of the candidate in design and draughtsmanship, and of checking the delegation of duties which rightly belong to the architect. Every candidate for the profession should be able to produce undoubted proofs of his ability by submitting sketch designs, as well as being able to declare that the drawings he puts in are the work of his own hands. The direct transference of thought to paper is the only test that can be of value.

Vicarious art is seen in many other branches besides that of the architectural designer. To the engineer is committed the details and specification of iron construction, and to him the design is largely delegated, as when he has to construct a large iron roof like that of St. Pancras' Station, or the Olympia. To the metal-worker the architect leaves often the design of grilles, candelabra, and other details; to the church furnisher the patterns of fittings; to the glass-painter designs for windows, and so on. In Secular work the manufacturer and the ornamentist, or decorator, relieves the architect's hands of a good deal of work. On the principle of division of labour the public have to some degree benefited. It would be easy to show the advantages of limiting one's thought and labour to a particular function or duty. On the other hand, it is necessary to insist that the architect ought to be prepared to hold his own; that if he delegates a certain duty to someone else, he should have a supreme control in the design, and that on no account ought he to hand over portions of his work to substitutes who cannot know the actual requirements or enter into the spirit of his design. According to the practice of many architects, the design of a building may be distributed on commercial principles, like the process of a manufacture of pins or needles. One man does the plan, another the elevations, a third writes the specification and quantities, and so on. The execution is also let out to the sanitary engineer, the carver, the decorator, the plasterer, and modeller. But how purposeless is the result! We enter many of our City offices, commercial buildings, and dwellings. No one single mind is prominent; a dozen or more tradesmen have advertised their goods or themselves, and each has had his own way. But it might and would have been different if the old co-operative spirit had existed. The fault that is obvious to the beholder is that each has been deputed a duty at the lowest possible price; that each of the artists employed has been engaged by another to do the work for him, to do something which the architect could not do, and to do it that he might take the credit. It is this substituted, vicarious art that has done so much harm to real architecture. Everything is deputed to someone else who will do it *incognito*, and at the least cost. From the façade of the building down to the door-handles the design has been delegated to competitive skill, and to men that are willing to sell their abilities in the cheapest market. As we said at the beginning, it is the organiser that now stands too often in the front ranks of his profession, and the ability to know where the best and cheapest workers are to be met with is no mean qualification. And this condition of affairs will remain under the present constituted state of the profession.

MONSTROSITIES.

AGAINST the erection of monster buildings the new Building Act for London has provided certain restrictions as regards height, though it will still be possible for one owner to overtop his neighbour by the erection of additional stories, which may be so formidable as to obstruct the rays of the sun, as well as seriously sacrifice the scale of the adjoining premises. We are at present by no means anxious to emulate our brethren in New York, Chicago, and other Western cities of the New World, in the erection of huge skeleton buildings of steel; but are contented to build substantially, with a fair appearance of uniformity and proportion, believing, as we do, that extremes in height and dimensions are calculated to destroy the dignity of our city buildings, and to bring discredit on architecture. A colossal building immediately destroys the size of those in its proximity by setting up a standard of scale disproportionate to everything around it. By its dwarfing effect on adjoining buildings the whole surroundings are made ridiculous, for the eye immediately seizes upon any disparity in size, such as between window openings, doors, and other features, and the diminutive features suffer in contrast with the larger. They appear to belong to a race of Lilliputians, and an almost comic element is introduced. The comparison becomes odious. Some idea of this contrast may be observed when viewing the large buildings and hotels lately erected facing the Embankment from Salisbury-street in the Strand. The overpowering size of the new hotel which backs on the Strand dwarfs almost to insignificance the old houses. One sees the same disparity of proportions in Whitehall when looking at the backs of the large buildings in the rear of the old Banqueting House. Similar incongruities may be seen behind Northumberland-avenue, in the neighbourhood of the Victoria Embankment, in parts of Clerkenwell, where huge blocks of flats have been erected. With the growth of the population of the Metropolis, and the consequent augmentation in the value of building sites, it is natural to expect an increase in size in our public and commercial buildings; it would be absurd not to expect our premises to become larger and higher in reason. What we object to is a height disproportioned to the site and its surroundings, the pulling down of one or more houses of the ordinary size and erecting in their place a huge structure of double and treble the height. We are afraid the craze for "monster" buildings has set in, simply because it is a little sensational, and to keep in countenance our cousins across the Atlantic. Magnitude is not, *per se*, an architectural virtue, although it gives importance to otherwise inferior works. The size of a building impresses the eye, but it is still only one of those technical qualities of architecture which are called "sensuous." The magnitude of an engineering structure such as the Forth Bridge impresses the beholder, though it may be exceedingly ungainly; but we have never yet seen a street building twice the height of the adjoining houses which is not extremely ugly, however well designed the façade may be. Why? Because its bare flank sides or party-walls and roof entirely destroy all congruity. The structure looks like a huge block interposed between the adjacent houses, shocking to all sense of fitness and unison. The very suddenness and abruptness of the break produces a painful effect on the nerves, which is not found in the great bridge or viaduct. In New York the architect of the "tall building" has in a few notable erections — such as the Merchants' Exchange, National Bank, the American Surety Co.'s, the "World" Building, the Manhattan Life Insurance—tried, by producing tower-like masses, to overcome this appearance; but, as a rule, they are monstrously misshapen and forbidding. There is nothing in Nature that can be found analogous to it, for we never find any sudden or abrupt break, and the Alpine heights and peaks are picturesque in their broken grandeur of outline. The only conceivable way of making such a mass tolerable is to pyramidalise it—to give it a gradually tapering and tower-like outline; but this would be impracticable where the party-wall division as laid down by our Act is exacted. The typical street monster is the acme of deformity, because its lines are so uncompromising; but we have other instances of jarring on the eye equally detrimental. The extension of King's College abutting against Somerset House is a notable example of one building injuring another, and Mr. Penrose did good service in calling attention in his address the other day to the importance of guarding our old buildings and monuments from this source of injury. He referred also to the way the west front of Exeter Cathedral has been dwarfed in effect by the re-erection of an old church, the tower and spire of which is so high as to injure the scale of the cathedral. The older and smaller church on the site gave "valuable scale" to the west front. We may see this injury or insult to old and meritorious buildings going on everywhere, and without any remonstrance from the authorities. Has not St. Paul's Cathedral itself suffered by the erection of the tall block of shops on the south side of Ludgate Hill, and which abruptly terminate on the spot occupied by the well-known tea warehouse? And a dozen other instances may be mentioned where an old and monumental building has been spoiled by the erection of a new building of greater height or size in its immediate vicinity.

The new London Building Act might have done more to safeguard our streets and public buildings. It is true it contains some useful provisions for checking the erection of "sky signs" and preventing the disfiguring of our streets, but the still more palpable nuisance of monster erections and hoardings has hitherto been allowed to exceed the limits of toleration, till nearly every street in which rebuilding is going on is disfigured by monster temporary erections, and, when these are removed, by buildings which have been designed without any kind of sympathy with those which are next to them, flanked by party-walls which rise in defiant impudence over the roofs of other premises, blocking out light and air, and destroying all that there was of graceful skyline or picturesque profile in the older street.

ARCHITECTURAL ASSOCIATION.

THE second ordinary meeting of the Association for the present session was held on Friday evening, the President, Mr. E. W. Mountford, F.R.I.B.A., in the chair. Messrs. R. Morphew and H. Budden were elected as members. Several donations to the library were announced, including the *Transactions* of the London and Middlesex Archæological Society, and the Collections of the Surrey Archæological Society, and other books, presented by Mr. E. Woodthorpe, M.A., and a bound volume of photographs from Wells and Ely, given by Mr. E. Fleetwood.

THE A.A. AND THE EDUCATION OF WORKMEN.

Mr. F. T. W. Goldsmith, hon. secretary, read the report of the general committee on the resolution passed by the Association on the 19th January last on the Education of Workmen. This resolution, it may be remembered, referred it to the committee to inquire if, and in what manner, the Association can usefully exert its influence towards the organisation of a more thorough system of education than at present exists for artisans engaged in the London Building trades, and its future supervision by architects. The committee now report that, "We are satisfied that there are many questions connected with the education of artisans in the London Building Trades which are of very considerable importance to the future well-being of architecture, and which are needing careful examination. The best course seems to us to be for the Association to invite a conference to meet at an early date to discuss these questions. We have consulted the following bodies, and have been informed that they will gladly appoint representatives to attend such a conference:—Architects: The Royal Institute of British Architects, the Architectural Association, the Art Workers' Guild, and independent London architects. Master Builders: The Institute of Builders and the Master Builders' Association. Workmen: The Building Trade Federation, the Operative Builders' Society, the Amalgamated Society of Carpenters and Joiners, the National Association of Operative Plasterers, the United Operative Plumbers' Association, and the Operative Stonemasons' Society. City Companies: The Carpenters', Plumbers', and Bricklayers' Companies. Educational Bodies: The Technical Education Board and the London School Board. Polytechnics: City and Guilds Technical Institute, Regent-street Polytechnic, Battersea Polytechnic, Borough Polytechnic, Goldsmiths' Institute, New Cross, and the People's Palace, Mile End. We recommend that we be authorised to invite a conference of representative bodies to meet at an early date to discuss the education of artisans engaged in the London Building Trades, and to take such steps as we considered desirable in the matter." This report was signed by E. W. Mountford, as president, and F. T. W. Goldsmith and B. F. Fletcher, as hon. secretaries.

Mr. Owen Fleming moved without comment the adoption of this report. This was as concisely seconded by Mr. John Begg, and carried unanimously.

THE STUDY OF MODERN ARCHITECTURE.

Mr. A. Beresford Pite read a paper on this topic. He pointed out that the study of architecture had hitherto consisted in the review of the works of antiquity, all the resources of which had been laid under contribution to our knowledge of what we had mistakenly called the "styles." Attracted in the first place by beauty of forms and detail, then by the interest of history and developments, architectural students had glowed with enthusiasm over Greek, Egyptian, Roman, and almost every "style" as it became available for observation. A somewhat wider range of view more recently had led to a consideration of the methods and motives of ancient design and construction, and enthusiasm had grown into wonder as the science displayed by Greeks or Goths had been discovered where little else than native genius was suspected to have been at work. None of this enthusiastic study had really been wasted; its fuel had supplied a warmth and touch of imaginative colour that had been invaluable to all our conceptions of the past in art and literature, and had been especially manifest in the work of the historians, but the result upon current modern architecture had been the occasion and cause of melancholy and discontent. The lecturer admitted that it would be a hopeless and thankless task to set before architectural students the foolishness of this enthusiasm, and the unwisdom of a thorough concentration of energy upon the mastery of the secrets of the success of ancient work. He urged, however, that an enthusiasm for varied phases of the architecture of antiquity could not be any longer beneficial to the modern architect, and, further, that without some equally potent force as living and instinct as the ardour of the past, the modern architect, and with him modern architecture, was in a pitiable condition. We were not altogether without sources of information as to the effect on architectural art of different conditions than those which had operated upon ourselves. In company with Belgium, Austria, Italy, and Germany, France had pursued a regular academical development of the traditional architecture of the immediate past, and with patient studiousness the "European style" of the 19th century had been developed. No warmth of feeling had been evolved in its generation, and consequently until the hands of Time, with his handmaid History, intervened, no warmth of enthusiasm could be excited within us towards modern Continental architecture. He contended further that we ought not to mistake professional equipment and qualification for architectural efficiency and power. There was some considerable danger of this at present among ourselves, for we were all conscious of the slackening interest in old work and its study, as the failure of competitions for medals and prizes offered for measured drawings testified, and it was to be feared that the progressing pressure of examinations was already impinging upon the tender growth of that enthusiasm which architectural educators seemed strangely incapable of assisting. Speculation as to the future was almost as unprofitable as lament over the past, but the suggestiveness of the idea that architectural students two centuries hence would be like ourselves, enthusiasts as to the works of our own ancestors, might have something to teach us. Why should we not apply our own treatment of the past to our present? Why not be as enthusiastic about the work of the 19th as about that of the 17th century? Why not sketch it, study it, measure it? It might be every bit as good, and much better. All that went for the making of good architecture had been much more abundant in our era than in the past, and, perhaps, if we gave up looking at distant objects with telescopes and looked naturally at what was around us, we should find as much to interest and delight our eyes. Surely the future historian would feel an enthusiasm for the 19th century that would be shared alike by the man of science and the artist and man of letters. Why should the architect stand aside and be unmoved? Within the limits of a century, had we not erected a series of buildings the æsthetic qualities of which were varied and beautiful in a very high degree, and more so than those achieved by any other race, the wide world over, in a similar span of years? In construction, in scientific equipment, and in æsthetics, surely the architecture of the 19th century would be to our successors as worthy of enthusiastic admiration as any of its predecessors that now excited our envy. While he would say study and enjoy ancient art as much as ever, let them also study and enjoy modern architecture. Let them derive enthusiasm from the wonderfulness of modern life and invention, and display their delight in it in their architecture, by their frank acceptance of the position, by their heartiest endeavours to make the best use of the materials, inventions, and science of the time, and let their trained and instinctive sense of beauty express in proportions, compositions, features, and decorations that they were not guided by a blind subservience to archæological ideals, but rejoiced in living in an age of privilege and advantage, with all the knowledge of the past ready to hand, and the products of commerce and science at disposal. It had been the use of advantages and qualities such as those that had made all characteristic architecture in the past, and that could not fail to do the same for us. Nothing could be evolved out of nothing, and he was far from suggesting that the architect should lay all his present material of design aside and figuratively make bricks without straw. All this material, however, did not lay, as the Royal Institute of British Architects' examination scheme in its art section syllabus seemed to imply, in a knowledge of the forms and features of ancient architecture. The beauty of ancient buildings could not be transferred by imitation to modern ones, for the student might measure and photograph, and reproduce in actual building, and find that he had only a stupid copy, without life or interest. As this had been a century of revivals, examination of some of its typical buildings could not but be instructive. Let them try to discriminate between the beauty that was merely borrowed from antiquity, and the living elements of architectural art that composed it. Let them ascertain how much was interesting and attractive merely because reminiscent to the student of bygone art, and how much was beautiful because expressive of the architect's delight in his problem and its elucidation, and manifested his appreciation of justice in proportion of ornamentation and form. Analytical study of this kind was essential to a proper grasp of the architecture of any period, though the dry-as-dust pundits of the day were not awake to it. In the Parthenon, for instance, the secret of its beauty was not in the subtle mathematical ratios that underlay its design, not in the forms of its detail, not in the unrivalled dignity of its Acropolis site, as surely it was not in its antiquity, for it must have been more truly and perfectly beautiful when first built than now in its ruin. Its charm was independent of archæological descent or antique traditions, and lay in a manifested power to support and carry, to shelter and shade, and to endure with firmness. The mind without effort was assured that the first necessities of all building were satisfied. But this conscious power was secured and expressed with every evidence of perfect finish and completeness; everything had been accomplished with art as well as with power; the columns were perfectly shaped for their load, and were decorated to emphasise the direction of their expression; they were shaped to completely satisfy the eye as to stability, and their abaci crowned them only to receive the load aright. Their bulk was regulated by the superincumbent load, weighed with regard to the possible length of connecting beam, and adjusted to satisfy the eye as to the due proportion of void and solid. The ample entablature was the essential element of the design, affording shelter and binding with simple horizontal masses and lines the supporting columns into covered and shady colonnades, and in carrying the roof made it a building. The entablature was emphasised and decorated with sufficient beautiful forms in the metopes, the undecorated triglyphs with their vertical flutings sufficing to convey the expression of the downward bearing of the roof upon the columns. The cella walls were equally expressive of the required inclosure, without unnecessary architecture, yet magnificently decorated with the unbroken line of frieze. In all, the simplest lines and the most direct expression governed the whole, permitting in the decoration the required element of freedom and play of lines to afford balance and contrast to the eye. Everyone of these elements and methods could, Mr. Pite argued, be transmitted into architecture, but one might have a reproduction not only of the forms and details, but of the exact proportions and size of the original, and yet miss its mysterious and complete beauty. The Walhalla, near Ratisbon, built by Klenze as a Bavarian temple of fame, was a complete archæological effort to produce the Parthenon, yet the whole was uninteresting except as a failure, and miserably unimpressive as architecture. Yet Klenze could do very satisfactory modern work himself when less trammelled with archæology, as in the new Pinnacotek at Munich. The lecturer proceeded to apply an analytical examination to St. Pancras's Church in the Euston-road, designed by Inwood, as a modern building of the revived Greek "style." St. Pancras was a building that suggested in every form and detail enthusiastic archæological study. The antiquarian thoroughness of the design was most remarkable, and was perhaps of a sounder type than that of Klenze's Walhalla. The prototype in the Temple of Minerva Polias was on the Acropolis at Athens—how different the result could scarcely be described. The original seemed to be a very offering to the Graces of architecture; a refined and delicate elegance of proportion, a sense of style in its true meaning, of virile beauty and quiet power characterised it, which lost nothing by its position upon the platform of the Parthenon. The portico of St. Pancras was just double the size of that of the Temple of Minerva Polias, and though the utmost care had been bestowed upon the detail of the order, its charm had not been grasped. The portico and order of St. Pancras, however, failed for other reasons than want of charm in proportion. There was no simple and easily-perceived motive prompting its existence of design. It was but a sort of antependium to the steeple composition. Apart from being nakedly uninteresting, the proportions of the composition of the western front were satisfactory, and would preserve for the building and its architect more esteem than the effort to be Greek. The eastern end of the church was necessarily more original and consequently satisfactory, the apse and transept-like vestries having some scale, grouping, and expression of their own. The interior, however, being less trammelled, was more satisfactory, and indeed its large and spacious effect of a fine hall with an impressive apse was to be preferred as more suitably modern than many Gothic interiors. What was true of works of the Greek revival was equally so of the Gothic, though the degree of interest might vary. The test might well be applied in the crudest way to the most recent and perfect examples of modern ecclesiastical architecture. Deprive a modern thorough Perpendicular church of its archæological robe, and of its studied interest in correctness of style and purity of period, and what was there left to indicate that the world had moved on since its primal age of Mediæval beauty and innocence, and that we were in the age of England's greatest prosperity and glory? What was indeed to indicate any life or movement, or that it was built in the 19th instead of the 15th century, except, perhaps, the existence in the building of a heating apparatus, a gas supply, and some limited sanitary arrangements? There were a large number of buildings, however, of the Gothic revival that had qualities well calculated to survive the ebbing of the tide of Mediævalism, buildings the interest and charm of which rested upon sure artistic grounds, and among these he would rank the Houses of Parliament, which possessed a beauty more lasting than a passing taste, and revealed the fact that the greater architectural qualities of majestic symmetry and grandeur of grouping were permanent and essential to success. The Mediævalism, indeed, was only skin deep, the corpus of the whole being of sound architecture. In the Law Courts, on the other hand, the marvellous Gothic life which invested every detail and feature might be chiselled away and the building would still be rampantly Gothic. Were they to re-clothe it with Classic or Renaissance detail, the vigour would still be powerful enough to assert its vitality and claim the building, so long as it had any articulation left, as the *ne plus ultra* of the Gothic revival. In conclusion, the lecturer said, do not fear to be modern, study and sketch every example that faces a modern requirement and subdues it artistically, and renders it beautiful without sacrificing aught upon the shrine of antiquity. A warehouse front, even if stipulated to be wholly of windows with only iron-girder construction besides and a few brick panels, can and should be made as beautiful and interesting a work as a half-timbered front. And have we not for such classes of buildings resources in new materials, that sensibly used would soon be recognised as artistic, such as glazed brickwork and terracotta, only when not used and designed as stonework? Why should concrete and cement building be left to the tender mercies of cheap speculative builders, when we have plenty of need to be taught the value of broad, unbroken surfaces in design, and long for economical methods for smaller country buildings, where the use of different textures in the finishings of a cemented or concrete wall will give plenty of variety and scope in new directions? Above all, learn to discriminate, practise upon yourself, examine and try to note down the impressions made upon you by a building, say, of known beauty, and then of one that you see for the first time. Why do you like one? Why are you doubtful about another? Not what features please you merely, but what qualities create the pleasant impression. Train yourself to like and dislike reasonably on good grounds, instead of unreasonably, like the amateurish and ignorant world.

At the conclusion of the paper a vote of thanks was passed to the author on the motion of Mr. W. D. Caröe, seconded by Mr. C. H. Brodie, and supported by Messrs. A. H. Hart, A. Bolton, and B. F. Fletcher.

THE SOCIETY OF ARCHITECTS.

THE first ordinary meeting for the eleventh session of the Society was held at St. James's Hall, Piccadilly, on Tuesday evening. Mr. Edwin Jas. Hamilton, of London and Brighton, in the chair. The following architects were elected as members:—F. G. Cundall, 70, Parade, Leamington Spa; F. Castle Gant, 11, Regent-street, Wrexham; W. C. Humphrey, R. E. Estab. Up Park Camp, Jamaica; John Henry James, 14, Romilly-crescent, Cardiff; Victor Mitchell, St. Peter's Chambers, Bournemouth; A. F. Wrightson, 26, Budge-row. E.C.

REPORT OF THE COUNCIL.

Mr. A. Montefiore, the secretary, read the annual report of the Council, who referred with satisfaction to its favourable nature. Out of a total of fifty-four, forty-one candidates who, by the works they have carried out, proved themselves in every case to be competent architects, have been elected during the past year to membership; two gentlemen have been added to the list of Associates, and one gentleman of distinction to the list of honorary members. Against this, one honorary member and two members have died, and seven members have retired, thus leaving a net total of 495 members upon the roll of the Society. The Council regretted that during the past year Mr. Edgar Farman, who had served the Society from its foundation with great zeal, discretion, and ability, and had in particular rendered signal service in carrying the incorporation of the Society into effect, had resigned his position as honorary secretary. A silver vase, together with an illuminated address, was presented to him by a large proportion of the members on his retirement from that office, and on the occasion of the presentation on December 12th, 1893, a very hearty vote of thanks for his valuable services was unanimously passed with acclamation. The Council at the same time expressed their satisfaction at having secured the active and able co-operation of Mr. Ellis Marsland in the honorary secretaryship.

During the session papers were read and addresses given by the president (Mr. George Highton) and Messrs. A. G. Hill, M.A., F.S.A., William Woodward, Ellis Marsland, the Rev. Canon G. F. Browne, D.C.L., F.S.A., J. Starkie Gardner, D. F. Ranking, M.A., LL.D., Major F. S. Leslie, R.E., and G. A. T. Middleton. During the past year the Council had met nineteen times, the Finance Committee eleven, the Literary Committee four times, and the Practice Committee on five occasions. At the various meetings, important questions affecting the society and the individual as well as the general interests of members had been repeatedly raised and settled, and the Council hoped that members would continue to avail themselves of the advice and experience offered them through the special standing committees. During the past year, by direction of the Council, the honorary secretary and secretary visited the members of the Society in different provincial centres, and the good arising from this had been so noticeable that it was proposed to continue and extend this periodical communication between the council and the members. It was further intended to organise, during the coming session, a series of meetings in the chief provincial centres, to discuss the question of "The Education and Registration of Architects." The Council had, during the year, carefully gone into the matter of examination for admission into the society, with the result that a report was prepared and submitted to the members at the recent annual general meeting. The Council drew attention to the fact that the *Journal* had been considerably improved, and they felt sure that the members would join them in thanking the editor for the change he had effected. Still further improvements were in contemplation, and the Council would urgently request the co-operation of members, particularly of those resident in the Provinces and the Colonies, in the supply of notes upon all matters which come under their observation, and which they think would be of interest to their fellow members.

Mr. Ellis Marsland moved the adoption of the report, which was seconded by Mr. H. G. Quartermain, and it was unanimously adopted. The balance-sheet was also presented and adopted. It showed a total revenue of £699 8s. 6d., a balance of £5 7s. 6d. being carried forward on this account, raising the surplus in hand from £232 2s. 6d. at the end of last year to £237 10s.

The President then delivered his

INAUGURAL ADDRESS.

Having acknowledged the honours conferred on him, the President continued: My aim will be, not only to maintain, but to raise by all legitimate means, the status of the Society, and also to increase the practical usefulness of its undertakings. In looking over the names of the men who have occupied this chair, to whose untiring energies and signal abilities the Society owes much, it is perhaps not a little significant that four out of the six have been architects engaged more or less in practice in the provinces. Now this fact emphasises a feature of the Society's work which it is, to my mind, of great importance to keep well to the front—namely, the extension of the benefits of the Society by all practical means to architects living at a distance from London. It will be fully granted that to architects practising in London, and to students residing here, there come many advantages of a social and educational kind to which men in the provinces — often much isolated from their professional *confrères*—are strangers, and to such the bond of union afforded by our Society cannot be made too real. The report which has just been issued by your Council mentions two useful extensions of our operations, both in the direction to which I have referred. The improved character which the *Journal* of the Society has, during the past year, assumed—both in literary excellence and style of production—is a matter for congratulation. The other matter is the visits of the hon. secretary and the secretary, by direction of the Council, to members in various provincial towns. Such friendly visits cannot fail to be of advantage, both to the members visited and to the Society. I sincerely trust, moreover, that it may be found practicable to carry out the contemplated holding of meetings in large provincial centres. To the members residing in these districts we must look to create the interest, and even enthusiasm, essential to the success of such gatherings; but if well organised and heartily taken up, such meetings would not only be helpful to our membership, but would doubtless do much to promote an education of the public mind on the important subject of the compulsory examination and registration of architects. At the close of the first year of our corporate life as a society, it is encouraging to be able to report a substantial increase in the membership. The total number of members and associates now exceeds 500. May I express the hope that with such an enlarged constituency the members attending our ordinary meetings may also be materially augmented? This would be both encouraging to those gentlemen who so freely give much time and pains to the preparation of papers, and also most helpful to the members themselves. Members must ere this be aware that the important question of examination for admission to the membership of our Society has, after careful consideration, now assumed definite shape. The scheme drafted by the council was submitted to the annual general meeting a fortnight since. It would have been surprising if such a radical change could have been brought about without difference of opinion. Variety of opinion, however, is not generally detrimental to a cause, but frequently leads to more careful consideration of every point, and thus secures in the end a better result. In my judgment it has been so in this case; but whatever be the opinions held and freely ventilated during the time for discussion, it is the evident duty of every member, and more especially of the Council and officers, now the matter is settled, to use every endeavour to carry the matter forward to a successful issue. In order to avoid misapprehension, it cannot be too distinctly stated that, in taking this action, the Society of Architects aims at no rivalry or competition with any other body. It is only following a course which is not unusual amongst other professional societies, and one, moreover, which is in perfect consistence with its steady promotion of the scheme for universal examination and registration of all architects. The only object sought is one which must commend itself to an unprejudiced judgment—namely, the guarding of the Society against incompetency, and securing that everyone elected to membership shall have a reasonable claim to be called an architect. The effect which the new rule may have upon the numerical growth of the Society, it would be difficult to foretell; but even should it check the increase, it must add to our self-respect, and will doubtless also raise the Society in public estimation. The provisions for a students' section have my very warm approbation, and I sincerely trust that the advantages presented will be largely embraced by pupils and others. I referred at the outset to the steady growth in the position and influence of our Society. The extension of our membership into the Colonies and other countries, the publicity afforded through the Press, the promotion of the Bill for the compulsory Registration of Architects, and, lastly, the incorporation of the Society have all doubtless contributed in varying measure to this growth. But let us never lose sight of the fact that real success and advancement, both for the Society and for the profession at large, depends upon ourselves. Upon what we are as men, and the works we achieve as architects, more than upon any external or accidental circumstance, will depend the position we realise for ourselves, and indirectly the success and status of our society. With this thought as a thesis, I venture to draw your attention briefly to a few considerations affecting the practice and province of the architect. Foremost amongst the essential elements of architectural practice I would place what I may describe as an artistic sense—the faculty of recognising and enjoying the beautiful in all things. And, more than this, an open vision to see, and wisdom to understand, the great underlying principles out of which all true beauty, whether in nature or art, grows. The direction of the student's work will depend much upon his tastes; but a study of the best examples in Classic, Gothic, and Renaissance architecture is certainly desirable. The aim of such studies should be fundamental, not with the object of slavishly copying, but of learning the principles upon which the builders wrought; and thus it will often be found that some of the principles are the same in widely differing styles. We are often twitted in this country with having no national style, but—as the Americans say of our weather—possessing "samples only." I take it we must admit the criticism. But may not this fact be due in some measure to the ofttimes wrong direction of our studies? It is scarcely a generation back since it was a common practice to regard ancient Classic examples as objects to be copied bodily—at least, as to elevation. The interior purpose of the new building might even be wholly different from those of the original, but convenience of plan had to succumb to an imposing façade. The Gothic revival only in a measure mended matters, for a time, for a somewhat slavish copying of detail, apart from a proper understanding of principles, became the fashion. This period, through which we have now happily passed, has doubtless had its uses, nor can we yet afford to set aside a careful study of Ancient and Mediæval art. It were indeed far better to copy bodily a good design than to invent a bad new one. But the evil is that buildings, like plants, are often indigenous to the soil, and ill-adapted for transplanting to another clime. Though the maxim is not a new one, we have perhaps not yet come fully to understand how a national style can scarcely exist, at least can only be good, as it grows out of, and fitly expresses national habits and characteristics. But when we speak of the "practice" of the architect, the word itself suggests that something more that the possession and efficient training of the artistic sense goes to the making of an architect. He must also undoubtedly possess not a little practical knowledge of several sciences. To the vexed question, whether an architect should be an artist or a theoretical mechanic, I would reply: In a measure he must be both, and a man of business too. An artist may be a thoroughly unpractical man, no man of business, and yet be a good artist; an architect cannot. On the other hand, neither has the mere mechanic, or man of business, with perhaps little art sense, and no art training, any claim to call himself an architect. He may be well versed in the science of building, and able, most efficiently, to conduct the business of his client, but he cannot be a true architect unless he be a true artist. Lacking this, though his buildings be very ornamental, the ornamentation will probably be vicious, and though his work secure many admirers, it will inevitably be devoid of the elements of true beauty, and transgress at every point canons of good taste. Time will only permit of a brief mention of two features of the times which present special hindrances to architectural practice. The mania for cheapness thwarts us at every point, often curtailing expenditure below reasonable limits, and tempting to the improper use of materials made to imitate the functions of more costly substances. The multiplication of specialists' manufactures by way of fittings and decorative features, though it sometimes saves us trouble, tends to sameness of treatment and loss of originality, and often unhappily to the fostering of a vitiated taste for showiness and a wholesale destruction of true art. The qualifications for the practice of architecture are wide in their range, and certainly such as to make large demands upon the powers of most men. I think, however, you will be ready to admit that they are not unreasonable. But does not every consideration of the subject point again to the absolute need for a careful education and training for every architect? Let us now turn from the qualifications for the practice of architecture and inquire what are its limitations. What is the province of an architect? One thing must be evident. Unless he become a specialist the variety of the buildings which an architect may be called upon to design will of itself present a wide scope for the exercise of his talents. He may be to-day designing a church, and to-morrow a dwelling-house, school, or factory. He need not, it is true, have a previous knowledge of all the technical requirements for which such buildings, for instance, as factories are needed; but he must be able readily to grasp these requirements, to invent methods for overcoming difficulties, to guide and advise clients who often scarcely know their own needs, and to throw all into forms of beauty framed out of suitable and enduring materials. Such duties are not light, and surely a man with any amount of practice might find in their faithful exercise ample scope for time and genius. But what are the facts of the case, gentlemen? A study of local Directories would lead us to suppose that many architects must indeed be men of Herculean powers. In fact, architecture seems to have been tacked on as a light and pleasant pastime relieving the more serious occupations of house agency or upholstery. In these days of keen competition it becomes a matter for quite serious discussion what occupations, if any, beyond his evident sphere an architect may fitly engage in. It would often doubtless be to his pecuniary advantage to undertake house and estate agency. It must, however, always be to the detriment of his art. If such a combination can be justified at all, it should at least be by way of recognised partnership, the partner who has been trained as an architect having freedom to give his undivided attention to architectural work. It has always appeared to me perfectly legitimate, and sometimes advantageous, for an architect to take out his own quantities. He must know best his own intentions, and if he has a proper knowledge of the science, should be best able to make the quantities a true expression of those intentions. An architect in large practice will, however, not often have time for this. When the work is done by a surveyor, he should be working in full concert with the architect; and whether the quantities form a part of the contract or not, it would be better if they were always recognised and paid for by the employer. Land surveying, and the laying out and development of estates, is another large branch of work in which architects frequently engage. As regards the former, it is certainly admissible for an architect to measure and level the sites for his own works, and he should at least be able to do this. In respect of the latter, it would doubtless be much to the advantage of the estates if an architect had at east some share in their planning. In this, as n other matters, very much must depend upon he time at his disposal. I cannot see that there is necessarily in the work itself anything inappropriate or injurious to the proper exercise of architectural art. Surveying for dilapidations is another branch of work which, at least in the provinces, s always regarded as coming within an architect's practice. It is certainly one which his general experience specially fits him to perform judiciously. The question whether architects should advertise opens an oft-debated point. Much depends upon the manner of advertising. It cannot reasonably be denied to an architect to use some legitimate means of making himself known. But should not his works be his best advertisement, and why should he not place his name upon them in some modest spot, as an artist or sculptor does? There s something very different in this from the ordinary trade advertisement. For myself, I much doubt whether advertising in the ordinary trade sense is of any use to an architect; but whether it be so or not, it is utterly repugnant to good taste. The following is an actual specimen of this kind of advertising, which fortunately has not yet become common amongst architects:—“Designs for chapels and schools. Pretty, inexpensive; free from damp and echo. Upwards of eighty have been erected during the past eight years, and the demand is still increasing.” And then follow paragraphs headed:—“Architectural Beauty, Echo, Damp, Ventilation, Extras and Disputes,” &c., in all of which points the author claims exceptional success. The circular closes with an offer to forward photographs or lithographic views of chapels in various styles at a charge of 6d. each below 400 sittings, and 9d. each above. Comment is superfluous! It is not always easy to stand against the fashions of such an advertising age in which literary men and even ecclesiastics are sometimes led into the stream. But to my mind all eulogistic comments upon the creation of one's own brain are out of place, and must so tend to lower one's higher sensibilities as to become reflectively injurious to our art. It behoves us, therefore, as a Society, very strenuously to set our face against such practices. Against the acceptance by architects of commissions from manufacturers and others, it s scarcely possible to utter words too strong. Architects are doubtless often put to much trouble in selection, and the unwillingness of clients to fairly remunerate for such work is strong inducement to them to seek their commission elsewhere. But the argument is specious and insufficient to uphold what can only be characterised as deception. My aim throughout has been to demand a high standard in the exercise of our art. With class distinctions of trade and profession I have little sympathy. A calling is honourable as it is exercised honourably. Every man who does his best, whether in art or craft, is worthy of respect. But assuredly all callings do not require the same degree of ability. And without any invidious comparison it may safely be averred that the practice of architecture ranks high amongst the professions, as one making large demands upon talent, study, and close application. It is on these grounds that I would urge the limitation of architectural practice as much as possible to what is certainly the main province of the architect, namely the designing and superintending the erection of buildings.

A cordial vote of thanks was accorded to the president on the motion of Mr. HENRY LOVEGROVE, seconded by Mr. MICHAEL SHELBOURN, of Belvoir, and supported by Mr. ELLIS MARSLAND.

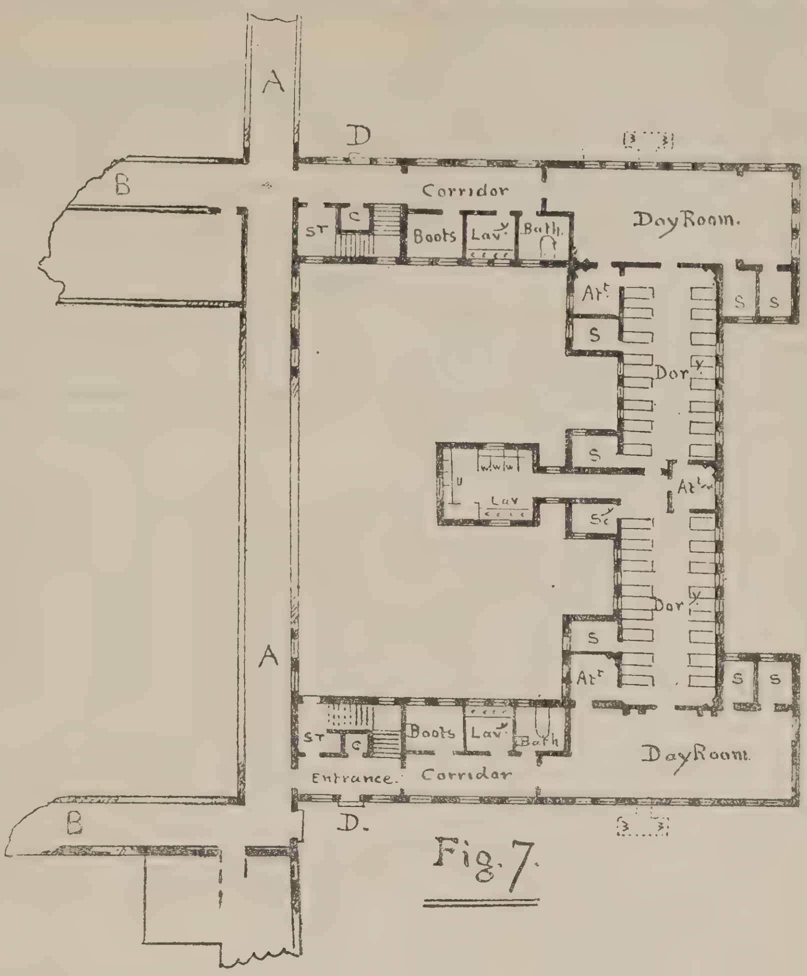

Fig. 7.

COUNTY LUNATIC ASYLUMS.—VI.

By GEORGE H. BIBBY, F.R.I.B.A.

THE WARDS FOR PATIENTS.

DURING the intervals between epileptic fits many of the patients suffer from hysteria, hypochondriacal or maniacal manifestations, and remain usually in a state of decided mental disease, are weak in memory, or have exalted ideas. Perhaps one-fifth of all epileptics are free from intellectual derangement; but nearly all even of these are often irritable, peculiar, and easily excited to passion. Epileptics are often suspicious, discontented, and suicidal. This is said to arise, in some cases, from a gradual perception of their terrible affliction, and an anticipation of its probable sad termination. “Memory fails, perception becomes dull; the imagination loses its brilliancy, and the emotions become withered. The physiognomy and deportment change; the patient becomes thick-lipped, coarse in his features, and repulsive in his appearance. As the attacks become weaker and less frequent, the mental faculties may regain their power; but owing to the rarity of radical cure in epilepsy, the majority of these patients fall into dementia.” For such persons as these the asylum architect has in most asylums to provide some accommodation; but the proportion of epileptics to other classes of patients varies much in the different districts from which asylums are filled. Some asylums (which are exclusively devoted to curable cases of insanity) have been closed against all insane persons who are afflicted with epilepsy.

The architect in planning the wards for male and female epileptics would first notice the considerable difference in the numbers to be provided for. For instance, there were in the London asylums (on the 31st December, 1893) 4,045 male and 6,009 female patients, a total of 10,054, of whom 1,171 appeared to be epileptics (596 males and 575 females); therefore, although there were many more insane females, yet there were greater numbers of *epileptic males;* but taking all classes it will, I believe, be found in most districts that there are more insane females than males. One reason for this, perhaps, is the fact that insanity is more frequently transmitted from the mother than from the father to the children. It has also been stated that when the mother was insane, more of the children became so. Further than this, in the case of daughters the disposition to insanity is inherited thrice as frequently from the mother as from the father. It follows from this, that through insanity of the mother the children generally are more endangered than through insanity of the father, and also that it is more especially the children of the female sex who inherit this unfavourable tendency. The asylum architect would occasionally be called upon to plan the wards on the male and female sides for equal numbers of patients, but more frequently for an excess of female patients, and seldom for an excess of males.

In plans for the apartments for epileptic patients, it is requisite that the attendants should have the most ample means of keeping the patients under constant observation, as the epileptic fit may occur at any time with little or no warning, and the patient fall and require instant assistance; after the fit he requires to be watched, as the attacks often follow in rapid succession. Apart from the patient's safety, the attendants and nurses require to be on the alert to prevent their charges having the opportunity of injuring themselves or others, or of committing suicide. The single sleeping-rooms must therefore be provided with small movable panels in the doors, so that the patients can be watched occasionally during the sleep that often follows a fit. The demeanour of a patient and a knowledge of his special hallucinations often indicate (for some time in advance) to an attendant what his condition is likely to be. The architect should endeavour, as far as practicable, to avoid all steps, and so arrange all corridors, day-rooms, and dormitories, &c., that a patient shall not be out of view should he fall into a fit. In Fig. 7 is shown the ground-plan of a ward for epileptic patients. Here the attendants' rooms command a view of both dormitories and day-rooms, and the single rooms are placed with direct access from the day-rooms and dormitories, thus allowing of a better means of observation than if placed off a passage or corridor.

In Fig. 7 the plan also shows that there would be a clear view of the lavatory, &c., from an attendant's room, which has been carefully arranged so as to command also a view of two associated dormitories.

In Fig. 8 is shown another arrangement of an annexe for waterclosets and lavatories, &c. An advantage of this plan is that it may be approached from the day-room and dormitory without intrusion upon the occupants of either apartment. The recessed lavatories, however, appear to be rather a disadvantage, as an epileptic patient might fall out of sight either to the right or to the left; but this arrangement has frequently been adopted, and might be sufficient in other parts of an asylum.

Fig. 8 also exhibits a plan for placing the baths in the annexe instead of in separate rooms, as shown in Fig. 7. The annexes shown in both Figs. 7 and 8 are isolated from the main building, an arrangement now usually adopted in new hospitals, asylums, workhouses, &c., and which is also shown in connection with the alternative plan for epileptics, shown on Fig. 9. In this the dormitory is arranged with four rows of beds, thereby very much reducing the building cost per patient, but at the sacrifice of much comfort and convenience both to officers and patients, and where there are large numbers accumulated in one room, troubles occasioned by excited and quarrelsome patients are greatly increased. In this plan attendants' rooms are not placed well; it would have been preferable to have located these either between the day-room and dormitory, or in a position to command (through glazed doors) a clear view of the whole apartment. Another disadvantage of this plan is the entire absence of a second means of exit from the whole of the apartments shown, to be available in the event of panic, fire, or any emergency arising through difficulties with the patients, and the chief merit of the whole arrangement is that it would be less costly to erect, and that the entrances to the w.c.'s would be under the observation of the attendants.

In the wards for the sick and infirm patients the conditions vary very considerably, for the patients may be suffering from various bodily ailments, requiring many descriptions of medical and surgical treatment, in addition to the continually changing complications arising from their disordered mental condition, bodily weaknesses, or advancing years.

A frequent arrangement of the plan of a large asylum provides a somewhat central position for the buildings for the sick and infirm, the medical officer's residence being placed between the wards for the males and females (see Fig. 1, p. 388).

In Fig. 10 is shown an arrangement for a ward for the sick and infirm, consisting of two dormitories for 10 and 19 patients respectively, with nine single rooms, a ward-scullery, and four attendants' rooms, also bath-room and lavatory accommodation. By this arrangement each of the dormitories and the large day-room could be approached from the main corridor without the necessity of disturbing patients in other rooms. All three of the larger rooms would have a southern aspect, and a considerably greater area is allowed for in the dormitories for associated patients and in the single rooms than would be necessary for healthy and strong patients.

There should be many day-rooms, so as to secure as far as possible individual observation and care. A northern aspect must always be avoided, and there should be two or more exits to every room for use in the event of panic or fire. There should be a few bay windows. These are sometimes useful in assisting the patients to form into groups for conversation and recreative purposes. The decorations of the day-rooms should be of a very bright and cheerful description. No day-room should be for more than 40 or 50 patients (allowing not less than 40sq.ft. per patient), and the height should be usually from 12ft. to 15ft., but never less.

Special observation dormitories should never be arranged for more than twenty-five beds, but for financial reasons it is too frequently necessary to greatly increase the number. In Fig. 10 the dormitories and day-rooms are shown with attendants' rooms attached, and arranged so as to command each day-room and associated dormitory.

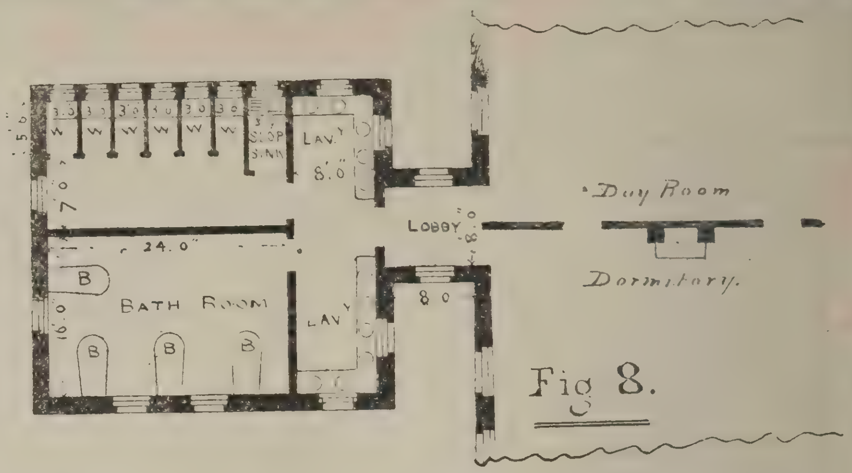

Fig 8.

All dormitories should have windows provided on both sides of the room, so as to secure a cross ventilation, and no dormitory should be less than 20ft. wide, but need not be more than 21ft. wide; this is assuming that there would be only two rows of beds—a greater number is a disadvantage (*vide* Fig. 9). The beds should be 3ft. apart, and are usually 6ft. in length.

The dormitory night attendant should occupy a central position, so as to be fairly near to all patients, and should always have the patient in front of him. In arranging the position of the beds this must be carefully remembered, and a space left for the attendant's chair, preferably upon a platform slightly raised from the floor.

The buildings for the sick and infirm patients should seldom consist of more than a ground floor and one story above. The upper floor may be arranged with day-rooms and dormitories, or with day-room dormitories. The staircases leading to the upper floors must always be of fire-resisting materials, inclosed within brick walls, and with handrails on both sides. No "winders" are admissible, and the straight flights must not contain more than ten steps each. Lavatories and bathrooms, &c., would be required in an annexe continued from the floor below (vide Fig. 11).

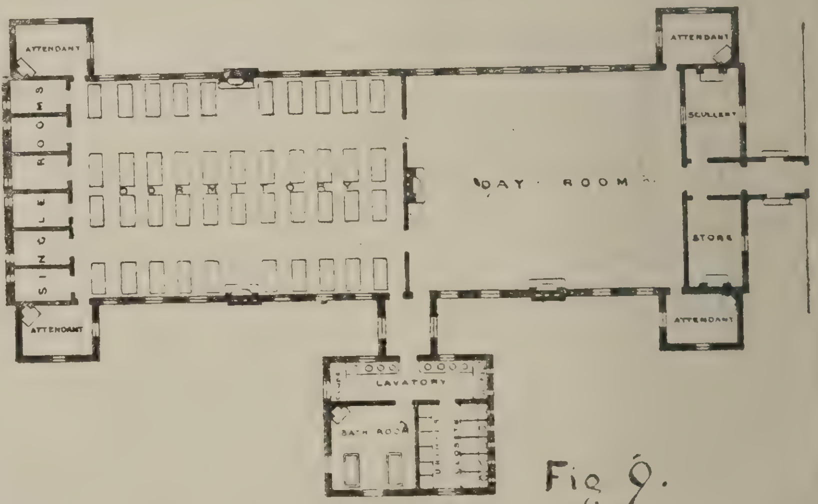

Fig 9.

GROUND-PLAN

As the attendant who has the charge of an observation dormitory ought not to be allowed to leave the apartment while on duty, he should not be required to take charge of any patients in single rooms connected with his dormitory.

Comparing Fig. 9 with Fig. 10, it will be observed that an attendant watching a dormitory in the former plan would have a view of the entrance to the w.c.'s and lavatories, an advantage which would not be obtainable in the plan shown on Fig. 10; in other respects, the plan shown in Fig. 9 is inferior.

Some authorities consider that the single rooms should not be less than 10ft. by 10ft., except those used by night only, which would be 10ft. by 6ft.; but for a county asylum for pauper lunatics perhaps 10ft. by 8ft. 6in. for the day and night single rooms and for sick and infirm, and 10ft. by 6ft. for the others, would be dimensions suitable for meeting all requirements. The doors would be arranged to open outwards in all cases, and these would have in some instances padded panels to deaden the sound caused by violent or excited patients hammering against the same, and to prevent other patients being disturbed. The single-room windows would require to be fitted with shutters, hung so as to fold and *lock* back against the side wall, otherwise opportunities for suicide would be afforded by hanging cord, sheets, &c., to the top of the shutters.

These shutters must be of strong construction, not less than 1in. in thickness. The upper half must have perforations for light and ventilation, or left open at the top for this purpose. What is required is that there shall be no *small* openings into which an actively suicidal patient could force a peg or support for any rope or material that could be used for hanging himself, nor any bars or projections which could be utilised for the same purpose. A certain number of single rooms may have double doors as additional deadeners of sound.

All doors of single rooms should have specially-made silent-action locks, indicating if locked or otherwise, and so arranged that they may be silently opened at any time by an attendant for inspection purposes, &c. For some patients, there can be no objection to an arrangement by which he may close his single-room door, and seclude himself from intrusion by other patients; but, of course, he must not be able to bolt or *lock out his attendant*, who must *always* have keys of these rooms. For purposes of inspection there must either be an opening in the door-panel, or a narrow slit-window 3in. wide, with splayed sides. Patients are said to

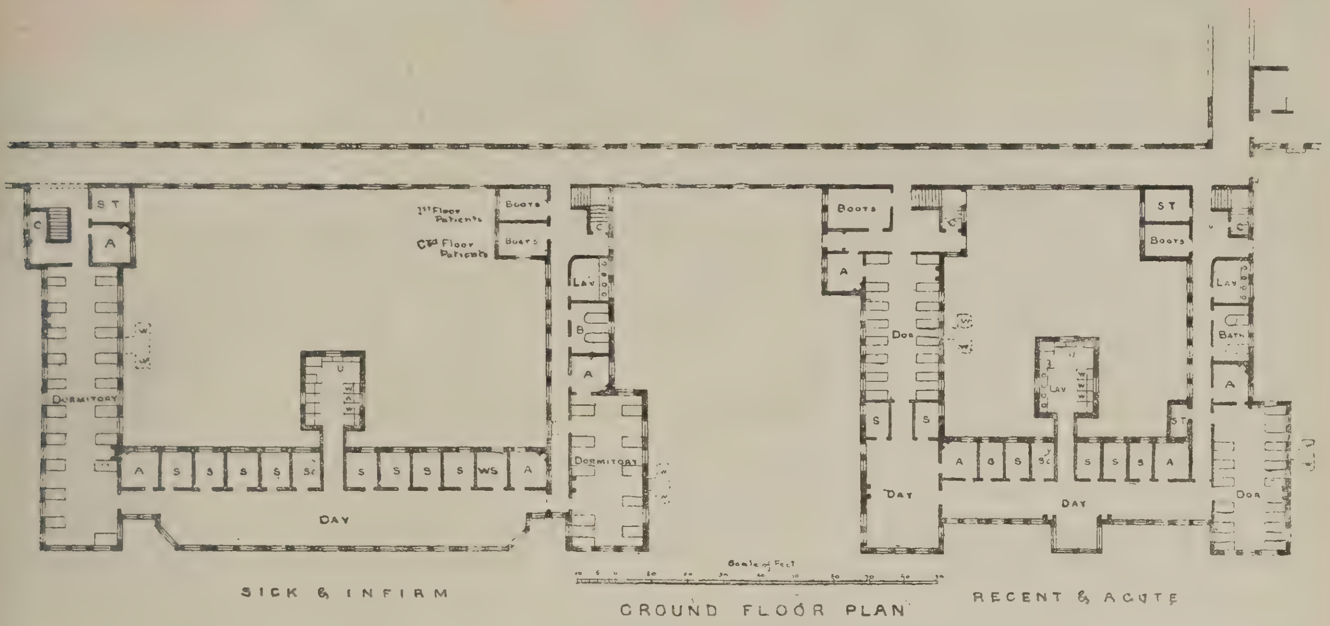

Fig. 10.

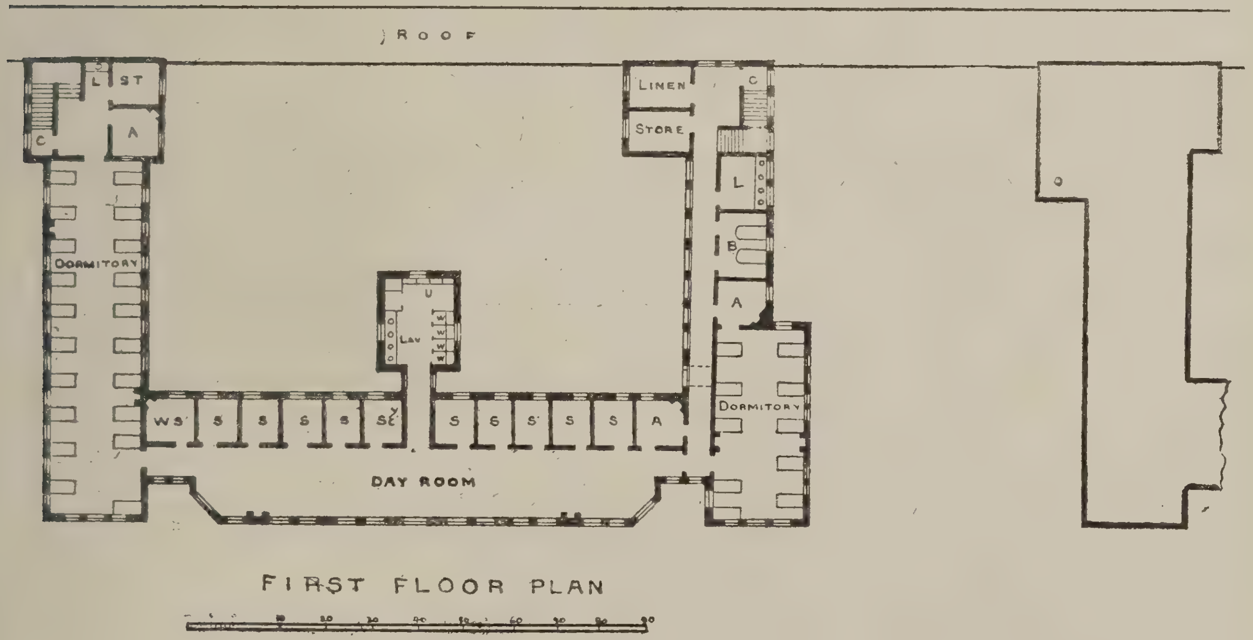

Fig. 11.

object more to the door-panel openings than to the window-slits.

On Fig. 10 is shown also a ward for recent and acute patients. This portion of an asylum should always be nearer to the medical superintendent's centre of work than the buildings for the chronic patients, but not so near as the wards for the sick and infirm.

Padded rooms are required chiefly for the protection of those patients who are not only weak, but also excitable, and liable by accident to suffer injury; but these small apartments are also necessary for preventing very strong and violent patients from purposely injuring themselves or destroying their lives.

For violent cases, the height of the padding on the walls should be about 6ft. 6in. Even in a large asylum, not more than two of these rooms need be provided—one for the males, the other for females. Any other padded rooms that may be required should be padded to the height of 4ft. or 5ft. only. The padding should be about 5in. in thickness, and as this would reduce the area of the room, the apartment must be made 10in. wider each way. (The cost of padding a room is about £60 or more.) From the offensive habits of the class of patients confined to padded rooms, it is necessary to provide for the necessity of cleaning and disinfecting the padding, which may be of leather, canvas, or waterproof materials, &c.

There should be included in the suite of rooms of all wards a small store-room provided with shelves and racks for the various appliances required for each class of patients. This room should be conveniently placed with regard to the distribution of stores and the non-disturbance of patients. For a ward of 50 patients the local store-room should not be less than about 10ft. by 5ft.

Coal stores may be placed in each ward, but it would be preferable to use coal-boxes; the latter have been found to be more economical, while coal-places have been found dangerous as affording hiding recesses.

Soiled-linen closets are frequently provided in asylums, but are not at all necessary; in fact, the clothing from the patients and all linen should be immediately sent off out of the wards to the laundry, particularly that from the wards occupied by patients of dirty habits.

Well-lighted closets for slops and brushes must always be provided; these should usually be placed in the water-closet annexe. There must be a slop-sink with cold and hot-water services. There should be a place for every article used in the cleansing of the wards and every orderly provision that can be suggested, as it is important that a good check upon the interference of patients with asylum appliances may be maintained, and it must not be forgotten that the slop and brush closet may afford patients weapons and the means of mischief to themselves and those with whom they may be associated. However insignificant some of these rooms or closets may appear, yet their improper arrangement or situation may involve fatal consequences.

Patients who are able to go out into the airing-courts, the gardens, or grounds of an asylum, and who have been working in the fields, often return (unavoidably) in a dirty or muddy condition, and it is therefore usual to provide for each ward a boot-room where they may change their boots and cleanse themselves, thereby avoiding the bringing-in of dirt on the floors and staircases of the asylum. These rooms should be provided with a suitable number of lavatory basins; it is, perhaps, an advantage to provide two doors to this room, so that the clean need not have to pass the unwashed.

The sculleries should be supplied with hot and cold water, the slop-sinks should be of glazed earthenware, and it is advisable that self-closing valves be used to prevent waste of water by patients and attendants; the sculleries should be locked from the patients when not in use, and therefore would not conveniently be placed in the annexe for closets and lavatories.

The lavatory basins should be about 2ft. 3in. from centre to centre, so as to allow the patients' sufficient space and avoid jostling each other. The basins should be of stoneware, say, *one* basin to every *four or five patients.* These should always be arranged within a proper lavatory apartment, as the ablutions should not be performed in the dormitories. The spaces below the basins should be left open. Some lavatory basins would be provided within the w.c. annexe, others in the bathrooms, boot-rooms, &c. For every *one hundred* patients not less than *five baths* are required. The ward bath-rooms should be placed near to the dormitories, or between the day-rooms and dormitories. The baths should be kept away from the walls, and there should be space all round the baths to enable the attendants (occasionally two of them) to assist or manage the patients. A desirable size of bath for the purpose would be 5ft. 6in. by 2ft. 6in. by 2ft. 3in. deep. Earthenware baths are preferable to any others. These baths are, of course, in addition to those provided in the large general bath-houses for the male and female patients respectively.

Urinals must be provided on the male side of the asylum in the proportion of *five receptacles for each one hundred patients.* The floors and walls of urinals should be lined with glazed bricks or tiles, and the divisions be of slate or stoneware. A gutter is all that is requisite. Pans raised above the floor are unnecessary. There should be an automatic flushing system to each row of stalls, acting every few minutes.

(*To be continued.*)

AN EMBROIDERY BOOK.*

LIFE is made up of desires unsatisfied and hopes unfulfilled. A new book on ancient embroidery, written in the modern spirit and by the light of modern research. This ought, indeed, to be welcomed by amateurs of the art! I open the book eagerly, and am prepared for ungrudging praise. I expect it will treat the matter seriously; it will refrain from going to the article on "Embroidery" in the "Encyclopædia Britannica" for information which was fresh—once; it will not drag in allusions to the Veil of the Temple, or to the embroidered peplos of Pallas Athene, or to Miss Linwood's woolwork portraits of distinguished people. Shall I find in it examples of the finest work of the best times, lovingly described and dwelt upon, and reproduced with all the skill of modern process-engraving? Such a good title, too—"Old English Embroidery: its Technique and Symbolism." This should be the work of a student, and fit for some more distinguished place than the "occasional table" of a suburban boudoir. Not a bit of it. The book lying on my desk is neither one thing nor the other: neither fish, flesh nor good red herring. There is no pretence of teaching stitches and methods so as to render it invaluable to the young lady who is just now beginning busily to fashion loving little gifts to bestow on her friends at Christmas; and there is no research or learning at first hand in it to give it a *raison d'être* as a monograph on an interesting and important side of Mediæval art. The book is a jumble of ill-digested notes, which the collector has not taken the trouble to verify, some of which are incorrect and others ancient history in more senses than one. And I am not saying this hastily for the mere sake of being "nasty," but speak as a specialist, and therefore impersonally regardless of private feelings. Our authors have neither spared us mention of "Babylonian skill" in needlework, nor reference to the decoration of the Tabernacle, nor yet quotations from Homer, nor airy allusions to the British Amazon Boadicea's troops arrayed in skin mantles "embroidered without" (oh, happy days of childhood and Pinnock's Catechisms, where are you fled?), nor the embroidered ravens on Ragnar Lodbrok's banner; nor the fact that "Berthe, mother of Charlemagne, was famed for her needlework"; nor *any* of the interesting facts that are set down in every handbook on needlework ever written by the hand of erring mortal. But just fancy it! Our relentless authors do not even spare us mention of the sailing of the *Mayflower*, dragged in literally by the heels, to my intense irritation, as it is a date I never can remember.

I am willing to believe that Matthew Prior is a printer's error for Matthew Paris, rather a different person, for I certainly don't intend to look up Mat Prior's inspired writings for any remarks he may have made on Mediæval garments, and indeed am almost positive that the remark in question, on page 21, occurs in the writing of Matthew Paris; so we will let this error pass. But my feelings are outraged to start with on p. 8, by a flippant allusion to the "Dark Ages," an epithet out of date now, and which reads strangely in the following passage:—"The accounts still in existence of the sumptuousness of the ecclesiastical vestments of the Dark Ages . . . . are very remarkable." In another place the writer speaks of the "bald manner" in which stuffs and what-not were described in the old inventories. Now listen to this: "Item, a canapye of red silke, with green braunchys and whyte flours poudyrd with swannys of golde betwene the branchys." This is from the rich inventories of Lincoln Cathedral: if I could describe anything as baldly as that, I should be rather proud of it. Prouder, perhaps, than of having written the following sentences:—"The taste for art needlework, which had languished during the Commonwealth, revived with other kindred arts at the Restoration, but the style was wilder and more luxuriant than the Early Renaissance it succeeded. . . . The work was lovelier than ever and richer in colouring, but the designs were outrageous." In the last sentence, the struggle to say something with a meaning is rather pathetic, but fails to convince.

The authors are under a mistake as concerns mass priests' vestments: on no occasion does a deacon wear a chasuble nor celebrate mass. They fall into the common error, too, of supposing that what are now solely ecclesiastical garments were always ecclesiastical, whereas in the Middle Ages they were merely the dress of the period. You have only to be a little familiar with early MSS. to recognise the dalmatic, alb, cope, and all the rest of it, on the back of a knight or squire in the miniatures, the more costly ornamentations naturally being reserved for the service of God, and for the glorification of earthly kings.

One chapter is headed St. Thomas à Becket, and certainly in his vestments at Sens (not a very arduous pilgrimage over the water to look them up personally) there is copy enough for a long chapter. But the Sainted Thomas is dismissed in a few words—treated, in short, in a rather summary manner, and we are off again like the butterfly from one tea-table anecdote to another, Thomas Beckett bundled out of the way, and as though he and his shining garments never had been.

But the chapter of chapters is that treating of "Domestic Embroidery of the Middle Ages" (nine pages of nicely leaded-out type), and here we are confronted with a wealth of encyclopædic knowledge that "confounds the reason and intoxicates the senses." The authors do not confine themselves to embroidery solely, but canter into other realms of art, tell us in a few simple words, understandable by the youngest of us, of the introduction of glass for windows, how they were confined for several centuries to palaces and churches, tenderly nursed, and carried from house to house by their owner at first, and so forth. I seem to be a child again at school, under the genial eye of the class-mistress, whose patience was greater than the sloth of her pupils. From windows to wood-panelling and painting on walls is a short step, and thence to the "earliest attempt at historical portraiture." Under Henry III., too, we learn that there was "very little originality or skill in these first rude attempts at art. The faces are without expression, the limbs are without proportion, and the draperies crude and ill-managed." Let us consider: Henry III. reigned the best part of the 13th century—with the 14th, the triumphant epoch of expressive art. Let it be the half-lost, ghostly fragment on a grey church wall, once glowing with life and colour; or up and down the borders of a manuscript, whose pages, like the embroidery of the same epoch, are precious as gold and jewels. Everywhere the same grace of line, the same sureness of eye, strength and delicacy of hand, the same tenderness and humour, the same power, in a word, that proclaims the artist executing his work, now, it may be, with simplicity and rapidity, and now with infinite labour and care, as circumstances demand, but never failing in his object of expressing himself and expressing life around him, graphically, sympathetically, and *humanly.* Truly spoke our authors on their second page:—"The untrained eye does not see what stares it in the face."

Why, also, have our authors labelled a bedhanging of the Late 17th century a century earlier, and the handsome pall of the Fishmongers' Company 14th century when it is obviously of the 15th century? Four of the clearest full-page illustrations are devoted to that ridiculous form of embroidery called "Embroidery on the Stump." Another illustration labelled "A beautiful curtain" wastes a whole page, while the Syon cope has one full-page illustration, of necessity very minute, and nothing else to show the scale and stitchery of this interesting piece of work. No other "Opus Anglicum" is represented, except for an indistinct, and therefore worthless, small reproduction (nicely placed in the middle of the page) of the Chesterfield cope, where the floriated arches in which the figures stand make it a very noteworthy example of 14th-century work, as interesting for costume, too, as for architecture. You may think I take embroidery too seriously; but it is worth while to consider whether needlework is of the faintest value unless of the best design and most curious and beautiful workmanship. Nothing but the utmost patience and steadiest application could have produced the work, the last few fragments of which we place among our greatest treasures, not to be replaced by all the money coined in all the smoky places of Merry England. To the wayward industry of covering this or that unsuitable object with tags and rags of stitchery I owe no allegiance, nor have I patience with a writer who can use the epithet, "chaste and elegant," to anything under heaven, or who speaks of the "art embroidery" of America. Poor America! I think the authors of this well-intentioned volume would be more at home in the sphere of modern art-embroidery; they had better leave the telling of the story of Mediæval "plain needlework" to some soberer pen. M. M.

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* Old English Embroidery. By FRANCES and HUGH MARSHALL. London: Horace Cox, Windsor House, Bream's Buildings.

A SPECIFICATION ANNOTATED.—I.

SPECIFICATION of works to be done in building a pair of semi-detached villas at ——, for ——, in accordance with drawings prepared by ——, under whose superintendence and to whose satisfaction same are to be executed.

So far all is plain sailing; there is no disputable matter here, nor does the filling-in of the blanks require any more extensive knowledge of building than may be acquired in any art architect's office during a three years' apprenticeship. Here, however, the amateur "constructor" will stick; he can't budge an inch beyond this. What is he to say next? He does not know, for he cannot possibly explain to others—there being no metaphysics allowed here—what he cannot and does not understand himself.

GENERALLY.

1. *How Work is to be Done.*—All work in the various trades must be done in a proper, workmanlike manner, and as this description will not be again repeated, it must be understood as applying to every item in this specification.

The expression "to be done in a proper, workmanlike manner" is a venerable one. It makes up the chief bulk of many specifications, and the wonder is that the architect does not boldly cut the entire matter short by specifying at once, that "the villas are to be built in every respect in a workmanlike manner," and say no more! At any rate, the expression does good service, for when, after racking his brain for what will not come, the architect is perplexed as to how any particular piece of work should be done, then he heaves in that it is "to be done in a proper, workmanlike manner," and further description is needless.

2. *Definition of a Workmanlike Manner.*—The manner in which a skilled, intelligent tradesman, working by the hour, would perform work, as distinguished from the manner in which a handy labourer, working piece work, would perform the same, is to be taken as defining work done in a proper workmanlike manner.

Here the trouble begins! For when this neat definition is fairly landed in the specification, how is an amateur to know a good tradesman's work when he sees it? He had better consult one of the Royal Engineers' books on "Building Construction," or "ask a policeman!" There is another alternative—call in the services of a first-class quantity surveyor.

3. *The Architect's Satisfaction.*—The work done and materials supplied are to satisfy the architect, and as this specification is written with the object of describing in an intelligible manner what will satisfy him, the builder is requested, before signing the contract, to read and understand its contents, so that no dispute may arise after the contract is signed.

The clause "to the architect's satisfaction" runs in double harness, or rather tandem, with the "proper, workmanlike manner" of the last paragraph; the expression is consequently quite as venerable, though not so unwieldy in being handled when the work is in progress; for though it may puzzle the architect to tell when the work is done in a proper, workmanlike manner, it can scarcely embarrass him to say when it is done to his satisfaction, though the first clause, like the leader in the tandem, may turn round now and again to stare the driver in the face and "worrit" him; the last clause is well in the shafts, like the wheeler, and it can be made to go anywhere! Before any contractor signs a specification containing a clause such as this, which may mean anything or nothing, he should have a rigid definition of what will satisfy the architect, for the architect's certificate is given when the work is done "to his satisfaction"—not before. And suppose he persists in saying it is not done to his satisfaction, what is the contractor to do? Ask Mr. Wetherfield, Legal Column, Building News.

4. *Work is to be done in accordance with Specification.*—The builder will not be entitled to any payment on account until he obtains the architect's certificate that the work done has been performed according to the true meaning and intent of this specification.

This clause, perfectly fair and reasonable before commencing the work, unfortunately becomes obscure, at least to the builder, once the work is in progress. He does not extract the same meaning out of it as the architect does, and the strange spectacle may be seen of two men feeding out of the same vessel, one declaring the contents are meant for bovril, the other being as certain they are meant for cocoa and milk. It is of importance, then, that there be no ambiguity in the meaning and intent of the specification.

5. *Departure from this Specification.*—All instructions to the builder given during the progress of the work will be given in writing, and such instructions must be preserved, and produced when required. No verbal message of any kind involving a departure from this contract will be acknowledged in the final settlement of accounts.

This is a most important provision. The architect will frequently find himself in a muddle if he persists in giving verbal directions to the contractor or his foreman. He will be told he said this, that, and the other thing, which he may, or may not, have said; if he did say so, he will probably have forgotten it. Nor should the architect, under any circumstances, decide or answer definitely any question relating to the work without first making himself well acquainted with the provisions of the plans, specification, and quantities relating to the work in question. A good plan to adopt in visiting works in progress is to examine everything, carefully noting any departures from the plans and specification, and then subsequently, after due consideration, embody all objections or suggestions, in a general note to the contractor, of course, retaining a copy of the same. All friendly "palavers" with the contractor, or his foreman, should be avoided when the proper business of all parties is being discussed. The architect may close his visit by saying to the contractor, or foreman, "I have looked round the works, and I will communicate with you in writing my opinion of them." This the architect should do promptly, and with a view to assist the contractor, rather than lord it over or embarrass him. In fact, if the architect really knows his business, his visits will be appreciated rather than resented by the contractor, for he will frequently help, by suggestions pertinent and well timed, the carrying out in a prompt and economical manner many difficult portions of the work; but if the architect knows of nothing but his own great importance, and the corresponding inferiority of everyone else on the building, then Heaven help the contractor!

6. *Trade Customs.*—Trade customs and usages are frequently set up to define and limit the sense of some words and clauses in specifications; but what is stated herein is literally meant, and this specification is to be taken as forming portion of a special contract undefinable by trade customs and usages in London or elsewhere.

In the construction of the Britannia and Conway bridge, Stephenson specified that the "best" plates only were to be used, as it was absolutely necessary that the finest quality of iron should be worked up into girders for these important works. He was, however, much surprised to find that all the iron supplied to his specification was so bad as to be quite unfit for the work. On making inquiry he was informed that in the trade "best" meant ordinary quality in common iron, "best best" second quality, and "best best best" a good quality suitable for his purpose; in fact, he discovered that trade custom defined the meaning of commonest words, and these had no longer their ordinary signification. An architect may not have any iron plates to deal with, but trade custom defines the meaning of nearly every expression applied to timber, cement, and other building materials. For instance, a contractor ordered 50 squares of flooring "free from sap," using the actual wording of the specification supplied by the architect. When the flooring was delivered it was not only not free from sap, but the boards were unusually sappy. The contractor, on refusing to pay for the timber, was sued by the merchant who supplied it, and the latter put half-a-dozen other merchants in the witness-box, who all swore that the boarding had been examined by them, and that it was what was *known in the trade* as "free from sap." Under these circumstances the contractor was nonsuited, had to keep the boarding, and pay all the costs of the action. A quotation was once asked for, at per ton, for "best" cement. A few days after the quotation was accepted, and 100 tons were ordered, the contractor using the following expression in his letter to the manufacturers:—"Be sure you send your very best cement." When the order was completed, and the account delivered, it was noticed that 2s. 6d. per ton was charged beyond the price quoted in the first instance, and this mischarge was explained in this way:—"You asked for the price of our 'best' cement, and we gave it to you; but in ordering, you asked for the 'very best.' We charge 2s. 6d. extra for this quality." Shippers, timber merchants, brokers, and others catalogue and sell deals as "first quality" or "best"; the architect using such trade expressions in his specification may get some very unsuitable timber for his work, though it may be such as is known in the trade as "best" or "first quality." It is evident that he could not condemn such timber—for the contractor would have no difficulty in proving that the timber objected to was dealt with in the trade as first quality timber. Again, 2in. doors are understood in the trade to mean $1\frac{3}{4}$in., $1\frac{1}{4}$in. flooring only about 1in., and $\frac{3}{4}$in. matchboarding holds not more than $\frac{1}{2}$in. and $\frac{1}{16}$in. Hence the necessity for a clause such as that at the heading of this division, and it will always be advisable that the architect should make himself thoroughly acquainted with the exact meaning, in the trade, of tne terms he employs.

7. *Figured Dimensions.*—In all cases where dimensions are marked on the drawings, or herein specified, they are to be taken in preference to measurement by scale, unless there is an obvious error in the former, and all such dimensions are to be the net dimensions of the work when finished.

In every instance where possible, all lengths, breadths, and heights should be distinctly figured on plans, sections, and elevations, care being taken that all running dimensions across rooms and walls, when added, make exactly the total lengths figured elsewhere. It is necessary to be especially careful that dimensions on upper-floor plans correspond with, or work in with, those of floors underneath, and that figured heights on sections correspond with those on the elevations. The thickness of doors, scantlings of timbers, &c., may be all marked on the drawings. These latter will then become a condensed specification, admitting of easy reference. The contractor should be furnished with a set of drawings or mounted tracings. Tracings on cloth are liable to have the lines washed off in the rain, and when the original glaze or stiffening disappears, the foreman, on an emergency some cold frosty morning, is tempted to use them as pocket-handkerchiefs!

8. *Scaling Drawings.*—Measurement by scale from drawings plotted to less than $\frac{1}{2}$in. to 1ft. is to be avoided, and drawings, when finished to a large scale, are in all cases to be held as superseding drawings for the same portion of the work to a smaller scale. No enlargements of mouldings are to be made from small-scale drawings. All such will be furnished full-size by the architect.

No two people will read off the same dimensions from small-scale drawings in the absence of figured dimensions. Full-size templets of mouldings—enlarged by the foreman from small scale drawings—often totally misrepresent the architect's intentions. All enlargements necessarily made on the site of the building, as, for example, tracery windows, if not made by the architect or his assistant, should be inspected, and certified correct by the architect or his representative before the work is actually commenced.

8. *Laying out the Works.*—The builder shall provide all rods, straight-edges, squares, levels, pegs, and lines for laying out the building, and be responsible that all dimensions are in strict conformity with the drawings.

This clause implies that the drawings are correctly and consistently figured, which is very often not the case. All lengths are to be laid down with 10ft. rods, shod with brass and correctly graduated, or with a Chesterman's steel ribbon "tape," for the ordinary tape will stretch 4in. or 5in. in every 50ft., the exact length depending on the tension for the time being. It cannot be urged too strongly that the squareness of all rectangular spaces should be tested by diagonal measurement, more especially where the boundary lines are obtained by producing the sides of the square used in laying down the right angles. The square or squares used in laying out foundations should have sides not less than 12ft. long, and should be strongly framed. Where the building is over 50ft. long on either side, the first course of brick or stonework above the ground should be levelled throughout with a dumpy level, for the ordinary practice of levelling with a straight-edge and spirit-level, though fairly correct for short lengths, is altogether unreliable, in ordinary hands, for lengths of 50ft. and over. Moreover, as with an engineer's level, all points can be fixed from one station by merely turning the telescope on its axis, a great saving of time is effected, and absolute accuracy secured.

THE SURVEYORS' INSTITUTION.

At the opening meeting of the 1894-95 session of the above society, held on Monday evening last, at 12, Great George-street, Westminster, the new President (Mr. Thomas Chatfeild Clarke) delivered an inaugural address which has, for our readers, a more than ordinary interest, from the fact that the President represents the architectural branch of the surveyors' many-sided profession. After referring to the growth of the Institution during the twenty-two years which had elapsed since he was elected a member of the council, Mr. Clarke proceeded to emphasise the necessity which compelled all professional men, and especially men whose very avocations depended upon practical sagacity, to move with the times, and to carefully watch the direction in which public thought was day by day altering. He looked with hope to the time when the extension of small ownerships would enable our country to possess so powerful a reserve force as that insured to France or Belgium by the system of peasant proprietorship. Mr. Clarke then dealt exhaustively with the question of the practicability of some system of agricultural credit banks, such as have worked with good results on the Continent, being applied to the relief of the undoubted distress which exists among our own farmers. But the matters which more nearly affect the interests with which we have to deal were referred to later in the president's speech. The more healthy housing of the working classes, of which Mr. Clarke has been a persistent advocate for many years, was, he reminded his hearers, gradually being accomplished by legislation, which all must welcome as tending to a useful end. Great as had been the work done in this direction by such bodies as the Peabody Trust and the Industrial Dwellings Companies, it went but a small way to meet the ever-growing demand for better accommodation for the working classes. It was no doubt true that from causes difficult to define the rate of increase of the population of London had steadily declined 21·2 per cent. in the decade ending with the year 1851, to 10·3 per cent. in that ending with 1891; but even at the decreased rate some 400,000 persons were added to the population of the Metropolis during the last ten years. The density of population was shown that in some districts, notably St. George's-in-the-East, 22 per cent. of the whole population were members of families each occupying but a single room. Mr. Clarke thought that owners of large estates, City companies, and others might well extend the practice, which, he was glad to see, obtained to a considerable extent, of devoting a large proportion of their landed estates to the erection of dwellings for the industrial classes. There had been no more important legislation in recent years than the London Streets and Buildings Bill, which, as the London Building Act, 1894, received the Royal Assent on the 25th of August last, and it may be interesting to quote the President's own words: "It may be worth while to place on record in this address the genesis of the new measure, and to indicate the leading share which the Institution has had in moulding its provisions in the various stages of its evolution. For many years past it has been felt that the Act of 1855 has been outgrown by modern requirements, and that the existing law was insufficient for regulating many details of new construction and materials. Endeavours have been made to cure this by several auxiliary enactments, and by by-laws framed by the Metropolitan Board of Works, and subsequently by the London County Council, under the Metropolis Management and Building Acts Amendment Acts, 1878 and 1882. It was felt, therefore, that the time had come for the codification of the law relating to building, and the first step taken in the matter was the production of a draft Bill under the title of the London Building Law Consolidation Bill, issued by, and apparently prepared under the auspices of, the Local Government Board. Copies of this draft Bill were forwarded to the Institution, and to other societies, accompanied by a request that the Institution would furnish the Department with comments on the Bill. The council pointed out, in reply, that what was really wanted was not consolidation, but a new Act; but, on being further pressed for suggestions, they appointed a strong committee, who devoted a large amount of time and labour to the work of engrafting on the Consolidation Bill the additions and amendments in their opinion necessary for making it a useful working measure. The matter apparently slept until, in December of last year, the council received copies of a new Building Bill, prepared by the London County Council, embodying some of the suggestions made by the council of the Institution to the Secretary of State in connection with the Consolidation Bill already referred to. The Building Committee of the Institution devoted a very large amount of time to the consideration of the new Bill, and finally nominated their colleagues, Mr. Rickman, Mr. Garrard, Mr. Steward, and Mr. Cubitt Nichols to represent the Institution at a conference with the Building Committee of the London County Council, and to press the adoption of the amendments proposed by the Institution. They were met in the matter in the most friendly way by the representatives of the London County Council; but, failing to obtain concessions on some important points, they were authorised by the council to draw up and lodge a petition in opposition to the Bill. After a prolonged fight in the committee rooms of the House of Commons, the representatives of the Institution (for this purpose Mr. Steward, Mr. Garrard, and Mr. Cubitt Nichols) succeeded, themselves or in concert with others, in modifying, or getting rid of, most of the more obnoxious features of the Bill, and were able to appear, in support of the greater part of it, before the Committee of the House of Lords. The council—and particularly those members of it to whom I have referred—have spared neither time nor trouble in the endeavour to secure a Building Act worthy of this great Metropolis, and, although it has involved the Institution in an expenditure of nearly £900, the members will, I am certain, feel that the money had been well bestowed."

The subject of "betterment," which had been discussed *ad nauseam*, must, Mr. Clarke thought, be for the present regarded as in a state of suspended animation. It was only the very extreme opponents of the principle who ventured to deny that, in the words of the House of Lords' report, "persons whose property has clearly been increased in value by an improvement effected by local authorities should specially contribute to the cost of the improvement." The whole difficulty arose from the incertitude of the effect of any given public work in increasing the value of neighbouring properties, and the evidence given before the House of Lords committee showed how acknowledged experts differed on this point. The proposal to give the person to be charged with "betterment" the option of going before a jury was not above adverse criticism, for a jury summoned *ad hoc* was in a less advantageous position to decide such a matter equitably than would be an arbitrator dealing with all matters arising under a particular scheme. The "worsement" principle reduced to its narrowest limits by the proposal of the Lords Committee was, he thought, an almost negligible quantity. After dealing with the report on the unification of London, which he regarded as a step in the direction of settling a question which demanded some solution in the near future, the President desired to place on record the very interesting fact of the presentation this year, at the end of 25 years of unwearying service in the interests of the Institution, of a testimonial to Mr. J. C. Rogers, the valued secretary of the society.

A hearty vote of thanks to the President for his address was proposed by Mr. C. K. Bedells, who alluded gracefully to the many services which Mr. Clarke, during his long membership, had rendered to the Institution, and the vote was seconded by Mr. W. Wright, who considered that the many valuable suggestions contained in the address might well form matter for future discussion and consideration.

The President, in replying, said that while he considered honest difference of opinion and free discussion most valuable for the purpose of eliciting the truth, he had endeavoured, as he felt bound to do on such an occasion, to avoid offending the susceptibilities of everyone who might differ from him on points which had at least two sides. The vote of thanks having been carried by acclamation, the meeting adjourned.

THE INSTITUTION OF CIVIL ENGINEERS.

THE opening meeting for the session of this institution was held on Tuesday night. Sir Robert Rawlinson, K.C.B., the president, delivered an inaugural address, dealing with the history and progress of all branches of civil engineering. Of all these branches no more remarkable progress had been made, he said, during the last half-century in any one department than in that which was concerned with the health and personal well-being of mankind. Sanitary science was, in a sense, as old as civilisation; but it might puzzle a lexicographer to give a satisfactory definition of it, and sanitary engineering, he might reasonably say, was not a science. Sanitary science based its results on scavenging, town sewering, house-draining, and on insisting upon all means for domestic and personal cleanliness. Among the principal of the improvements brought about by the progress of sanitary science, after main-sewering, house-draining, water supply, and scavenging, had been the establishment of public baths, washhouses, and disinfecting apparatus. It had become usual to credit sanitary works, such as sewerage, drainage, and improved supplies of water, with the observed reduction of deaths in this district, and he was not inclined to repudiate this. But he also saw other powerful influences at work on this great and most interesting problem. There was no problem of sanitary engineering of vaster range than that presented by the great metropolis. At present the streets of London were crowded to a dangerous excess with sewers, drains, water-pipes, gaspipes, telegraph and pneumatic tubes, electric-lighting cables, and hydraulic pressure mains. Yet the main low-level sewers of London were now too small to relieve the area bordering the river. It had at times occurred to him that deep tunnel sewers, in lines irrespective of those of the streets above, might be found necessary to relieve the streets. In Paris there were such large underground tunnels for sewers, gaspipes, water pipes, and telegraph tubes and wires. The sewage of London, now wasted at great cost to the ratepayers, might be taken to the Maplin sands, and on its way be delivered in dressings of liquid sewage over the poor adjoining lands. A question of vital importance was that of the present and the future water supply to the ever-increasing millions who lived and worked in London. The supply of water to London was still derived mainly from open rivers, the Thames and the Lea. The important questions were:—Must these sources be continued? Must the interests of the water companies be bought? And, then, must there then be consolidation of management? If so, under the London County Council, or by a special water trust? The sources of both the Thames and the Lea were as pure or as free from objection as it would be possible to find water. The works were owned and managed by companies. Consolidation and purchase seemed practicable, and then any necessary extensions could be made. To bring in rival companies and to attempt to lay additional mains in the already choked streets of London would be impossible. To bring in soft water from long distances would be costly. Additional supplies of water for London might be obtained in or near the areas through which the Thames and the New River flowed.

CHIPS.

The governors of the Northampton General Infirmary have decided to carry out forthwith the first section of plans by Messrs. Hall and Young, of London, for a new north-east wing to be added to the infirmary buildings, at an estimated cost of £2,000. The addition will provide a new operating theatre, and will be temporarily roofed in.

The Holborn Board of Guardians are about to carry out works of alteration and reconstruction at the City-road Workhouse, estimated to cost £7,000. Mr. A. Saxon Snell is the architect.

The Cheshire County Council have decided to purchase Saltersford Hall, Holmes Chapel, as a site for an agricultural college. The house will accommodate 70 students, and is surrounded by 100 acres of land. The necessary alterations are estimated to cost £2,800, and a further £1,000 is to be expended on stocking the farm.

Works of water supply have just been completed for the parochial committee of Wootton-under-Edge. Mr. Ambrose was the contractor, and the cost has been £3,300.

The German Emperor conferred again on Saturday with the artists whom he has intrusted with the sculpture of the statues of the seven Hohenzollern Sovereigns for the White Hall. He criticised the models, but was satisfied on the whole. As to the material, he is at present in favour of marble.

All Saints' Church, Norfolk-square, which was destroyed by fire in June last, is to be rebuilt immediately. Mr. Ralph Nevill, F.S.A., of Chancery-lane, is the architect. To complete the church according to Mr. Nevill's designs, the vicar and churchwardens are asking for £2,500 beyond what is at present in hand. It is hoped that the church will be completed soon after Easter, 1895.

The length of railways in the island of Ceylon is 231½ miles, 40 miles having been added during the past year, and the traffic yielded last year a profit of 4·5 per cent. on the original outlay.

The town council of Evesham at their annual meeting on Friday, after a long discussion, decided to increase the salary of Mr. R. C. Mawson, the borough surveyor, by £45 a year, and that of Mr. Mann, the road surveyor, by £15.

A portrait of the late Sir Rupert Kettle, the well-known County Court Judge, and originator of arbitrations in trade disputes, executed by Herr Voss, has been presented to the art gallery of Wolverhampton, and a second portrait of Sir Rupert, by the late Frank Holl, R.A., is on loan at the same institution.

The west window of Hanbury Church, Staffs, has been filled with stained glass as a memorial to the late vicar. The chief subject is our Lord in Glory, and below it is a full-length figure of Melchisedek. Messrs. Ward and Hughes, of London, were the artists.

All Saints' Church, The Clive, near Yorton, Salop, was restored and enlarged from plans by Mr. C. J. Ferguson, of Carlisle, in 1887. Through the munificence of Mr. J. J. Bibby, of Hardwicke, it has now been again enlarged, and still further beautified. A new tower and spire have been erected by Mr. Bibby in memory of Mrs. Bibby, who died on the 19th of May, 1892, and, in addition, he has given to the church a font, six bells, and other gifts, and these were dedicated last week by the Lord Bishop of Lichfield.

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ILLUSTRATIONS.

"SACRED AND PROFANE LOVE," BY TITIAN.—INTERIOR OF ST. AGNES CHURCH, KENNINGTON.—LYDDINGTON BEDE HOUSE.—ST. ALBAN'S ABBEY.—HOUSE AT WALMER.—MEMORIAL TO THE LATE C. W. COPE, R.A.—BARKING TOWN FIRE BRIGADE STATION.—WEDGWOOD MEMORIAL INSTITUTE, BURSLEM.

Our Illustrations.

OLD MASTERS ON THE CONTINENT, NO. XI.—"SACRED AND PROFANE LOVE," BY TITIAN.

Mr. Charles L. Eastlake, the Keeper of the National Gallery, who is contributing the descriptive articles which accompany our series of Old Masters, is prevented from writing anything about the famous painting by Tiziano Vecellio, which we illustrate to-day from the Borghese Gallery, Rome, because he has not lately seen the picture, and the original notes which he has concerning it are not sufficient to justify a full description of the work. This rule, which Mr. Eastlake always rigidly adheres to, materially enhances the value of his writings, for in no case have particulars of any work been given by Mr. Eastlake unless they were based upon notes recently made from the original painting. We are, however, desirous of making our choice of subjects as complete as possible, and consequently there are a few pictures selected for our series of Old Masters which will appear without the advantage of Mr. Eastlake's descriptions. "Sacred and Profane Love," illustrated to-day, constitutes the first of these. The original, which is one of the most beautiful and fascinating of Titian's works, forms one of the most valuable treasures exhibited in Room X. of the Borghese Gallery. In conception, as well as in colour, the composition illustrates in a marked degree the influence of Giorgione, which may be traced with equal certainty in some other of Titian's works. Like the same master's exquisite picture of "The Three Ages," in the Bridgwater House Gallery, this conception realises the poetic sense in the truest degree, while the melting harmony of its colour is to the significance of the composition what music is to the song. "Earthly and Heavenly Love" seems to describe the painter's ideal better, though some have thought that "Love and Prudery" more exactly expresses the intention of the painting, seeing that the draped figure is so completely clothed as to be gloved even, as she sits serenely secure in the stronghold of enshrined modesty. The calm sense of the delight of pure existence herein constitutes the dominant feature of Titian's creation. The contrast between the nude conception of earthly amours exhibits really no anomaly between the two maidens which illustrate his idyllic theme. The spectator, indeed, involuntarily partakes of the dreamlike feeling which it suggests. The plucked rose on the top of the sarcophagus fountain, whereon in bas-relief a Cupid is shown awakened out of his slumbers by genii castigating him into action, while a pair of lovers in the distance serve to illustrate his influence, and rabbits in the middle distance indicate the joys of the undisturbed state of natural being, in contradistinction to the mixed pleasures of the chase exemplified by the hound to the right of the principal group hunting a faun. The draped beauty is said to be very like the Flora and the Bella in the Palace Sciarra. Ridolfi, writing in 1646, speaks of the picture: "Due donne vicino ad un fonte, entro a cui si specchia un fanciullo."

CHURCH OF ST. AGNES, KENNINGTON PARK.

This, without doubt, is one of the most interesting churches erected of late in London, and its completion has been gradually going on for the last twenty years. A plan and view of the exterior, drawn by the late Fred C. Deshon, was published in the Building News for July 16, 1875, soon after the commencement of the buildings, which comprise as well a parsonage house and schools, the whole forming an extensive and exceedingly picturesque group overlooking the park at Kennington. Mr. George Gilbert Scott, M.A., was the architect from whose designs the work has been principally carried out; but more recently, since his illness, Mr. Temple Moore has acted in that capacity, the pulpit and font cover having been done from this architect's plans. The photograph which we reproduce to-day was taken by Messrs. Fry Bros., of Brighton, and the view illustrates the building with fir-trees standing under the arches of the nave, a novel and effective method of festival decoration. A great feature is made of the gallery over the chancel screen, and the rood-beam is a conspicuous and very handsome adornment to the sanctuary; but the brass grilles below in the screen itself are out of character, and quite disfigure the choir. It will be remembered that when we gave the previous illustrations of this church, to which reference has already been made, a curious and somewhat contentious correspondence took place which brought forth some admirable letters from the pen of the late John D. Sedding, who warmly, and very rightly, commended the originality and suitability of Mr. Gilbert Scott's design, although, perhaps, technically, exception might with some show of reason be taken against a few insignificant items of detail. The tower and spire, which some critics found fault with, has not been carried out, and the omission of this feature is possibly an advantage. Mr. Sedding's remarks will bear repetition after the lapse of twenty years, during which time he exhibited in his own works the principles which he admired so warmly when they were to be found in other men's designs, and his opinion, now that he has passed away, serves to re-echo the teachings of his master, the late George Edmund Street, whose principles were, in their turn, based upon the lead of Sir Gilbert Scott and Welby Pugin. The younger generation of Gothicists carried church development a stage further, and among these none with more success than Mr. G. G. Scott. Sedding thus commended what he called the "superficial qualities" of the design of St. Agnes, Kennington, which he specified as follows:—"1. A carefully thought-out plan of an English church suited to the exigencies of modern worship. 2. An entire mastery of the details and spirit of English Gothic, as manifested in ancient examples. 3. A simplicity and natural quaintness of treatment, the more valuable as it opposes the tricky picturesqueness and theatricality of the half-assimilated Gothic of much contemporary work. 4. That is is an independent effort, based on a period of English architecture almost wholly unrepresented in modern design. And let me add that the individual character and unmistakeable sincerity displayed in this design should merit the hearty approval of all well-wishers of the Gothic School of England."* Those who take an interest in church design, and have not yet seen this group of buildings, will find that a visit to Kennington will be well worth making for the purpose. We venture to think that the pulpit is hardly so successful as some other parts of the church and its furniture. The font cover is probably not yet finished. The façade of the vicarage facing the park is an extremely effective example of quiet and unassuming design.

LYDDINGTON BEDE HOUSE: PUGIN STUDENTSHIP DRAWINGS.

About three miles from Gretton is this prettiest of Rutlandshire villages. The Bede, or Almshouse, is charming in outline and detail, as well as colour, in lichened and ivied walls, of deep yellow and grey stone, and tiled roof. Originally a manor-house of the Bishops of Lincoln, it was founded as a bede-house by the First Earl of Exeter. The quaint wood cloister, or, more properly speaking, "verandah," on the other side, gives access by a staircase to the hall above, lit by the oriel and large windows seen in the sketch. These are still glazed with the old quarries of diamond shape, bearing devices of the rose and lily, with the mottoes "Delectare in Dno" and "Dns exaltatio mea." The very uncommon wood cornice and panelled ceiling of this room were added during the earlier half of the 16th century. R. Shekleton Balfour.

[We gave some other illustrations of this charming old bede-house, from the pencil of Mr. J. Alfred Gotch, F.S.A., in the Building News for August 18, 1882.—Ed.]

ST. ALBAN'S ABBEY, HERTS.

These sketches by Mr. F. G. Kitton appear in Mr. Chas. H. Ashdown's capital book, "St. Alban's: Historical and Picturesque," which we reviewed in our issue for March 23rd last. Mr. Kitton's drawings add greatly to the permanent value of that work. The upper view given on our accompanying plate shows the church from the N.E., with Lord Grimthorpe's masterpiece of design which he added in rebuilding the north transept. His transfigurations to the choir and Lady chapel have since been completed, and remain a monument to his taste and knowledge of architecture—qualifications which seem to afford his lordship much satisfaction, though no one of any repute in the art world has publicly confirmed this approval or condoned his productions. Mr. Kitton's sketch is rather too small to exactly define the detail of the new work. The second sketch shows the historic gateway to the west of the church, and once belonging to the old monastery.

HOUSE AT WALMER.

We illustrate this week, by perspective and ground and first-floor plans, a brick and tile-hung residence at Walmer, near Deal. Mr. Arthur Keen is the architect.

MEMORIAL TO THE LATE C. W. COPE, R.A.

This characteristic memorial is situated in Maidenhead Churchyard, and has been well executed in brown Portland stone by Messrs. Farmer and Brindley, from the refined and effective design of Mr. J. W. Simpson, architect, of London. The lettering and palm branch on the monolith shaft of the monument are in bronze, cast by Mr. H. J. Allen. The figures, flanking the base of the shaft of the cross, were modelled by Mr. Arthur Cope, the portrait painter, son of the late C. W. Cope, R.A., to whose memory this cross has been erected. It will be remembered that some of the frescoes which decorate the Houses of Parliament were painted by him. The drawing herewith reproduced was exhibited at the Royal Academy this year.

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The second of a series of fortnightly lectures, organised by the Art Galleries Trust of the Glasgow Corporation, was given on Saturday night by Mr. Alexander M'Gibbon, A.R.I.B.A., on "Gothic Architecture: its Place and Power," when the attendance was so large that many were unable to obtain admittance to the hall in the Corporation Art Galleries, where the lecture was delivered.

The Lord Bishop of London visited Finsbury Park on Saturday for the purpose of consecrating the new church of St. Olave's, Woodberry Down, which has just been erected from the proceeds of the sale of the site of St. Olave's, Old Jewry. The pulpit and font have been brought from the old church, and the communion plate from the church of St. Margaret's, Lothbury.

For some years past the Board of Trade have been losing the foreshore between Dover and St. Margaret's Bay, owing to the encroachment of the sea, and the lighthouses and other buildings on the cliff are likely to become endangered. It is proposed to let the cliffs be escarped by the convicts still at Dover, and the town will find paid labour to reclaim about 300ft. of land under the whole three miles of cliff.

An inquiry was held at the Public Hall, Erdington, on Wednesday week, by Colonel Ducat, R.E., with respect to an application made by the Aston rural sanitary authority to the Local Government Board to sanction a loan of £1,150 for extension of sewers within the district. The engineer, Mr. J. E. Wilcox, C.E., of Birmingham, explained the plans.

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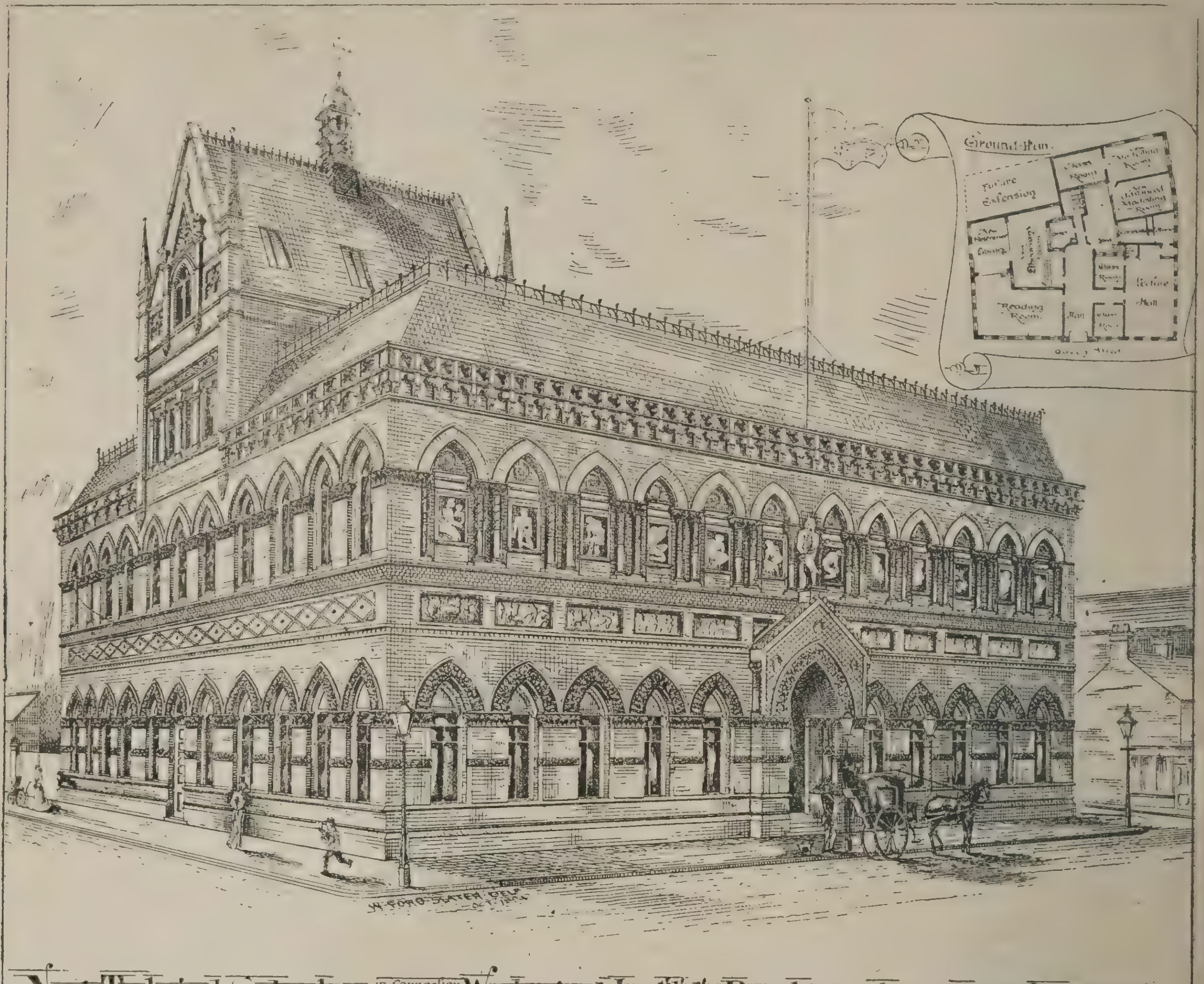
* See Building News, Aug. 13, 1875.



New Technical Schools &c in connection with the Wedgwood Institute Burslem : Ford & Slater Architects

WEDGWOOD INSTITUTE, BURSLEM.

THE Wedgwood Institute, the additions to which were formally opened on the 15th ult. by the Princess Louise, is a commanding edifice, with its principal façade to Queen-street, which is near the centre of the town, and the foundation-stone was laid on Oct. 26, 1863, by the Right Hon. W. E. Gladstone. The style of architecture adopted is emblematical of the arts of the district, and illustrative of the use of terracotta, and in the Pointed style based upon those types of Ceramic architecture so prevalent in Northern Italy during the 15th and 16th centuries. The building, previous to the recent additions, comprised a school of art, a laboratory, and a free public reading-room and lending library, the Free Libraries Act having been adopted by Burslem, the first of the Pottery towns. On entering the building from the main entrance in Queen-street, on the ground floor on the left is a large reading-room, whilst on the right is a lecture-hall with two classrooms, and from the entrance vestibule is seen the grand staircase leading to the upper floors. The first floor was devoted to art classrooms and a museum, whilst the second floor was devoted to science classes. The important additions to the Institute, which have been designed by and carried out under the superintendence of Messrs. Ford and Slater, architects, Burslem, comprise two blocks of buildings, and these are the buildings the opening of which was the occasion of the visit of her Royal Highness. One block of buildings is on the Baker-street side, and is three stories in height, with basement in addition. The ground floor comprises two large modelling rooms. On the first floor is an antique classroom, above which is a large laboratory, in connection with which is a lecture theatre, classrooms, balance-room, and master's room.

Several years ago, owing to the liberality of Mr. W. Woodall, M.P., a museum was erected at the rear of the Institute, but this has been removed to another position, and the building is now utilised partly in connection with the school of art, and partly by the Science Department. The second block of building referred to is on the Brickhouse-street side, and is four stories in height, and this, on the ground floor, provides a large reference library and an extensive department for the librarian, and the reference library is so arranged as to be in conjunction with the reading-room. On the first floor is a large classroom for elementary art, whilst on the second floor are provided two classrooms for technical instruction, and on the top floor is a gymnasium, or it might be used in conjunction with the technical schools.

On the Baker-street side the architects have purposely had regard to plainness of design, inasmuch as this portion of the building is somewhat excluded from view; but as regards the elevation in Brickhouse-street, this has a very imposing and pleasing effect. The elevation is carried out to accord with the original part of the building so far as its height extends; but in order to gain as much room as possible, this addition to the Institute is carried up considerably higher than the original building, and in consequence of the additional height so given to this part of the building, it forms a most distinctive and bold feature from many points of the town.

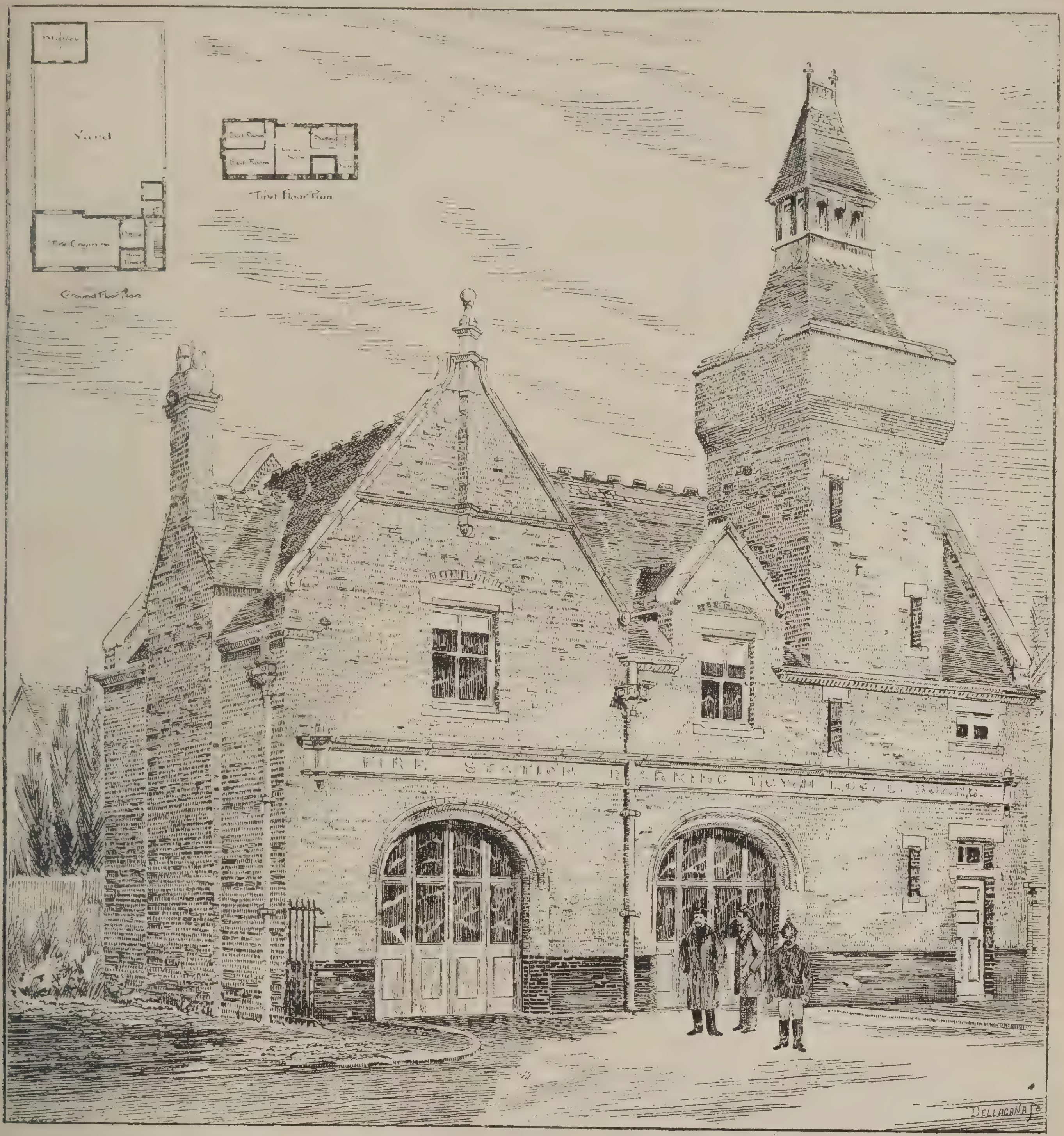
The walls of the buildings throughout are of red brick, with strings and dressings of terracotta, the floors being of fireproof construction of tiles laid on concrete, resting on iron girders. The various rooms are warmed by hot water on the low-pressure system.

The building contracts have been carried out by Mr. W. Grant and Mr. W. Cooke, builders, of Burslem. The cost of the additional buildings, including fittings and heating, including also several alterations, and the redecorating of the original building, is upwards of £5,000, the bulk of which is defrayed by voluntary donations intended to commemorate the Jubilee of the Queen.

* * *

A stained-glass window has been placed in St. Luke's Church, Southampton, as a memorial to the late Captain J. H. Buckler, of the Royal Mail Steam Packet Co. The work was intrusted to Mr. C. E. Kempe, of Nottingham-place, London. The window consists of two lights, with a circular light at the head. In the two principal lights are the figures of St. Peter and St. Stephen. Beneath these figures are allegorical representations of "Faith" and "Hope." In the circular light is an angel bearing a scroll. On the wall under the window is a memorial brass, by Messrs. Hart, Son, Peard, and Co., Limited, London, bearing an inscription.

At the last meeting of the Gravesend School Board it was decided to give notice to Mr. Rayfield, of Northfleet. the contractor for the schools in Wrotham-road, of the intention of the board to enforce the full penalty of £20 a week, due under the contract, for the five months' delay in the completion of the buildings. The contract was taken by Mr. Rayfield at £6,888, the buildings to be completed within six months, and the clerk mentioned that the builder demurred to signing the contract at first because he considered the time was not sufficient, but he gave in on the understanding that clemency would be extended to him. Mr. Stephens, a member of the board, said it was always apparent that sufficient men were not employed, owing to the fact that Northfleet men were given the preference. Mr. Rayfield would not employ Gravesend men, and as a Gravesender, he did not think Mr. Rayfield could expect much clemency from the board.



BARKING·TOWN L B FIRE STATION CHAS J DAWSON·F.R.I.B.A ARCHITECT

CONCRETE BRIDGE OVER THE DANUBE.

A CONCRETE bridge has been constructed over the Danube at Munderkingen, Germany, with a single segmental arch of 164ft. span, and 24·6ft. wide, an illustration of which appears in the *Engineering Record*. The abutments are of concrete on piles at an angle of 15° with the vertical, and are of considerable width, to equalise the pressure over the piles. A pressure of 15 tons per square foot is obtained on the rock abutment on one side, while on the other the pressure is less than 3 tons per square foot, this being on gravel and piles. To increase the security, joints were made at each abutment and at the crown; these joints allow the crown to rise and sink without causing cracks. The arch has a rise of 16ft. 4in. in the centre. Calculations were made for a live load of 82lb. per square foot, and the thickness at crown is 3·28ft., and 3·61ft. at the abutments. The arch curve was determined experimentally, and is approximately the line of pressure under full loads. On the left side, the arch has a radius of 213ft., on the other half, two-thirds of the soffit has a radius of 230ft., and the remainder 151ft. From the description, it will be seen that the arch forms two rigid segments of concrete, jointed or hinged at the abutments and crown, and these joints have abutting surfaces of steel in 12 separate parts in the width of bridge. These devices distribute the abutting pressure on steel bars over the concrete section of arch. The Portland cement used came from Ehingen Blaubeuren, and was of a fineness to pass a 5,800-mesh sieve.

* * *

FIRE-STATION, BARKING.

THIS building forms one of the group of buildings recently erected by the Barking Town Local Board, and referred to in our issue of October 19th. The accommodation is for two engines, hose-cart, &c., an office for the use of the captain, with suitable residence on the first floor for a resident fireman. The hose-tower shown in the drawing is fitted inside the lantern-roof with gearing for hoisting the fire-hose. The walls of ground floor are faced internally with salt glazed bricks; the external walls are faced with pressed red bricks, and relieved with Monk's Park stone, the roof being covered with Broseley plain tiles. In the rear of the building are a spacious paved yard, and stabling for two horses. The contractors are Messrs. Kirk and Randall, of Woolwich, and the architect Mr. C. J. Dawson, F.R.I.B.A., surveyor to the local board.

* * *

At the quarterly meeting of the Hants county council it was reported that good progress was being made by the contractors with the county offices at Winchester. Mr. Robinson is the architect, and Sir Arthur W. Blomfield, A.R.A., the consulting architect.

The Duchess of Teck opened, on Saturday, the building erected at Bethnal Green for the Oxford House Club, from designs by Mr. Hale. A lecture and entertainment hall is on the ground floor, while above are a library and *café*. On the second floor is the billiard-room, in which are three tables and three bagatelle boards, while the top floor is divided into committee and classrooms and a card-room.

WAYSIDE NOTES.

One's patience is taxed by the vagaries brought together and described as "Modern Pictures" by the New English Art Club. Their thirteenth show has just been opened in the Dudley Gallery; but it is for the most part a very tame and tasteless affair, devoid of humour, and characterless as a whole from an art point of view, though I am quite well able to see an amount of tricky cleverness in many queer things there, and real merit in a very few others. I am not surprised to note how the exhibition is becoming impoverished and lacking in skilled productions, for the cult of the whole thing is unhealthy and unnatural, with no manliness or honesty of purpose about it. Here and there a true piece of artistic work creeps in, and shines in merit midst the follies with which the room is garnished in its ghastly gasconade, loudly calling for notice in bedaubed vulgarity, displaying often, and by preference, the most commonplace of subjects. Mr. Will Rothenstein sends two large frames of this kind. His "Porphyria" (price £95) shows a fully-developed female wearing the ugly costume of the early Victorian period, with a low bodice to display amply the Dutch-like ideal of beauty, in a white frock, well beflowered, and trimmed with magenta pink, seated on a red-and-white striped sofa. His next exhibit shows two "Coster Girls" (£40) by the river-side, brutal in their realism, but not badly painted in an unsavoury manner, besmirched with the rough morality of the doss-house. Cast in the same low type of unwholesome association is Mr. W. Sickert's crude, inarticulate rendering of a serio-comic "turn," with limelight glare, at "Sam Collins's," Islington (£52), made more racy by colour daubed on to the frame. It is impossible to conceive anyone desiring to possess such a production. The same exhibitor's "l'Hotel Royal," Dieppe, is another unaccountably ugly subject, knocked off in the paint-pot style, and called "impressionism."

The best picture in the gallery, to my mind, is Mr. Wilson Steer's "Japanese Gown," in which a tall, graceful female—not, it is true, remarkable for beauty—stands in front of a cheval glass admiring her Oriental mauve dress, richly brocaded and splashed with patternings of black and red. The heavy tresses of her abundant hair partly shade the lady's face as she turns in graceful attitude, bespeaking movement, and exhibiting an ease of handling on the part of the painter which has secured a brilliant effect without needless effort. The big canvas by M. Paul Helleu, showing "La Fontaine de Latone, Versailles," at the end of the room, is singularly ineffective, and hardly realises, in its all-over drenching of paint, any idea of water in action. The picture exhibits an entire absence of concentration, and shows, too, a lack of knowledge of architecture. "Jenkins, fruiterer," is the name of a gas-lighted street view, probably in Hammersmith Broadway, by Mr. Francis Forster, which is in every way a direct contrast to the last-named picture. The subject is ugly enough; but as a true impression, brilliant in its luminosity and concentrated in intention, the exhibit deserves warm praise. Mr. C. W. Furse aims at daylight effect in his able portrait of "Lord Monteagle," but the result is elementary and ungainly, and the same remark applies to "Mrs. Walter Sickert," painted by Mr. J. E. Blanche; but then some people seem to be nothing if they are not queer, as if that could be the chief object of life. Cromer, always a favourite subject, makes a gay evening study by Mr. J. L. Henry, red in sunset glow, with the church tower tapering off in yellow. Mr. R. Anning Bell sends a coloured terracotta in red called "Helena of London"; and also in a frame are some clever enamels by Edith and Nelson Dawson set in *repoussé* metal frames, oddly designed and jewel-like in colour. Mr. E. Friant's drawing of Mr. Will Rothenstein is an honest piece of work, and I daresay a good portrait; and near it hangs a capital still-life study in red of a table with vases, by Miss Florence Ayling. Mr. W. Estall's pastel of an old horse (87) merits praise; but I do not like Mr. C. E. Holloway's widened river scene called "Cheyne Walk"—the details seem so untrue. "Six-o'clock Tea," by Mr. A. J. Finberg, shows a very plain person in a garden on a summer's afternoon, and another odd single figure is "Mr. W. Llewellyn Hacon," painted on a pier by Mr. Will Rothenstein, and making his subject a regular guy.

The disappearance of Claridge's hotel is about to be followed by that of another famous old London inn, the White Horse, in Fetter-lane, which is also going the way of all earthly things. If the reputation of Claridge's was connected with the 19th century, that of the famous Fetter-lane inn is identified with the 18th. It was the house of great men, too, in its palmy days, but these were long ago; and it has come down to such an extent that the wanderer in search of a night's lodging could get accommodated in one of its many bedrooms for sixpence. Yet, when John Scott, who afterwards became known in political and legal history as Lord Eldon, first visited London, he put up at this antique hostelry. It retained its standing till the close of the coaching days, which railways have brought to an end. From being a hostelry where nearly a score of coaches departed or arrived daily, with country squires, parsons, and people of all degrees, it has subsided into a very humble eating-house, where the hungry may be fed at a cheap rate.

The public are keeping very shy of all investments in houses or in land, and week after week in London, nothing almost is recorded in the estate market but the putting up of property for sale, and its failing to find purchasers. Out of a dozen properties exposed for sale one day last week only one house in London was sold. It is not the Budget only which may have contributed to this result, nor even the policy of the County Council. The chief cause is more likely to be the apprehension that the political drift of the times will throw more and more largely on such investments a share of the growing public burdens; but taking all three causes into consideration, it would seem to be felt that there are better outlets for capital than are presented by either houses or land.

Mrs. Lea Merritt's recent letter in the daily papers describing the wall paintings on Keim's process she has lately carried out in a mission church at Blackheath, Surrey, has given rise to a long correspondence on the general subject of frescoes. Professor W. B. Richmond, A.R.A., writes that the process for wall painting adopted by Mrs. Merritt is in no sense "fresco." Fresco painting strictly means that pigments mixed with water are laid into a fresh wet ground composed of slaked lime mixed with river sand or marble dust. The white pigment used in fresco is lime. All colours used in fresco should, if properly applied, become incorporated with their ground. They are protected and held together by crystals which, as the lime sets, form around them. There is no other fixing body in fresco than lime. The Keim process is wholly different from beginning to end. The durability of all wall painting, in whatever medium executed, whether it be size, egg, or even oil, depends upon the absolute dryness of the wall upon which the ground for painting is applied. Professor Richmond adds:—"If architects will give us dry walls, so constructed that damp neither rises, falls, nor penetrates, we can make use again of all the ancient methods of wall painting with perfect security. If science will give us pure air in London those methods can be used there. Until that is accomplished we must content ourselves with using our perfectly permanent processes in the country, away from acid-laden skies."

A recent case, reported elsewhere, in which Mr. Gundry, a district surveyor for Paddington, recovered full fees for surveying a dangerous cornice to a terrace of houses, has led to a correspondence in one of the daily papers on the high fees exacted by these officials for repairs. A firm of contractors gives an instance where £2 12s. was charged for repairs costing £5, which were carried out without delay, and in another case the fees for pointing a chimney stack in a Norwood house came to 32s. 9d., equalling the builder's charges. In both these cases the bill was accompanied by a notice stating that, if not paid within seven days, a summons would be taken out under the Metropolitan Buildings Act. It was such cases as these that helped to raise the storm of discontent that five years ago swept away the old Metropolitan Board of Works.

Mr. William Duncan, solicitor, of 50, Constitution-street, Leith, sends me a small contrivance he has patented which is designed to overcome the great objection to the incandescent gas-light —viz., the frequent breakage of the mantle when the chimney is removed or replaced. As I know from experience, the mantle is very delicate, so much so, that I had to abandon the use of the light in my own office, and it very often happens that, as the funnel is being removed before cleaning, and replaced after cleaning, it touches the mantle and breaks it to pieces. As each mantle costs 1s. 3d., and the funnels require cleaning every fortnight, the cost of the light soon mounts up, especially where several burners are in use. Mr. William Duncan claims that his guard absolutely prevents the breakage, and as it is only used when the funnel requires cleaning, and is detachable, one is sufficient for any number of burners. The guard costs 1s., and the wholesale agent is Mr. Thomas Ferguson, 17, West Maitland-street, Edinburgh.

OBITUARY.

Mr. James Keys Wilson, of Cincinnati, one of the oldest Fellows of the American Institute of Architects, died a fortnight since, aged 66 years. Mr. Wilson was born in Cincinnati, and from 1855 to 1875 designed a very large number of buildings there, among them being the Sinton Building, the Shoenberger Mansion, the Jewish Synagogue on Eighth-street, the Mitchel Building, and many other business structures and private houses. He was the first President of the Cincinnati Chapter of the Institute, and, a few years ago, was one of the most prominent candidates for the appointment of supervising architect of the U.S.A. Treasury Department.

The death has occurred, with some suddenness, at the age of 46, of Mr. Hugh Mackintosh, a well-known builder in Edinburgh. He had been ailing for some time, but the end came unexpectedly on Saturday morning, some twelve hours after his re-election for the third time as a member of the Edinburgh Dean of Guild Court. A native of Nairn, he migrated to Edinburgh about 25 years ago, and in a comparatively short time, by his enterprise and energy, reared a successful business. It was to him and to his partner, Mr. Galloway, that the public were indebted for the opening up of the Warrender Park district in that city. He was likewise concerned in the erection of many large public buildings in the city. The school board schools at Warrender Park, Lothian-road, South Bridge, and Abbeyhill were erected by him, as were also the offices of the St. Cuthbert's parochial board in Castle-terrace; and at the time of his death he was engaged in the building of the Sick Children's Hospital. He was a very active member of the Dean of Guild Court, where his practical knowledge gave his services a special value. He was unmarried.

CHIPS.

Mrs. Lancaster, wife of Mr. C. H. Lancaster, architect and surveyor, Liverpool, died on Tuesday while under an anæsthetic in that city at a dentist's.

At the annual meeting of the dock commissioners for Leith, held on Friday, it was reported that the value of the work done at the new dock works by the contractor, Mr. John Best, was £18,330.

The new premises of the Scottish Arts Club, at 24, Rutland-square, Edinburgh, built from designs by Mr. Dunn, were formally opened on Friday afternoon by Mr. Hall Caine. The proceedings took the form of a reception by the president (Sir George Reid, P.R.S.A.) and the council of the club.

On Wednesday week Mr. Thomas Codrington, M.Inst.C.E., inspector under the Local Government Board, held an inquiry at the Guildhall, Rochester, as to the application of the Corporation to the Local Government Board for sanction to borrow £3,250 for the carrying out of works of storm-water drainage of Strood and Rochester.

During the erection of an organ chamber adjoining the south aisle of the parish church of Harrow-on-the-Hill, a work in process under Mr. J. Oldrid Scott, F.S.A., a series of Early English lancet windows, which formed the original lights to the chancel on that side, have been disclosed. They were single lights, each having an interior breadth of about 5ft. from jamb to jamb, the breadth of the light itself being about 18in. or 20in. The splays, which are deep, were from the first covered with plaster, and were decorated in colour; some of this decoration is still to be seen. The height of the spring of the arch above the sill is about 12ft. 6in., and that of the apex of the arch about 15ft. Considerable remains, sufficient for complete restoration, have been found of three of the windows, and there were probably two more. An Early English window has also been discovered in the east wall of the south transept.

Building Intelligence.

Dunfermline.—The memorial stone of St. Margaret's Roman Catholic Church, now in course of erection in Holyrood-place, Dunfermline, will be laid to-day (Friday). The church is from plans by Dr. Rowand Anderson, of Edinburgh. The plan is cruciform, with apsidal east end, the greatest length being 194ft. and the extreme breadth at the transepts 75ft. The nave has five bays, with two aisles, and the choir has three bays, two of which open into side chapels. The tower at the transept crossing is finished internally with a dome. The entrance south porch, 24ft.sq. internally, is finished with a groined roof. It is intended to decorate the apse and the dome of the transept with mosaics, and in the apse and transepts the floors will be laid with marble and tiles. Immediately below the dome will be the baldacchino. Over the entrance to the nave will be the singers, and provision is made for an organ over the east chapel in the choir. The exterior shows a building of the Transitional style of the 12th century, built with natural-faced rubble. The nave will have a series of five circular-headed windows in the clerestory, alternating with buttresses of hewn stone, corresponding with the interior bays. The square tower at the transept crossing, 108ft. high, has two double round-headed windows on each face. The porch shows an open doorway flanked by turretted angle buttresses. Entered from the porch on the west side is a circular bell-tower. It fills the recess between the nave and the porch, has a diameter of 28ft., tapering slightly to the top, and is 174ft. high. The lower stage is a baptistery. Above this, for 105ft., the main body of the tower is plain, and the upper part, which is arcaded in two stages supported on a band of sculptured figures, is open. The tower is finished with a conical stone roof. Only the nave is being built; but the total cost, when the building is finished, will be £30,000.

Edinburgh.—The new Craig House Insane Asylum was opened last week by the Duke and Duchess of Buccleugh. The mansion and estate were bought in 1878, and the new building was begun five years ago; the grounds cover 61 acres, and adjoin the 50 acres of land surrounding the West Asylum. The building is French Renaissance in style, and has been erected from designs by Messrs. Sydney Mitchell and Wilson, of Edinburgh. It represents the eastern half of the complete scheme, and contains 75 beds. The asylum building extends east and west for a distance of 360ft., and from north to south, through the central block, 250ft. The ground plan shows a building of the "—E" form, the open face being towards the south. The chief entrance is placed in the north-east angle. The great hall in the central block is 63ft. by 33ft. 6in., and 45ft. high to the crown of its vaulted ceiling. It is panelled in oak to a height of 12ft., the walls above being divided by pilasters into six vaulted bays. Artificially the hall, as well as all the rest of the building, is lighted with electric light. On the south side are two large rooms, a drawing-room, 40ft. by 22ft., and 15ft. high, and a billiard-room, 30ft. by 22ft. The dining-rooms, five in number, and situated on the north side of the great hall, vary in size from 28ft. by 20ft. to 30ft. by 35ft. Below the dining-halls is a suite of kitchens, sculleries, and other offices. Further down the northern slope of the hill is a building for the engines and dynamos, and at a lower level are six steam boilers for supplying steam and hot water. The main building is divided into ten separate sections by stone walls carried through the roofs in order to prevent the spread of fire. Three detached villas and two hospitals have been erected as adjuncts to the main building. The accepted tenders for the asylum amounted to £65,494 6s. 5d., exclusive of furnishing and other accessories, which will run up the ultimate cost to £110,000. The contractor for the whole masonry and carpentry work was Mr. John Lownie, builder, Edinburgh. The clerk of works was Mr. Perry, and Mr. Bryson was consulting electrical engineer.

Glasgow.—A new sanitary washhouse and disinfecting station for the northern district of Glasgow was opened last week by Lord Provost Bell. They are erected in the Scottish Baronial style of architecture, of red sandstone, and have a frontage of over 200ft., standing 30ft. from the public road. The works have been designed and erected under the superintendence of Mr. Peter Fife, sanitary inspector for the city.

Morley, near Leeds.—The top stone of the tower of the new town-hall was laid on Friday, Nov. 9th. The stonework of the tower is about 120ft., and the dome, turret, and terminal will be 30ft., making a total of 150ft. It is expected that the huge building, which includes town hall, municipal buildings, borough court, police department, cells, and electric station, will be opened the early part of next summer. The architects are Messrs. Holtom and Fox, of Dewsbury. Mr. Henry Clarke is the clerk of works, and Mr. William Bines contractor's manager.

Stratford-on-Avon.—The new infectious diseases hospital in the Birmingham-road was opened on the 8th inst. It consists of five separate blocks. These are an administrative block, suite of offices, embracing disinfector, washing-house, laundry, mortuary, and discharging rooms; scarlet-fever pavilion block, diphtheria block, and typhoid, quarantine, or private patients' block. These blocks occupy three sides of a quadrilateral, all isolated and separated by a 40ft. zone from the boundary fence. The scarlet-fever wards contain 156sup.ft. of floor space, and 2,028c.ft. per patient. The other ward blocks contain 216sup.ft. and 2,700c.ft. per patient. In each ward is a double Shorland's Manchester warm-air grate. The walls are built hollow, and are plastered internally with adamantine cement plaster, finished with distemper. The floors are of narrow boarded pitch-pine, waxed and polished. The hot-water is generated by gas boilers of the multitubular description, placed in the passages. Mr. H. A. Campbell, the borough surveyor, was the architect, and Mr. Whateley the builder. The total cost has been £5,640.

CHIPS.

The Council of the Property Protection Society, in their fourth annual report, state that the Society had continued to make satisfactory progress, and that its efforts for the protection of proprietary rights have been maintained and extended. Among the public Bills opposed by the Society during last session were the Industrial and Provident Societies Bill, the Land Values Bill, the Leaseholders Bill, the Occupying Tenants Enfranchisement Bill, the Places of Worship Bill, the Smaller Dwellings (Scotland) Bill, and the Workmen's Houses Tenure Bill.

The foundation-stones of a new church in Davies-street, Oxford-street, to be called the Church of St. Anselm, and designed to take the place of the Hanover Chapel, Regent-street, were laid last week by the Duke and Duchess of Westminster. The former has given the site for the church and vicarage, and the building, to cost £20,000, is to seat 800 people. To provide the funds, Hanover Chapel, one of Professor Cockerell's best works, is to be sold and demolished, under a private Act passed last year.

The magistrates at Stratford last week, in compliance with an application by the Tottenham and Forest Gate Railway Company, appointed Mr. Alfred Savill, of Kingwell, as valuer for a small piece of land in Suffolk Park-road, Walthamstow. The railway company have taken possession of the land, for which no owner has been found. Its value will be deposited in a bank, to await events.

Extensive alterations have just been completed for a firm of drapers in Wine-street, Bristol, the shop having been extended to a frontage in St. Mary-le-Port-street, a total depth of 175ft. Mr. Herbert J. Jones, M.S.A., Bridge-street, Bristol, was the architect, and Mr. T. R. Wilkins, of the same city, the contractor.

At the Bristol Docks extension at Avonmouth a new hydraulic crane has just been erected. It has been supplied by Sir W. G. Armstrong, Mitchell, and Co., of Newcastle, and is capable of coaling a vessel at the rate of from 250 to 300 tons per hour. The crane is movable, running along rails placed parallel to the edge of the dock. The base is arched, and rails are laid between, so that a train can run along underneath. Besides being available for coaling purposes, the crane can be used for lifting any load up to 30 tons in weight. The cost was £4,700. The crane is 69ft. above the coping of the dock wall to centre of jib head, and weighs 160 tons.

The large block of buildings forming the Bishopsgate Institute, situate in Bishopsgate-street Without and Brushfield-street, will be opened by the Earl of Rosebery on Saturday in next week, the 24th inst. The buildings, which comprise a hall, library, and reading-rooms, have been erected at a cost, including the site, of about £70,000. The hall will seat 500 persons. Mr. C. Harrison Townsend, F.R.I.B.A., is the architect, and the contract was taken in May, 1893, by Mr. J. T. Chappell.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Leeds and Yorkshire Architectural Society.—The first ordinary meeting of the session of this society took place on Monday evening at the Mechanics' Institute, Cookridge-street. The president, Mr. E. J. Dodgshun, F.R.I.B.A., delivered the opening address. The number of members on the roll was, he said, the same as last session. Strength lay in unity. Could they truthfully say they were honestly united in the wish for the welfare of the profession, or were they more anxious about individual success as business men? If not the latter, why was it that so comparatively few of the architects in the district were attached to that society? The only reason he could give was that they were not sufficiently interested to join. If they were united, their endeavours would have more weight, and they would most undeniably advance their interests. He next referred to the building by-laws committee of the corporation, and their methods of passing plans. It was positively degrading to be supervised by a set of men—the sub-inspectors—who could not possibly have the experience they, as architects, were supposed to possess, and to have to explain to such how they proposed to carry a wall, ventilate a room, or lay a drain. Why should there exist a building by-laws committee at all? Would it not be preferable to dispense with the committee, and appoint district surveyors, whose duty it should be to see that the laws were not violated or infringed? The president said he thought the city engineer went beyond what should be required of him when he undertook the designing of buildings of an architectural character, such as lodges, park gates, laying-out parks, and so forth. The city engineer had quite enough to do in his own legitimate line, without being expected to make designs for architectural works, and it would be to the city's advantage to appoint an architect for work of that description. The new fish-market was ample proof of what he had stated.

Sheffield Society of Architects and Surveyors.—The ordinary monthly meeting of the members of this society was held on Tuesday evening, when there was a good attendance of members. The chair was occupied by Mr. E. M. Gibbs, the President, who delivered an address on the recent events connected with the profession in the city. Mr. Hugh Stannus gave a lecture on "The Three Greek Orders: Doric, Ionic, and Corinthian." It was announced that Professor Anderson had promised to give the concluding lecture of the session in March, which fills up the list.

The Surveyors' Institution: Junior Meetings.—The council have awarded the prize offered by Mr. T. Chatfeild Clarke (the president) to Mr. Harold Castle, for his paper entitled "French Light on the English Land Question." The fellowing papers are honourably mentioned:—"Fen Farming in 1894," by Mr. S. Stevens, and "Ventilation," by Mr. E. W. Hooper. The dates of the four meetings as fixed by the council for the session are:—1. Monday next, the 19th inst., at 7 p.m. Paper entitled "French Light on the English Land Question," by Mr. Harold Castle. 2. 14th Jan., 1895, "Fen Farming in 1894," by Mr. S. Stevens. 3. 11th March, "Ventilation," by Mr. E. W. Hooper. 4. 6th May, "Realisation of Landed Estates," by Mr. J. W. Tyler.

At the National Schools, Esholt, Mr. George Waller Wilcocks, M.Inst.C.E., one of the Local Government Board's Inspectors, held an inquiry, on Tuesday, into the application of the Wharfedale rural sanitary authority for sanction to borrow £2,500 for works of sewerage and sewage-disposal for the township of Esholt.

Yesterday (Thursday) the Bishop of Durham dedicated the new portion of the Church of Holy Trinity, Gateshead. Originally the chapel for the Hospital of St. Edmund, Bishop and Confessor, it was rebuilt in 1244. After the surrender to the king's commissioners in 1540, the chapel was allowed to fall into disuse, and was never again used for religious services until restored by Cuthbert Ellison in 1837. The recent additions include a new nave and aisle, erected on the site of a school which adjoined, and which has been rebuilt at the east end of the church. The cost of the work has been £5,100, the architect being Mr. Stephen Piper, M.S.A., of Westgate-road, Newcastle-on-Tyne; the contractors Messrs. Anderson and Slater, of Newcastle. Mr. Richley was the clerk of works. Among the special gifts are a stained-glass window, pulpit, brass lectern, choir stalls, &c.

COMPETITIONS.

Bury, Lancs.—In a limited competition for a new chapel and school to be erected in Walmersley-road, Bury, for the United Methodist Free Churches, the designs of Mr. Geo. E. Bolshaw, of Lord-street, Southport, and Victoria-street, Crewe, have been selected, and he has been instructed to carry out the work.

Kilkenny.—In the recent competition for a new Town-hall for Kilkenny, the design of Mr. J. Kelly Freeman, M.R.I.A.I., Sun Chambers, Trinity-street, Dublin, has been selected.

Morley.—For the new board schools to be erected in High-street, Messrs. Holtom and Fox, Dewsbury, are the architects selected by the board, out of 24 competitors from different parts of the country, to carry out the above.

CHIPS.

The town clerk of Bath on Tuesday received a letter from the Local Government Board authorising the raising of a loan of £30,000 for the pump-room annexe.

At Bridge-street Independent Chapel, Walsall, on Tuesday, memorial stones were laid of a new front which is to be put to the old building, erected in 1791. The plans have been prepared by Mr. McConnall, of the firm of Messrs. Bailey and McConnall, and embrace the renovation of the roof; a new front, which will be brought forward 8ft.; three front doors, with extra side doors for the galleries; a large vestibule, and extra seating accommodation in the gallery. The tender of Mr. W. Kendrick, Walsall, has been accepted for the works at £1,800.

The report of the Blackpool Tower Company on the first year's operations has exceeded the most sanguine expectations. The net receipts for the last eleven months are £12,389 14s. 9d., and of this £5,940 7s. 11d. is available as balance. Dividends are declared of 6 per cent. on preferred ordinary shares, and 4 per cent. on the ordinary shares, and £500 is set aside for the reserve fund.

Mr. George Fosbery Lyster, of Liverpool, and of Plas Issa, Llangyntrafel, Ruthin, is amongst the gentlemen named for appointment as High Sheriff of Denbighshire. He has long been the engineer of the Mersey Docks and Harbour Board.

Mr. Thomas Fenwick Hedley, a well-known rating arbitrator and valuer, died at his residence, 12, Park-place, Sunderland, on Tuesday, aged 73 years. Mr. Hedley's great familiarity with the law and practice of rating led to many demands for his services by unions and parishes throughout the country, and the High Courts referred to him many cases for arbitration. This work led him to devote himself to valuation and arbitration. In this business some of his sons joined him.

The opening meeting of the winter session of the Northern Architectural Association was held at the Art Gallery, Newcastle-on-Tyne, on Wednesday evening, when the president (Mr. Jos. Oswald, F.R.I.B.A.) delivered his inaugural address.

The ceremony of laying the memorial stone of a new wing to St. Clare's (R.C.) girls' orphanage at Pantasaph was performed on Monday, in the presence of the Bishop, the Right Rev. Dr. Knight. The addition will involve an outlay of over £2,000. The contractor is Mr. W. Henley, of Salford.

The foundation-stone of a new church of All Hallows has been laid at Higher Kew, Cornwall, by Lady Falmouth. The old church, built ninety years ago, was so poorly constructed and ugly that it has been demolished, and will be replaced by one designed by Mr. G. H. Fellowes Prynne, and Perpendicular in style. It will consist of a nave 170ft. by 21ft. 8in., a chancel 30ft. 6in. deep and 21ft. 8in. wide, two vestries, porch, and tower surmounted by copper-covered spire. The church will seat 380 people, and will cost £4,600. Mr. A. Carkeek is the builder.

The Mersey Docks and Harbour Board have approved of a recommendation of the Docks and Quays Committee to establish lairages and to build a floating landing-stage at Seacombe for the accommodation of foreign cattle at an expenditure of £400,000.

The reopening, after restoration, of the parish church of Ravenfield, near Rotherham, took place on Friday. The old, straight-backed pews have been replaced by open benches; carved oak choir-stalls have been provided, and a new carved oak lectern and reredos added. In the latter has been placed an old painting representing the Annunciation, formerly in the roof of the chancel.

Colonel Hasted, R.E., an inspector of the Local Government Board, held an inquiry at Taunton on Tuesday, in reference to an application from the town council for permission to borrow £5,000 for the purpose of electric light extension.

Correspondence.

THE SOCIETY OF ARCHITECTS' EXAMINATION.

To the Editor of the Building News.

Sir,—I am afraid, from his letter in your last issue, that Mr. W. H. Seth-Smith must have entirely misconstrned the intention of the examination which the Society of Architects has now decided to institute as antecedent to membership, to come into force in November, 1896; and it is the more strange that he should ventilate his misconstruction in the public Press, as, being a Past President, and therefore having a seat on the Council, he need only have attended the Council meetings when the matter was under discussion, to have made himself conversant with every aspect of it.

It goes without saying that no professional body of architects can claim that its entrance examinations, imposed in self-defence, to keep the unworthy out of its own ranks, shall be "regarded as constituting a test of qualification to practise architecture," so long as it has not the right to prohibit practice to those who have not passed such examinations. Such right can only be obtained by Act of Parliament. The well-known Registration Bill would, if passed, secure this to the Institute which has consistently opposed it, and leave in the cold the Society which has as consistently supported it. For years the Institute has been in a logically false position in opposing the Bill and at the same time examining for its own Associateship, and the Society has been equally illogically placed in supporting the Bill and admitting to membership without examination. This false position the Society now escapes from.

Further than this, it has been announced very definitely that when the Registration Bill passes into law, as it must do sooner or later, and may do at almost any time, the Institute will refuse to take the position of examining body accorded to it, whether from pique, or as a last endeavour to wreck the working of the measure, is not stated. Of course, such an eventuality is carefully provided for; but it will then certainly expedite and simplify matters, if, when this happens, there be another examining body in existence ready to take up the work. It will be two years yet before this will be the case, and if the Bill should happen to pass into law meanwhile, I shall look upon it as a very bad thing for the Society, and shall in so far regret it, anxious as I am that this much-needed measure should be pushed through.

The Society is, therefore, acting entirely in self-defence to raise the standard of its membership, and to avoid extinction on the passing of the Registration Bill. For two years yet, membership can be obtained by nomination and the production of photographs and drawings of satisfactorily executed works; but at the end of that time a closer barrier will be set up, in accordance with the resolution passed at the recent annual meeting.—I am, &c., G. A. T. Middleton.

THE SOCIETY OF ARCHITECTS.

Sir,—I did not have the pleasure of listening to the presidential address of Mr. Hamilton last evening; but I was delighted to see in the report which appeared in the *Times* this morning the following words:—"He (the President) urged the limitation of architectural practice as much as possible to what was certainly the main province of the architect—*the designing and superintending the erection of buildings*."

Let the Society of Architects follow up, in every possible way, the excellent advice of its President. Let them educate the public to understand that its interests can only be thoroughly protected when the real functions of the architect are brought into play, and that to surrender all questions of construction, materials, superintendence, and sanitation to others, whilst the so-called *architect* is devoting himself to carved brickwork, gauky roofs, floors at different levels, dark rooms and passages, broken pediments, burlesqued columns, chairs and tables, table-covers, and window curtains, is to surrender the distinct and best interests of the client, and the Society of Architects will very soon make it apparent that a young and vigorous body is a better guardian of the public interests than the Mutual Admiration Society at 9, Conduit-street. Let the Society tackle the *cant* which is the stock-in-trade of the half-dozen outsiders who cover their professional ignorance by the query, "Is architecture a profession or an art?" Let it teach "Art Standing Committees" that the designing and superintending the erection of buildings—within the full meaning of the comprehensive phrase—is the true work of the architect, and it will not be difficult to expose the shallow perversions of the falsely so-called "art architect."

That *architecture* is degenerating is not open to question. Whilst we are deluged with rubbishy talk about "art," we are treated to its degradation; whilst we are obliged to listen to the cant about "due regard for the works of others," we see it disregarded by the very set who utter the platitudes; and at the moment when "examining bodies" are insisting upon "true principles" their own members are murdering them. The Society of Architects has a free hand, and it is within its power, if it so wills, to open up a new era of truth in architecture.

And whilst, Sir, I am on the subject of the Society of Architects, may I be permitted to express the hope that, as regards its recent discussion on the question of *examination*, it will proceed to act entirely in its own independent capacity. It need not look at No. 9, Conduit-street at all—it will receive nothing but opposition from that quarter—and if examination is good, then go for the good, and go alone.—I am, &c.,

Wm. Woodward.

13, Southampton-street, Strand, Nov. 14.

STAINED GLASS.

Sir,—My attention has been called to a paper in the Building News of last week, wherein Mr. Herbert Bacon has taken upon himself to make statements the reverse of accurate with regard to myself.

Mr. Bacon should be obliged to me for being the instrument of his long and self-advertising article.

I have neither time nor desire to criticise that article, and I only wish to reply to Mr. Bacon's hasty mis-statements. He says: "Mr. Richmond does not execute his windows with his own fingers." "He employs glass-painters and mosaicists whose names the public never knows." Both these statements are untrue.

In answer to the first, allow me to state that the drawings and designs for all my windows were executed to 1in. scale, completely finished, down to the most minute lead, by me. That every square of glass was selected and chosen by me in my studio. That the working full-sized cartoons were drawn under my eye in my studio, and that all the figures were entirely wrought by my own hand. That I spent many days and, in all, several weeks, not only in teaching Mr. Powell's glass-painters what my desires were, but also in painting upon the glass myself. Indeed, there was not a single compartment left without my handywork upon the glass, correcting and executing all the more important parts—heads, hands, drapery, &c.—with my own hand.

I venture to remark that had Mr. Bacon given one quarter the time that I have given to my windows upon his, he would not have been able in three years to have turned out 410 windows.

Would he spend three weeks of his time in lining a window with double glass, seeing each piece cut and put in place, six and seven hours a day? I doubt it. No commercial firm would.

Mr. Bacon and his companions may be admirable artists—I hope they are. However, they should, before they accuse an artist of "cant," verify their assertions.

Mr. Bacon could have paid a visit to Messrs. Powell's, where he would have learned the truth in relation to my work.

In answer to his second assertion, as untrue as the first. The name of every individual who has worked with, and under, me at St. Paul's has been inscribed in the archives of that cathedral. Mr. Bacon will be able to read and learn, if he applies for permission at the Cathedral to do so.—I am, &c., W. B. Richmond.

Sir,—As a lover of fine arts, and an old friend of Mr. W. B. Richmond, I have read with great indignation the utterly unfounded and gratuitous libel upon that gentleman, published in the report (in your last number) of a lecture delivered by Mr. Herbert Bacon at Manchester. Referring to the new windows in the choir of St. Paul's, Mr. Bacon volunteers the statement (for which he can have no possible authority) that Mr. Richmond does not execute them with his own fingers, but employs a firm to do them.

It is, of course, obviously impossible that the artist who designs monumental work of any kind can do the whole of the work himself, no matter whether he be architect, sculptor, or painter. Does Mr. Bacon imagine that Phidias sculptured with his own hands all the figures on the pediment of the Parthenon? Of course, he knows better, and the gist of his charge against Mr. Richmond, therefore, is that the artist has been satisfied with preparing drawings or cartoons for stained-glass windows and mosaics, and has handed over the execution of them to a firm of tradesmen who employ unknown artisans to carry out the work. Nothing could be further from the fact than this misrepresentation. Mr. Richmond has given a minute personal superintendence to the work throughout, and has himself drawn largely upon the glass for the windows. Not only have I seen this with my own eyes, but I have witnessed the extreme care with which he has personally selected the exact colours of the glass to be painted upon.

It will doubtless be news to Mr. Bacon that out of the 20 men now working on the mosaics in St. Paul's only two had ever handled a tessera until they began to work under Mr. Richmond. Mr. Bacon is probably equally unaware of the fact that Mr. Richmond trained all the mosaic workers himself in the special studios he has built at Hammersmith, and that he devoted in all no less than four months to this preliminary training. Some distinguished artists have probably furnished designs for mosaic, without giving any profound attention to the technique of mosaic work; but certainly Mr. Richmond is open to no such charge. He has revolutionised the method of execution followed by modern mosaic workers generally, after giving the most patient and prolonged study, not only to the finest Mediæval work in Italy and Greece, but also to the optical principles which underlie the successful use of mosaics in a Southern climate. Moreover, he has worked out the many modifications of those principles requisite for the use of mosaic in a Northern climate and in a Renaissance or Gothic building.

I should be the last person to refuse a word of appreciative admiration to Messrs. Powell, the firm which furnishes the extremely beautiful glass for the mosaics at St. Paul's; but it must be remembered that admiration of the same kind (though less in degree) is due to the tradesmen who furnished the materials for the palette of a Titian or a Tintoretto; and that the *colour* (in the sense in which that word is used by artists and writers on art) is no less the creation of the designer in mosaics who works as thoroughly as Mr. Richmond does, than it is of the great masters of painting.

Mr. Bacon's advertisement of himself and the firm of architects to which he belongs may readily be pardoned, in consideration of his feeling against commercialism in matters connected with his art; but it is not easy to overlook a wanton attack upon a brother artist who is at least as much opposed, both in practice and in theory, to the purely commercial methods as ever Mr. Bacon can be.—I am, &c., Alfred Higgins.

The Burlington Fine Arts Club,
17, Savile-row, W., Nov. 13.

FIREPROOF PLASTER.

Sir,—In the Building News of November 2, a report is given of the result of trials made at Belleisle, York-road, with respect to the resistance of plaster ceilings to fire, and wherein it is stated that fire was allowed to play on a ceiling for three-quarters of an hour without any apparent damage thereto.

Allow me to state that similar experiments, made on ordinary ceilings of the same character as the one described, about a year and a half since, fully confirm the wonderful power of plastering to withstand a severe conflagration, but under more severe conditions than the one alluded to.

An ordinary ceiling on metallic lathing was constructed over a purpose-built brick room, and subjected to intense heat from burning wood for over two hours, during which time water was poured on the upper side at intervals, the result being that the ceiling remained intact. The only effect apparently was that the metallic lathing assumed a corrugated form from expansion, but the plastering appeared quite capable of conforming to this change of shape without cracking even, although, as a matter of course, every particle of hair was consumed. Wood laid on top of the ceiling was quickly alight, but a few inches above the heat was so slight that no serious damage could be sustained by any incombustible materials.

The unexpected results of these experiments undoubtedly places ordinary plastering mortar, properly applied to metalling lathing having a good key, in the first category of fire-resisting materials.

The non-conductivity of plastering when compared with burnt clay—viz., as 26 to 66—is another important advantage. Patent cements and plastering materials, the basis of which is gypsum or plaster of Paris, did not stand fire so well as common plastering mortar made in the usual way—probably the result of being much harder, and less capable of change of form without cracking and splitting up into fragments. On the other hand, the nature of the sand employed in common mortar had undoubtedly to do with the result. But no matter how much a plastered ceiling may be able to resist fire, unless the steel or iron joists are amply protected, the general result will be a failure, and this depends upon the efficient protection of the bottom flanges, which, during a conflagration, are the parts usually liable to acquire a high temperature, but in a general way are most exposed, and during a fire are called upon to sustain an increased strain.

Anyway, there can be no doubt that the best possible first line of defence is a plastered ceiling totally disconnected from the floor, and the second is to thoroughly encase and protect the metal joists, more especially the bottom flanges, upon which the stability of the floor largely depends, and the third to avoid as much metal, otherwise, as practicable, and allow it room for expansion. These conditions are embodied in a patent which I obtained about a year since, and which bears my name.

The German authorities made a number of experiments in 1893, with the view of determining the best class of floors to stand against fire, and the successful resistance of common plastering mortar to a conflagration was very marked. Our own Government are now adopting fire-resisting floors in most public buildings, but apparently with no prejudice in the matter, and no settled conviction as to the most desirable one. This is somewhat strange when it is remembered that thousands of pounds are being expended annually in this direction, while the issue at stake is very far from being unimportant. A few hundred pounds spent on an independent series of tests of the numerous systems now before the public would set at rest—for a time at least, until further developments took place—the description of floors best adapted to take the place of the time-honoured but dangerous and unsanitary wood arrangement.—I am, &c., Thomas Potter.

39, Victoria-street, Nov. 7.

A WARNING.

Sir,—A man I find is calling upon various architects and builders, representing himself to be a son of the late Gilbert Scott, and asking for assistance, though, as far as I have heard, without success. I need hardly say that he is an impostor.—I am, &c., J. Oldrid Scott.

35, Spring-gardens, London, S.W.

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The rector of Flint has dedicated a new pulpit in St. Mary's Church, erected as a memorial to the late Miss Moon. The pulpit is of stone, and has been executed by Mr. Edward Griffiths, of Chester.

Reopening services in connection with the Asbury Wesleyan Memorial Church, Handsworth, which has just been enlarged by the addition of a new chancel and new classrooms, were held on Sunday. The schoolroom has been considerably enlarged, a commodious lecture-room erected, several classrooms have been added, and improvements made to the church itself.

The Mechanics' Institute in Skellgate, Ripon, founded about sixty years ago, has been rebuilt on a fresh and larger site, at the east corner of the old Market-place. There has been erected, from the designs of Mr. G. Styan, architect, York, a brick building with stone dressings, at a cost of £1,500. On the ground floor is a room, used for library and savings-bank purposes, and a schoolroom to accommodate a hundred pupils. On the first floor are a reading-room, two committee-rooms, a secretary's room, and a cloak-room. The second floor and the basement are occupied by the caretaker. Behind the building are a cookery kitchen and workshop for carpentry and other manual instruction. The formal opening took place on Friday.

Intercommunication.

QUESTIONS.

[11245.]—**Improved Cross-Staff.**—What concise book or paper is there on the right use of the improved cross-staff with revolving parts (degree marked) for surveyors?—Statutory.

[11246.]—**Lettering Marble or Stone Surfaces.**—In lettering stone or marble where it is desirable to have the letters filled in with black or red sealing-wax as more durable than painting, and if for greater permanency to have the dove-tailed grooving filled in with lead, what is the best way to bring the wax or lead to a smooth face with the stone or marble surface?—Tolop.

[11247.]—**Architect's Duty.**—Is an architect justified in providing healthy adjuncts ahead of his employer's requirements, such as special supply of fresh air and exit for foul in dwelling-houses when neither the employer or the occupants themselves care for these things?—Progressionist.

[11248.]—**Formulæ for Long Columns.**—Which is the correct formula for long columns? Hurst's Handbook gives Gordon's formula as—

$$W = \frac{36\,s}{1 + \frac{l^2}{400\,d^2}}$$

while Part IV. of "Notes on Building Construction" gives it as—

$$W = \frac{48\,s}{1 + \frac{l^2}{800\,d^2}}$$

These cannot both be correct. If some reaher will kindly say which is, he will greatly oblige one who is—Mystified.

[11249.]—**Window Tracery.**—Would some reader kindly inform me which is the best book showing the method of drawing window tracery. I have got Brandon's "Veritas."—J. W. S.

[11250.]—**Abutting Buildings.**—Has the owner of new erection built against higher adjoining building any right to insert flashing into the abutting building where the new erection is below that already built, for mutual protection against wet weather causing damp between the buildings?—Doubtful.

REPLIES.

[11236.] — **Colouring Deed Plans.** — "E. H." should, after pencilling, place a small quantity of powdered French chalk upon the parchment, and rub it in with a small ball of soft paper. Shake off surplus chalk, and ink-in with Higgins's waterproof drawing ink. Finally colour with water-colours without ox-gall. It is important that ox-gall should *not* be used in colour-washes, as it causes the parchment to shrink, and is unnecessary if the above directions are followed. Should it be desired to afterwards ink-in over coloured parts, allow same to dry thoroughly, and then finish off with a duster to prevent the ink flowing too freely.—J. E. M.

[11237.]—**Granite, Stone, and Marble.**—In reply to a letter of "J. T. P.," I think there is no work published in the locality of any stone and marble quarries throughout the world; but there is a handbook on "Marble and Marble Workers," by Arthur Lee, published by Crosby Lockwood and Son, which gives full particulars relating to the principal marble quarries in the world.—J. L. Williams.

[11239.]—**Open-Timbered Roofs.**—"H. L." states "if the roof-trusses are properly constructed, the chase is unncessary" in walling to receive wall-posts. The next question arises as to what is proper construction, as the office I was brought up in, during over the dozen years I was there, invariably had chases formed in walls to receive wall-posts, both for school and chapel structures, so as to prevent too great a weight coming solely upon the stone supporting corbels, and also preventing lateral movement between the binders while fixing same and afterwards. Perhaps "H. L." can throw some light on the subject of proper construction, and oblige.—Improver.

[11242.] — **Ventilation of Public Rooms.** — Assuming that no gas or artificial light, which fouls or heats to an unpleasantly high temperature the air of the room, be burning, and that the fresh air be warm, and the season be winter, then the best way to ventilate a room is to admit the fresh air through an opening in the wall, 8ft. from the floor, to extract it through an opening in the same wall, but at the floor level. It is assumed that there are no hot-water or steam-pipes or radiators in the room, and that the openings are connected to flues—i.e., that a system of combined warming and ventilation be in use. If gas or other air-fouling or heating light be burning, then an opening is needed in the opposite wall to that through which the air enters, and this opening must be as near the ceiling as possible, and it must have a shutter to close it, so as to prevent leakage and waste of warm air when the lights are not burning. If the room be not a square but a long one, put the openings and flues in the long wall. But if cool air be coming in, and it be desired to cool and ventilate the room as it is in summer, whether air-fouling lights be burning or not, then the outlet opening must be close under the ceiling, though the inlet may still have its lower edge 8ft. from the floor. The happiest compromise of relative positions of flues and openings is to put the inlet flue at one end of the longest wall of the room, and the outlet flue at the other end. Make the lower edge of the inlet opening 8ft. above the floor; make the top outlet opening (the summer or gas-light outlet) as near the ceiling as possible, and put a shutter in it, and let the sill of the bottom outlet opening rest on the skirting, if the skirting be not more than 15in. high.—Palatinus.

[11243.]—**Charge for Measuring Work at Completion.**—1. For an ordinary job the charge would be 2½ per cent. on the extras and 1½ per cent. on the omissions. 2. If the alterations to the building have been ordered by the employers, it is perfectly clear that the architect should be paid for the measuring at the rate of 2½ per cent., or at some less rate to be agreed with the clients, should the nature of the measuring justify the reduction. Is it quite impossible to settle the matter by measuring the variations?—Henry Lovegrove.

[11243.]—**Charge for Measuring Work at Completion.**—"Lancastrian" seems to assume that it is the rule for architects to prepare their own quantities. This is done in some small provincial offices, but never, I believe, in the best offices. (1) If 2½ per cent. has been received for quantities, only a nominal fee should be charged for measuring up the work at completion, providing, of course, that no very extensive alterations were made as the work was in progress. Three guineas would generally be sufficient for contracts not exceeding £2,000. (2) If the original contract was so altered by the employer as to necessitate the measuring up of the work in order to ascertain the amount due to the builder, then the employer is liable for an extra payment beyond the agreed percentage, and, should he object to pay this, the architect would have no alternative but to refuse to pass the builder's accounts, and then the builder would have to send in his claim direct to the employer.—Chas. W. Ball.

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CHIPS.

New board schools in Upton-lane, West Ham, were opened on Friday last. The schools accommodate 1,418 children—namely, ground-floor, 558 infants in classrooms; first floor, 430 girls in classrooms; second floor, 430 boys in classrooms. The playgrounds are spacious, the site occupying an area of 1¼ acres. Staircases are provided at each end of the hall. In each department separate private rooms for the head teacher and assistants are provided. There is a caretaker's residence, with cookery classroom. Mr. J. T. Newman is the architect.

At a choral celebration at Lympstone on All Saints' Day, a stained-glass window was dedicated in St. Mary's Parish Church. The artist is Mr. W. G. Taylor, of Berners-street. The subject is the Annunciation, and is treated in a novel manner, the scene being laid in the open fields in front of Nazareth.

The Filey Local Board have received the sanction of the Local Government Board to borrow £1,600 for the carrying out of sewerage works. They intend to construct a sewer which will carry the sewage well out to sea, and clear of the sands.

During the restoration of the parish church of Linlithgow, an ancient tombstone has been discovered in the interior of the building, and the inscription, which is in good preservation, bear the names of two former Provosts of the burgh. The inscription is:—"Heir lyis Jhon Forrest of Magdalane, Provost of this toun, quha deit the viii. day of March anno. 1589; as also Robert Steuart, his sonne-in-law, sometyme cornet of his Majestie's Guard, quha deit Provost of this toun the last day of October anno 1615." It has been remitted to the committee to consider as to a suitable place for the re-erection of the old stone.

The new municipal buildings presented to the borough of Burton-on-Trent last week by Lord Burton have been added to the existing premises at a cost of £17,000. Mr. R. Churchill, of Burton, was the architect, and Messrs. Thomas Lowe and Sons, of the same town, were the contractors.

A new block of buildings is to be erected in Esselmont-avenue, Aberdeen, for artisans' dwellings by the local branch of the Ancient Order of Foresters, and on Saturday the ceremony of laying the foundation-stone was performed by Baillie Mearns.

During the demolition of the north wall of the parish church of Llandrindod, a 17th-century structure erected on old foundations, a stone rudely carved in bas relief with the nude figure of a woman was found embedded in the wall.

Mr. J. P. Thomas, of Penally, has been elected by the Pembrokeshire county council as highway surveyor for the Narberth district.

A mayor's chain and badge were presented to the corporation of Eccles on the 9th inst. The badge bears the coat of arms of the borough, surrounded by Lancashire roses. The pendant and centre links are of 18-carat gold, and enamelled in heraldic colours. The rest of the chain is silver gilt, and it is suggested that each successive mayor shall add a gold link to mark his term of office, so that eventually the whole chain will be of gold. It has been executed by Messrs. T. and J. Bragg, of Birmingham.

The meetings of the Architectural Section of the Philosophical Society of Glasgow was opened by a conversazione on Monday evening in the Philosophical Institute, 207, Bath-street, Glasgow, in the upper lecture-room, which was decorated with articles connected with the building and allied trades. Among the exhibits were several working models of the new opening window, adopted by the Glasgow authorities as meeting the requirements of the Building Regulations Act, and a model of the stained-glass memorial window for Crathie Free Church, the latter having been lent by Messrs. J. and W. Guthrie. During the evening, Mr. T. L. Watson, the president, formally opened the section for the season, and a programme of songs and music was carried through.

Legal.

WHO IS THE "OWNER"?

Once more the definition of the word "owner," as given in the Metropolis Management Act of 1855, has come up again for consideration by the Court. The recent case of "Walford *v.* Hackney Board of Works" (*Times*, Nov. 5) is important, because it is of very general practical application. The question was whether a lessee who received the rent of a house from its occupier, and then paid over exactly the same rent to his lessor under his own lease, came within the definition of the word "owner" as given by that statute, was to be liable to pay the apportioned expenses of road-paving for the premises let. The amount was £110, and the facts were that Walford held the premises of one Harper, at a rent of £31 a year, while he had sublet them to Wright, the actual occupier, for the same rental. When he was summoned for the paving apportionment according to frontage, Walford argued that there had been some negotiation between Harper and Wright as to granting a lease direct, and though this had not been carried out, he was really only the agent of Harper to receive the rent from Wright and pay it over. The magistrate made the order apparently upon the ground that Walford, in the words of the Act, "the person for the time being receiving the rack rent." Then Walford brought this appeal, and the judges found a way out of the technical terms of the Act, so that they set aside the magistrate's order.

Mr. Justice Mathew laid it down that the Act intended to throw the charge for paving upon the "owner" of the premises, in the ordinary sense of that word, as meaning the person who really got the benefit of their rental value. If Walford had paid over anything less than he received, he would have been rightly held to be the party receiving the rack rental, and so liable. But he paid it all over, and obtained no benefit whatever. The learned judge also pointed out that if the magistrate's decision were to be upheld, the local authorities might easily have to claim against a mere man of straw, while the actual beneficial owner escaped. The appeal was therefore allowed, and now the Board of Works can only proceed against the lessor, who himself gets the full rent that is paid by the occupier.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

B. F. J.—Stone.—Contract.—Breach.—I do not consider that the delay on his side, and which is not provided for in the contract, gives you a good ground to rescind it. As to the payments, you appear to have taken the sums paid, and so to have waived your right to receive the full agreed instalments. I do not think you can safely refuse to complete the contract on those grounds and on the facts stated.

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A still further delay has occurred in the carrying out of the Cambridge memorial to the late Adam Sedgwick. Some twenty-one years have elapsed since his death, and the raising of a fund to provide a suitable memorial of the great geologist, and just when it seemed likely that the walls of the new Geological Museum would appear, it is discovered that the cost would exceed the estimate of £4,500, and so the syndicate are about to reconsider the plans.

At a meeting of the Western District Committee of the Haddingtonshire County Council, held at Haddington on Monday, a report was read from Mr. James Wilson, C.E., Edinburgh, regarding the recently tapped water supply at Gullane, in connection with which Mr. Hamilton Ogilvie, of Biel, proposes to make a generous arrangement with the board, in order that the district of Gullane may be supplied with water. The draft of the proposed agreement was submitted and was approved, and the scheme will proceed with as little delay as possible.

The opening conversazione of the Edinburgh Architectural Association was held at the Royal Institution in that city on Wednesday evening. After the reception, the president delivered a brief inaugural address, following which there was an exhibition of lantern slides, illustrating examples of the Mediæval architecture of France and Britain. An exhibition was on view of architectural drawings, sketches, prints, wood carvings, plaster modellings, wrought-iron work, &c.

LEGAL INTELLIGENCE.

Re J. Waterman.—The bankrupt, who had traded as a timber merchant at St. Benet's-place, Gracechurch-street, applied on Tuesday for his order of discharge. The Official Receiver reported that the bankrupt had contributed to his failure by gambling, and the discharge was suspended for two years.

District Surveyors' Fees.—At the Marylebone Police-court, on Friday, before Mr. Cooke, the London County Council summoned Mr. J. H. Hunter, a member of the Paddington Vestry, for £16 4s. 6d. as expenses incurred by the County Council in dealing with a number of houses in Gloucester-crescent as dangerous buildings under Section 69 of the Metropolitan Building Act. Mr. Horace Gundry, district surveyor for Paddington, gave evidence as to his having visited the premises and finding them dangerous so far as the cornices were concerned. About February 28 he made an inspection of the buildings, and found the danger removed, and he certified accordingly on March 1. The Council paid him a fee of £1 5s. in respect of each house he surveyed. Cross-examined, witness admitted that he had already received fees amounting to £16 10s. from the defendants for services in connection with surveying the work done on the premises in question; and he based his title to make the charge under a section of the Metropolitan Building Act. He had also received from the County Council a sum of £1 5s. in respect of each of the houses. How do you make out that you are entitled to be paid twice over in respect of these premises?—The fee of the Council is for surveying and reporting upon certain structures which were alleged to be dangerous, and that fee is specified in the schedule at 20s. Then after that your clients sent me notice that they were about to do these structural works on the premises, not as surveyor to the London County Council, but as district surveyor. Then you are acting in two capacities—one as district surveyor and one as Mr. Gundry?—No; one as district surveyor and the other as a competent surveyor. Continuing, the witness said that the two sets of fees he received were for two separate and distinct services. Exclusive of the cornices, the houses in themselves could not be called dangerous structures, but with the cornices as he found them they were dangerous. Mr. Bilney, for the defence, contended it was monstrous that an owner of property should be called upon to pay over £33 in fees on works which only cost £50 to carry out. His clients complied with the notice served on them without any delay. Another point, too, was, that of the eleven houses five were unoccupied, and therefore it was quite unnecessary to serve a separate notice in regard to each house. The Magistrate said he was of opinion that the fees might be very properly charged against the defendants by the County Council, and he ordered that the full claim should be paid, except a small charge for travelling expenses, which he understood the Council were willing to forego, but he could not allow any costs in the case.

What is an "Owner"?—Walford, Appellant, v. The Hackney Board of Works, Respondents.—In the Queen's Bench Division on Nov. 3, before Mr. Justice Mathew and Mr. Justice Charles, this appeal was heard, raising the question who is "owner" of premises within the Metropolis Local Management Act (c. 120), so as to be liable for a proportion of the expense of paving by the district board; and, in particular, whether a new tenant can be so liable, the occupier being his sub-tenant and he himself deriving no profit or benefit. The interpretation clause of the Act (section 250) saye that the word "owner" shall mean the person for the time being receiving the rack rent either on his own account or as agent for any other person. In 1886 one Harper let the premises to Walford for a term of years unexpired at the rent of £25 a year raised to £31. Walford occupied, and then in 1889 sublet to one Wright at the same rent of £31, and Wright took possession and paid rent to Walford, who continued to pay it to Harper. The board had paved the street, and demanded £110 from Walford as apportioned amount due from him in respect of his premises, and, on an application to the magistrate, he made an order for payment, against which Walford appealed. Mr. Bevan argued for the board in support of the order, citing "*Re* Christchurch Enclosure Act," and "Truman v. Kerslake." The appellant's counsel was not called upon. The Court decided in favour of the appellant Walford that he was not liable as "owner" of the premises. Mr. Justice Mathew, in giving judgment, said these local authorities would; if the magistrate's decision were upheld, often have put upon them a mere "man of straw" not really responsible. The charge was laid upon the "owner of the premises," and the question was—the appellant clearly not being the "owner" in the ordinary sense—whether the Court was coerced by the statute to declare that he was the "owner" as being in receipt of the "rack rent." It would be very extraordinary if he were so, he paying the whole of the rent over to another person really the "owner."

If he paid over less it might be different, for then he would be the only person in receipt of the full rack rent, but here he paid over the whole. The order of the magistrate, therefore, was wrong, and must be set aside. Mr. Justice Charles was of the same opinion. It might appear strange that if the appellant paid over less than the rent he received he would be liable, though not so as he paid over the whole; but in the one case the appellant would be the only person in receipt of the rack rent, whereas, in the present case, he was not. Order set aside. Leave to appeal refused.

An Architect's Responsibilities for Breaches of By-laws.—At Walsall, last week, Thomas Rollason, architect, 278, High-street, West Bromwich, was summoned for erecting five new houses and a shop in Princes-street, the Pleck, without putting in the necessary damp-course. The question at issue was whether the defendant was the person erecting the properties, within the meaning of the Act. The town clerk's contention was that the architect giving notice to the authority was the person erecting the building where he was superintending the erection; and that if he was not so generally, the effect of the notice which the defendant had served would make him so in this case. In support of this view particular stress was laid upon a printed note appended to the notice: "Further, I will make myself responsible for the work being carried out in accordance with the by-laws." For defendant it was maintained that he was not the person responsible under the by-laws. Being in the nature of criminal statutes, inasmuch as they imposed penalties, they must be construed strictly or literally, and the words "the person erecting the building" must be understood to mean the person actually doing the work, or someone acting as his agent. It could not mean either the owner or the architect. As soon as the defendant's attention was drawn to the fact that the damp-courses were not in, he saw the contractors, and wrote the borough surveyor, stating that he had called the attention of the contractors to the matter, and that the latter would no doubt attend to it before the buildings were completed. The magistrates, after some deliberation in private, dismissed the summons, but consented to grant a case for the consideration of the Court above, on the application of the town clerk, who said a decision on the point raised would be of great importance to the local authorities. Defendant's solicitor rejoined that it would also be of great importance to architects and builders.

Nuisance from Brick-Burning.—At the West London Police-court on Saturday, Mr. Curtis Bennett gave judgment in the case of three summonses which had been issued against Mr. Augustus Bird, Messrs. Alexander and Walter Thomas Richardson, and Mr. W. Willett, brickmakers, having fields in Wood-lane, Shepherd's Bush, for causing a nuisance in the process of brick-burning injurious to the health of the district. The summonses, which were taken out on behalf of the Kensington Vestry, though the brickfields were in the parish of Hammersmith, were heard in the early part of the year, and had been continued at intervals from that time, this being the twentieth day. A number of witnesses were called on both sides, the evidence as to the existence of a nuisance being most conflicting. Mr. Curtis Bennett, in giving judgment, said that under the Public Health Act of 1891 the vestry were compelled to take proceedings upon the receipt of a requisition signed by ten persons. The vestry had, however, the option of taking proceedings in that Court or in the High Court. As to the point whether there was a nuisance from these brickfields, it could not be doubted that a nuisance existed. Putting the question to himself, "Is the smell complained of the smell of brick-burning?" he came to the conclusion it was that, and that alone, which had been and still was the cause of the nuisance which the people of Hammersmith and Kensington had endured for twenty years. To that nuisance, one and all of the defendants had contributed. An expert witness had said a London stock brick was the only brick in the world in which ashes were incorporated with clay, and added that it was impossible for such a brick to be produced without causing an objectionable smell. The same witness had said to prevent the nuisance there were four things to be done—(1) to burn in kilns, (2) to burn small coal, (3) to use clean breeze and ashes from furnaces, and (4) clean breeze and ashes from houses. He (Mr. Bennett) thought the best practical means had not been used to prevent a nuisance, and, therefore, it was his duty to convict the defendants. He fined Bird and Willett each £50, and each of the other defendants £25, with 300 guineas costs. Ultimately, the summonses were adjourned for a fortnight for the defendants to consider whether they would give an undertaking not to burn bricks except with clean ashes and breeze. In that case the fines might be remitted.

The Legality of Rood-Lofts.—In the Consistory Court of Norwich, before Mr. Blofeld, the chancellor, an application was made in October on behalf of the vicar and churchwardens of St. John, Timberhill, in that city, for a confirmatory faculty for a chancel screen with rood-loft and gates, and also for a rood-beam, upon which were placed the figure of our Lord upon the Cross, and figures of the two Marys, St. John, and the Roman Centurion, some of which had been erected so far back as 1890 and other parts during the period when the see of Norwich was vacant. There was no opposition, but as it was the first case of the kind in the diocese, it was argued at length before the chancellor in the Beauchamp Chapel on October 12, when the chancellor reserved judgment. The chancellor gave judgment on Saturday last. A faculty to confirm the erection of the rood-loft and of the figures at present on the rood-beam, and to authorise the placing of the other figures there, was refused; but a faculty to confirm the erection of the screen without the rood-loft, and to authorise the placing of gates in the existing screen, the erection of the proposed side screens with gates in them, and the erection of the choir-stalls and screen behind them, was granted. Notice of appeal was given.

WATER SUPPLY AND SANITARY MATTERS.

Barnsley.—Special meetings are about to be held of Barnsley Town Council and ratepayers for the purpose of considering and approving application to Parliament for power to extend the waterworks of the town by the construction of a new reservoir at Hagg Brook. Mr. Chas. Hawksley, C.E., has prepared a scheme, which he estimates would cost about £146,000, for obtaining a supply of 1,800,000 gallons daily from the Little Don and the river Porter, after making full allowance for the compensation water to the Sheffield millowners and others. The borough surveyor (Mr. J. H. Taylor) has prepared a report on the scheme, in which he estimates the cost as follows:—Cost of works, £146,000; Parliamentary expenses, £10,000; interest on outlay during construction of works, £10,590; extras, £3,050; total, £170,000. The site is the same as that once chosen by Wakefield, whose attempt was defeated by Sheffield opposition; and it is expected that there will be great opposition in this case also.

Kendal.—The Corporation of Kendal having decided to augment their water supply at a cost of £30,000, a piece of land has been purchased from Lord Henry Bentinck at a cost of £4,500. Against this purchase 56 of the largest ratepayers in the borough petitioned the corporation, on the ground that Fisher Tarn was not a suitable gathering area, and contained peat. They asked for the engineer's report upon other sites, naming Longsleddale and Hullon Park. The engineer, Mr. G. F. Deacon, Westminster, has forwarded a long report, assuring the corporation that his original scheme is the cheapest and best. At a special meeting of the Kendal Corporation on Tuesday, the Fisher Tarn scheme was adopted, and the agreement between the corporation and Mr. Deacon to carry out the work was sealed.

CHIPS.

The Bishop of Beverley officiated on Wednesday week at the reopening of Ravenfield Church, near Rotherham, after restoration at a cost of £200. The whole of the old pews have been removed, and their places taken by seats of pitch pine. Carved oak choir stalls have been provided, also carved oak lectern and reredos.

Mr. Thos. Winter, builder, Durham, died at his residence, Claypath, Durham, on Sunday evening, at the age of 78. The deceased served his time under Mr. Thos. Grainger, the famous Newcastle-on-Tyne builder. He subsequently started for himself at Durham, and had executed many important contracts.

The Duke and Duchess of Devonshire, on Saturday, attended the reopening service of Baslow Church, which adjoins Chatsworth.

It is proposed to erect a pier about 2,100ft. in length at Ardeer, near Stevenston, on the Ayrshire coast, from designs by Messrs. Crouch and Hogg, C.E., Glasgow. It will be a private pier, solely for the convenience of Nobel's Explosives Company, and will be carried out into the sea a long way below water mark, so that their steamers may load at all states of the tide.

Folkton Church, in the East Riding, was reopened by the Archbishop of York, after restoration, on Monday. The cost has been about £400, exclusive of a new stained-glass east window, given in memory of the late rector, Rev. H. Blane.

The London County Council on Tuesday, in accordance with the report of a committee, rejected the proposal to acquire the Salisbury Hotel (late the Liberator building), on the Embankment, as a Municipal building, on the ground of the unsuitability of the rooms for a council-chamber, committees, and offices, and the bad approaches.

Our Office Table.

Professor A. H. Church is engaged on the "restoration" of the frescoes and other paintings in the Houses of Parliament. The two great Maclises, each 44ft. by 12ft., and representing one the "Meeting of Wellington and Blucher," and the other the "Death of Nelson," had accumulated upon them a thin disfiguring coat of sulphate of lime. This an application of sponging and syringing with distilled water has effectively removed. These pictures were executed by the process known as water-glass. Herbert's "Judgment of Daniel" has been treated with minute doses of linseed oil, and careful treatment has been given to his "Moses bringing down the Tables of the Law." Professor Church is now engaged on the pure frescoes by Dyce, which are in the Queen's Robing-room. Three of these are still so dirty that they can scarcely be seen, though they were treated by the late W. C. Cope, in the year 1868, to an application of paraffin wax.

The London Building Trades' Federation have sent a copy of the following questions to all the candidates for the London School Board:—Are you in favour of contractors supplying with each tender a schedule of the wages paid to their employées, and, where found less than the trade-union rates, that the tender not be entertained? Are you in favour of the insertion of a clause in all contracts compelling the Board's contractor to recognise the working hours of the London district? Are you opposed to contractors sub-letting any portion of work to one or a number of workmen? Are you opposed to any contractor sub-contracting any portion of his contract without the direct sanction of the Board? Are you in favour of the enforcement of a penalty for any evasion of the Board's terms of contract? Are you in favour of the Board, where possible, doing their own work direct, and without the intervention of a contractor? Are you in favour of practical mechanics only being appointed by the Board as clerks of works? As a body, the Progressive candidates have answered these questions in the affirmative. The Hon. Lyulph Stanley thinks that the Board might do its own repairs, but does not deem it practicable that it should build new schools.

The 141st session of the Society of Arts will be inaugurated on Wednesday next, when the opening address will be delivered by Major-General Sir John Donnelly, K.C.B., chairman of the council. The papers to be read before Christmas include "The Electrical Treatment of Sewage," to be read on Dec. 5th, by Mr. E. Hermite, and another on "Forestry," by Lieut.-Gen. J. Michael, C.S.I., to be read on Dec. 19th. Among the papers for meetings after Christmas are "Electric Lighting of Ecclesiastical Buildings," by Major-General Charles E. Webber, C.B., and "Technical Carpet Designing," by Mr. Alexander Millar. The courses of Cantor lectures will include a series of three by Mr. Alan S. Cole, on "Means for Verifying Ancient Embroideries and Laces," to be given on February 11, 18, and 25.

A loan exhibition of some 300 pictures was opened in the Queen's Hall of the People's Palace, Mile End-road, on Saturday. The pictures include Bauerle's portrait of the Princess Louise of Wales, Webster's "Sunday Morning," Mr. Watts's "Gill," Professor Herkomer's "John Ruskin," Hacker's "Fire Fancies," Mr. J. W. Waterhouse's "Mariamne before Herod and Salome," Graham's "Rising Mists," and Sir John Millais's "Mr. Gladstone." Among those who have lent pictures are the Queen, the Prince of Wales, the Duke of Norfolk, Mr. F. Goodall, R.A., Professor Herkomer, Mr. Alfred East, Sir C. Tennant, Sir John Millais, and the Corporation of Nottingham. In a room adjoining the hall are loans from South Kensington and the People's Palace Sketching Club. The exhibition will remain open till December 1st.

It is satisfactory to learn that the recent statement which went the rounds of the London papers that John o' Gaunt's stables at Lincoln were about to be pulled down and rebuilt, is unfounded. The buildings were described by the late J. H. Parker, C.B., as probably the most valuable and extensive range of buildings of the 12th century that we have remaining in England. The origin of the rumour was that the fields behind the stables are about to be built on, but the 12th-century premises will be left intact.

The scheme of architectural education recently organised by Mr. Henry R. Babb, headmaster of Plymouth School of Art, has commenced. Mr. B. Priestly-Shires, A.R.I.B.A., delivered on Thursday in last week the opening lecture of a course on "The History of Architecture, including an Analysis of Mouldings, Features, and Ornament." Mr. Shires dwelt at length on the different forms of Greek temples, and mentioned the architects, sculptors, &c., connected with the more important ones. It is hoped before long to establish an architectural association for the "Three Towns"—Plymouth, Devonport, and Stonehouse.

Electric wiring is a matter that few architects trouble themselves about. They are content to leave it to the electrician. Among the necessary rules which have been framed is the necessity of providing an extra covering where the wires pass through walls and floors. These coverings should be durable and moisture proof, and of good insulating material; where the wires run along ceilings and walls, they ought to be separated by an interval of about 3in., and each wire where it passes through a wall should have an aperture to itself. Another necessary precaution is to avoid all metal gas-pipes, speaking tubes, &c. Where these have to be crossed the wires should be bridged over with wood or hard rubber tubing. Between wires and hot-water or steam pipes an air space of 4in., at least, must be allowed. An eminent English authority says no wiring is to be imbedded in the walls or under floors, or in any inaccessible position. Composition metal tubes are to be used where casing is found impossible, but these should not be longer than can be threaded.

The German Archæological Institute in Athens has resumed the excavations at the Western base of the Acropolis at Athens. The object in view is the discovery of the Enneakrounoi, the ancient nine-piped well, the site of which is essential to a correct topography of ancient Athens. Herr Dörpfeld, who is conducting the operations, reports that a well of the time of Peisistratus has been found between the Areopagus and the Pnyx, west of the Acropolis, at the spot where, according to the description of the market by Pausanias, the Enneakrounoi, constructed by Peisistratus, was situated. If the further excavations show that the Clusinion lies above it and the Odeon below, its identity with the latter will be proved.

* * *

New National schools are being erected at Coleraine, Ireland, and special consideration has been given to the ventilation, which will be carried out on the Boyle system, the latest patented improved form of self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

The monthly report of the Labour Department states that "though fairly well employed as a rule for the time of year, the various branches of the building trades show a slight falling off, not, however, more than is accounted for by seasonal cause. The percentage of unemployed in the unions concerned has risen from 3·6 to 3·8. The furnishing and wood-working trades continue fairly busy on the whole. The proportion of unemployed in the unions connected with these trades has fallen from 4·7 to 4·6 per cent.

A new eight-day illuminated turret clock has been erected in the Grand Hotel, Ashington, by Messrs. Wm. Potts and Son, clock manufacturers, Leeds and Newcastle-on-Tyne, who are also making a new Cambridge-quarter clock for St. Cuthbert's Church, Crook, co. Durham.

An action of ejectment was before the Court of Appeal on Wednesday, in which the owner of some small houses at Limehouse sought to recover possession of them from the sub-lessee for non-payment of rent. The defendant, who had spent £400 on sanitary works upon the property, sought by a counterclaim to recover this from the plaintiff, but Mr. Justice Charles had decided against him. The defendant contended that, as the plaintiff had demanded a halfpenny too little, the claim was, under an old statute, invalid. The Master of the Rolls admitted that the "dear old judges" had thus laid down the law: but he had long ago made up his mind that at the proper time he would over-rule such decisions. The defendant's appeal was dismissed.

St. John's Church, Egremont, was reopened on Sunday, after internal decoration carried out by Messrs. G. H. Morton and Son, of Bold-street, Liverpool. The style adopted is Byzantine, the building itself being an attempt to reproduce a Greek temple. In the sanctuary a richer treatment has been made use of than in the nave, the basis of the decoration in the eastern portion being a representation of the Resurrection.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Royal Institute of British Architects. "Notes on the Architecture of China," by Frederick M. Gratton. 8 p.m.

Tuesday.—Institution of Civil Engineers. "The Machinery of War Ships," by A. J. Durston. 8 p.m.

Glasgow Architectural Association. Paper by Jas. Chalmers. 8 p.m.

Wednesday.—Carpenters' Hall. Lecture to students on "Sanitation," by J. Wright Clarke. 8 p.m.

Society of Arts. Opening Address by Major-General Sir John Donelly, K.C.B., Chairman of Council. 8 p.m.

Friday. — Architectural Association. "Sanitation in Regard to Hospitals and Infirmaries," by Keith D. Young. 7.30 p.m.

* * *

CHIPS.

Stanley Church, near Bishop Auckland, which was destroyed by fire during the November gale of last year, has been rebuilt, and has been opened by the Bishop of Durham this week.

The foundation-stone of the first permanent home on the Farm Colony for Epileptics at Chalfont St. Peters, in Buckinghamshire, was laid on Wednesday, by Mr. J. Passmore Edwards.

The Bill seeking powers for the projected new railway between Bristol and London, *viâ* Bath, Trowbridge, and Andover, will not be proceeded with this session, on the ground that insufficient time is available to complete the arrangements.

The Prudential Assurance Company of London have bought the London Hotel, St. Andrew-square, Edinburgh, and their architect, Mr. Alfred Waterhouse, R.A., is preparing plans for a new building, to be erected on this prominent site next year.

An Association of Yorkshire students of the Institution of Civil Engineers has recently been formed in Leeds, and the inaugural dinner was held in the Queen's Hotel in that city last Saturday. Sir Jas. Kitson, Bart, M.P., occupied the chair, and the toast of the evening was proposed by Mr. T. Hewson, the city engineer.

The foundation-stone of a new parish hall and Sunday school for the parish of St. Peter's, Middlesborough, was laid on the 14th inst. by Sir Raylton Dixon. The building consists of two floors. The lower floor will be used as a Sunday-school, and the upper floor as a parish hall, to seat about 400. The building is being carried out from the designs of Messrs. R. Lofthouse and Son, architects, Middlesborough.

There is now being fitted in the Pontifical apartments in the Vatican a complete system of hot-water pipes. These apartments have hitherto been without any heating apparatus, and in many of them there are no fireplaces.

The school boards of North Staffordshire are combining to provide a deaf-and-dumb school, and have decided to acquire for the purpose The Mount at Penkhall. The plans prepared by Mr. E. E. Scrivener for altering the premises have been approved by the Education Department, and will soon be carried out. Accommodation is to be provided for 28 blind and 108 deaf-and-dumb children, and the entire cost of acquiring The Mount residence and grounds, and adapting the residence to the purposes in view, is estimated at £13,200.

For £35, the corporation of Deal have agreed to purchase, from the War Department, all that is left of Sandown Castle, erected by Henry VIII., with Deal and Walmer Castles. The ruins are being acquired for sea defence purposes.

In memory of the late Mr. William Norton, a stained-glass window has been placed in the lecture-hall of the Congregational Church, Truro, with which he was connected as deacon, teacher, and school-superintendent for forty years. The window, supplied by Messrs. T. and W. Farmiloe, Westminster, comprises three lights, the centre portraying Christ blessing little children.

The new schools for the Barrow-in-Furness School Board are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

In the case of the application for discharge from bankruptcy of George Taverner, of Lyndhurst, builder, the application has been adjourned *sine die*.

The Council of Egyptian Ministers has voted a sum of money for archæological exploration in Nubia.

* * *

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* * *

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Belfast.—For internal plumbing and gas-piping at new National Bank, &c., Belfast. Mr. W. Batt, Garfield Chambers, Belfast, architect:—

Dowling, J., Belfast (accepted) ...	£215	10	0

For electric wiring switches, &c. (exclusive of fittings):—

Laing, Wharton, & Down, London*	196	0	0

* Accepted.

Bermondsey, S.E.—For alterations, &c., to stabling, Jacob-street, Dockhead, for Messrs. R. Chambers and Co., 58, Mark-lane, E.C. Messrs. W. Eve and Son, 0, Union-court, E.C., architects and surveyors:—

King, W. R.	£179	0	0
Harris and Wardrop...	175	0	0
Johnson, J. H....	163	0	0
Newman...	145	0	0
Chafen	143	0	0
Josolyne and Young, Borough* ...	142	10	0

* Accepted.

Bermondsey, S.E.—For erecting on a vacant site in Page's-walk, Bermondsey, three new temporary iron buildings, for the London School Board:—

Charteris, D.	£1,880	0	0
Cruwys, T.	1,764	0	0
Croggon and Co. (Limited) ...	1,735	0	0
Keay, E. C. and J. (Limited) ...	1,663	17	0
Humphreys (Limited), Knightsbridge (accepted)	1,644	0	0

Bermondsey, S.E.—For erecting new offices and drainage for the boys' and girls' departments of the Southwark-park School, Bermondsey, for the London School Board:—

Foxley, G.	£1,520	0	0
Parker, G.	1,390	0	0
Newton, G.	1,313	0	0
King, H., and Sons	1,290	0	0
Calnan, M., and Co.	1,231	0	0
Stevens Bros., Yonge-park, N.* ...	1,226	0	0

* Accepted.

Bicester.—For repairs, alterations, and sanitary work to The Priory, Bicester, for Mr. G. R. Norbury. Messrs. W. Eve and Son, 10, Union-court, E.C., architects and surveyors:—

	A.	B.	C.	D.
Head, W. B., and Son:—	£259 0 0 ...	£135 0 0 ...	£141 0 0 ...	£535 0 0
Smith, J. W.:—	178 10 0 ...	90 0 0 ...	120 0 0 ...	388 10 0
Kingerlee:—	153 0 0 ...	67 0 0 ...	105 0 0 ...	325 0 0
Bartlett Bros., Witney (accepted):—	172 10 0 ...	65 0 0 ...	83 10 0 ...	*321 0 0
Grimsley and Son:—	185 7 0 ...	—	... 132 9 0 ...	—

A.—General works. B.—New bath-room and w.c. C.—Drainage work. D.—Total.

Bournemouth.—For the making up of Grosvenor and other roads. Mr. F. W. Lacey, A.M.I.C.E, borough engineer and surveyor:—

Hoare, F., and Sons	£1,439	10	0
Saunders, W. H., and Co.	1,404	2	11
Troke, G. (accepted)	1,321	5	4

[Surveyor's estimate, £1,235.]

For making up South and other roads:—

Saunders, S., and Co....	£605	5	7
Saunders, W. H., and Co.	599	19	7
Troke, G. (accepted)	572	10	7

[Surveyor's estimate, £632.]

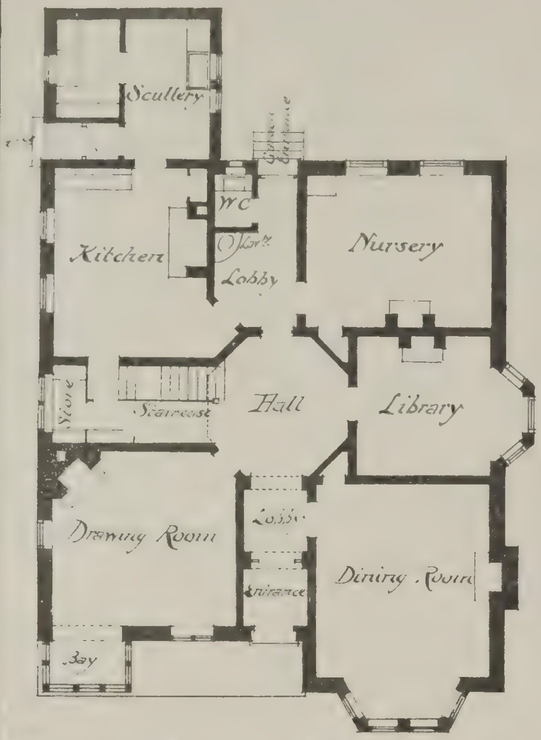
For making up western portion of West Cliff-road:—

Jones, W. E., and Son	£285	4	7
Hoare, F., and Sons	259	10	0
Saunders, W. H., and Co.	258	13	2
Troke, G.	220	9	11
Saunders, S., and Co. (accepted) ...	204	7	0

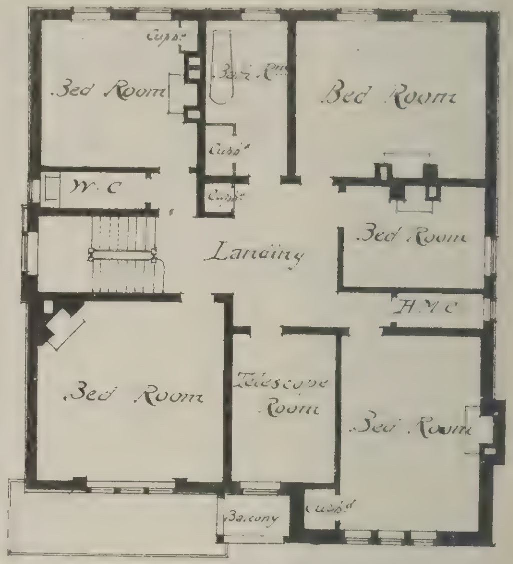
[Surveyor's estimate, £200.]

Bridgnorth.—For building tramp wards at the workhouse:—

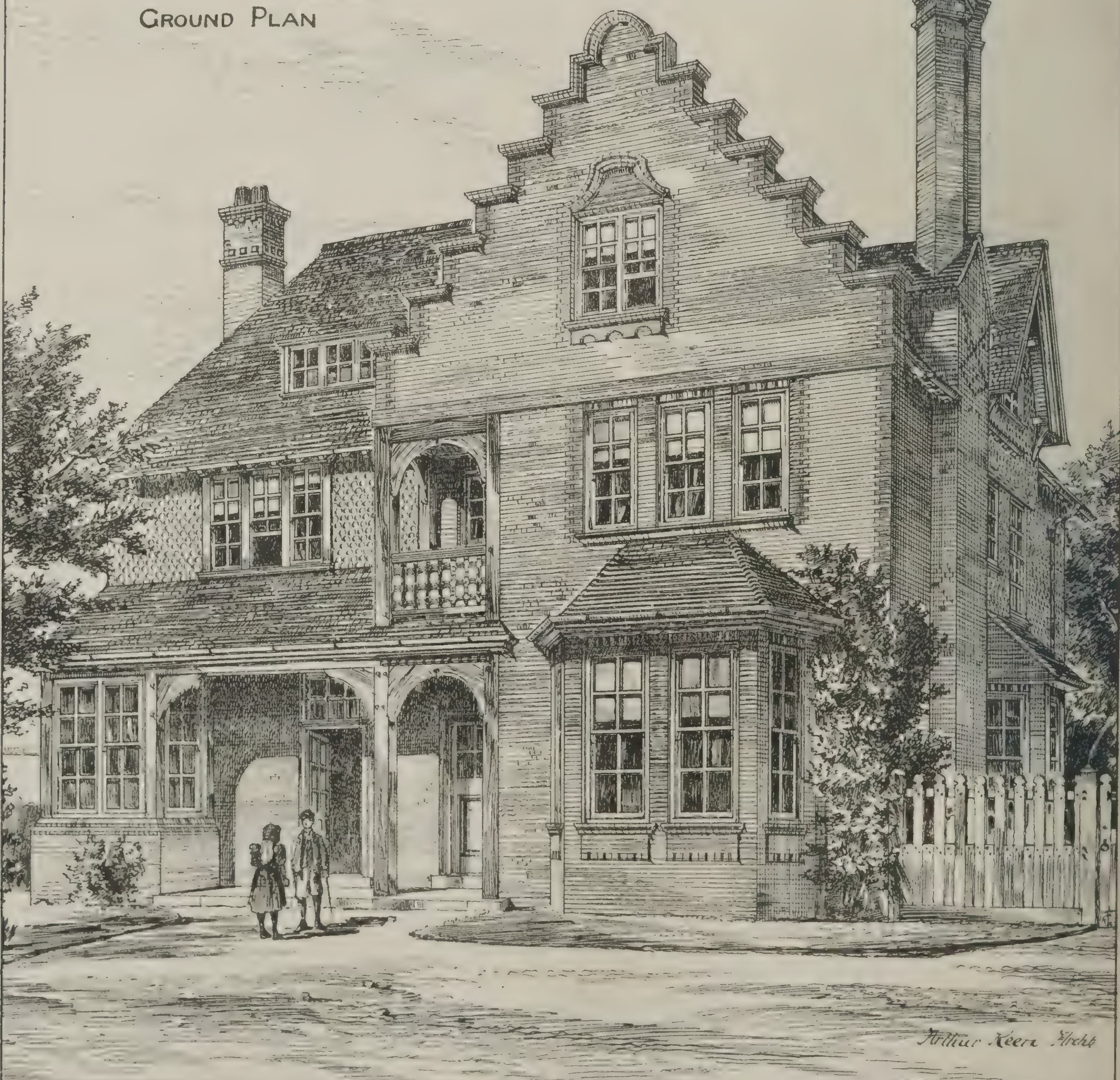
Bickerton and Maddocks, Shrewsbury (accepted).



GROUND PLAN



FIRST FLOOR PLAN



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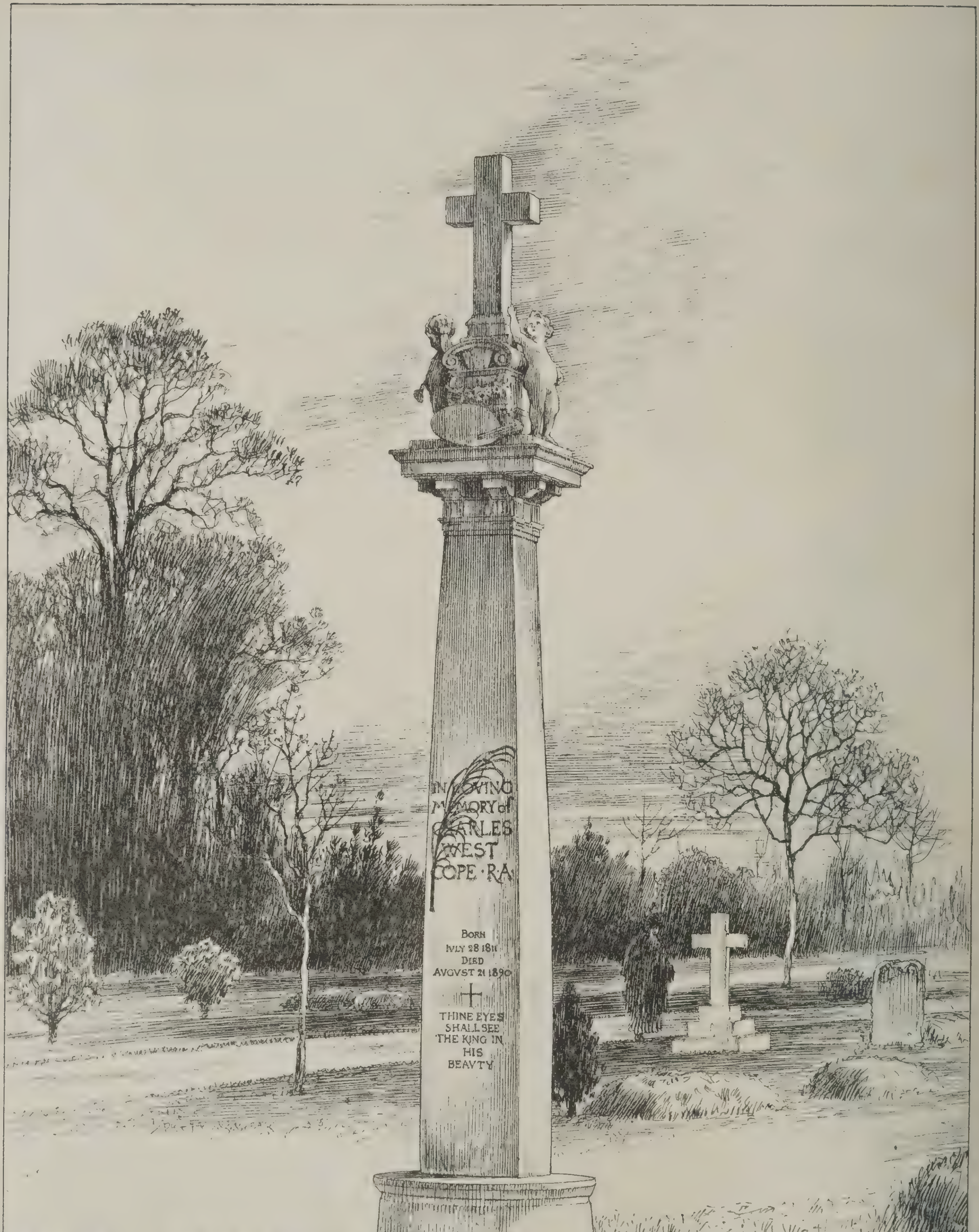
HOUSE AT WALMER KENT. ARTHUR KEEN ARCHT.



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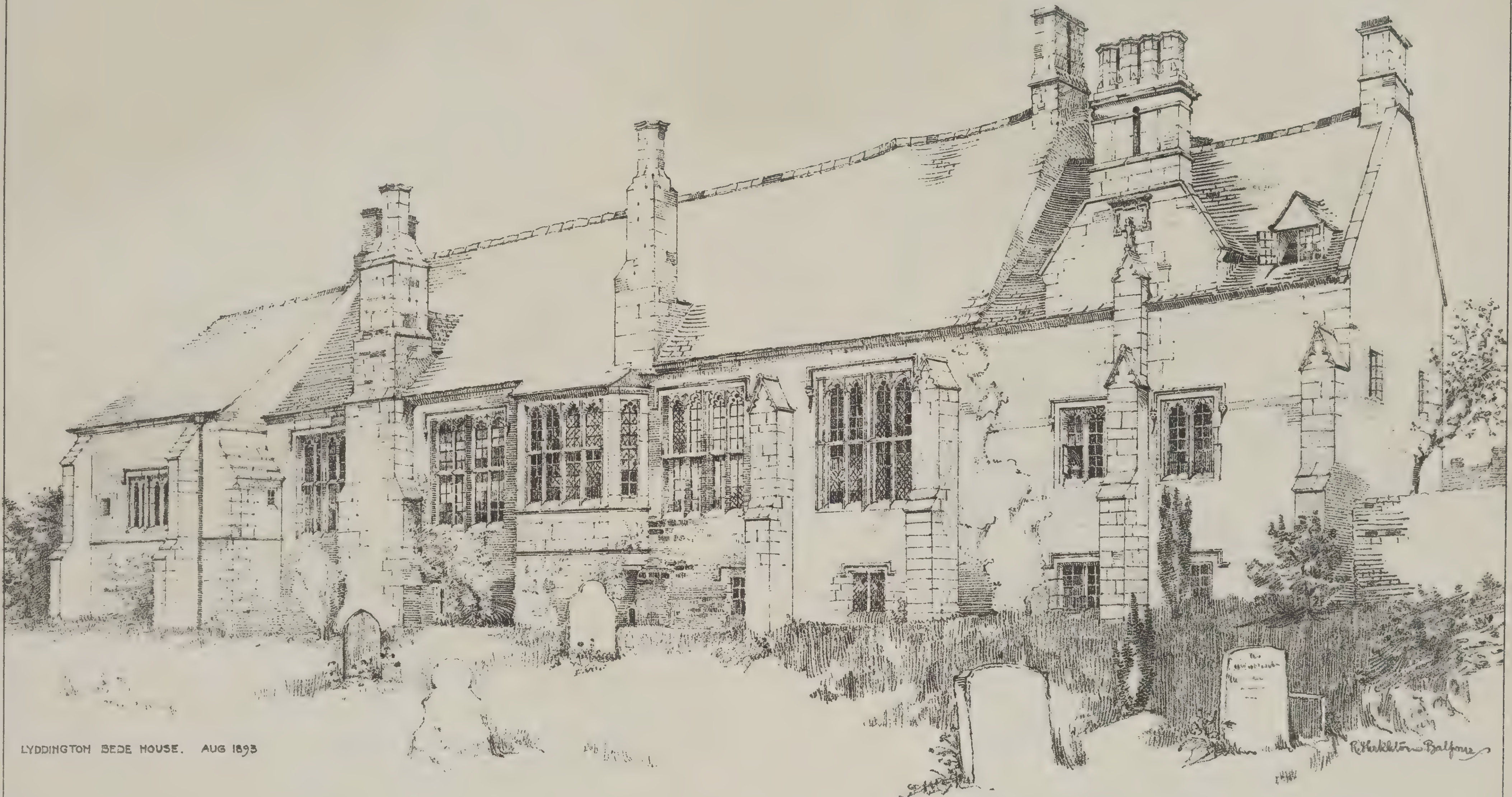

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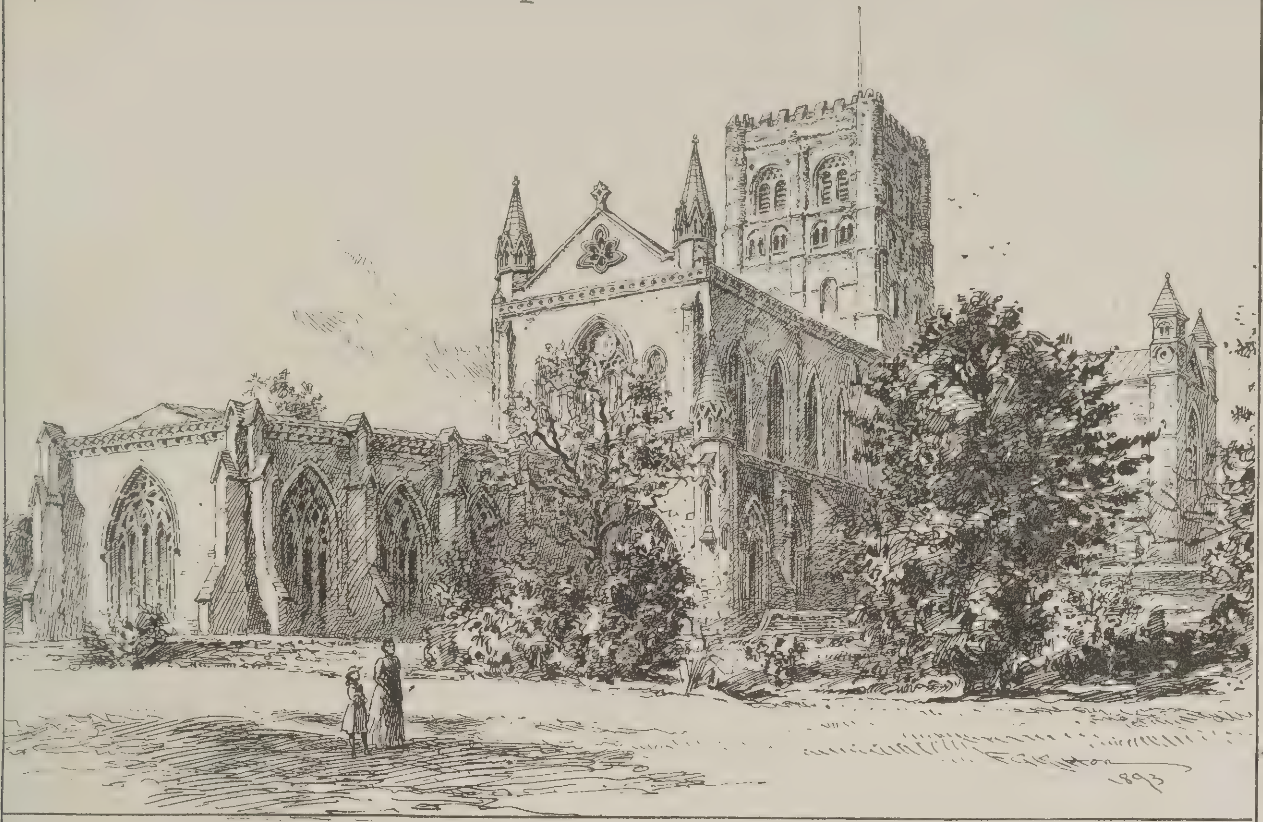
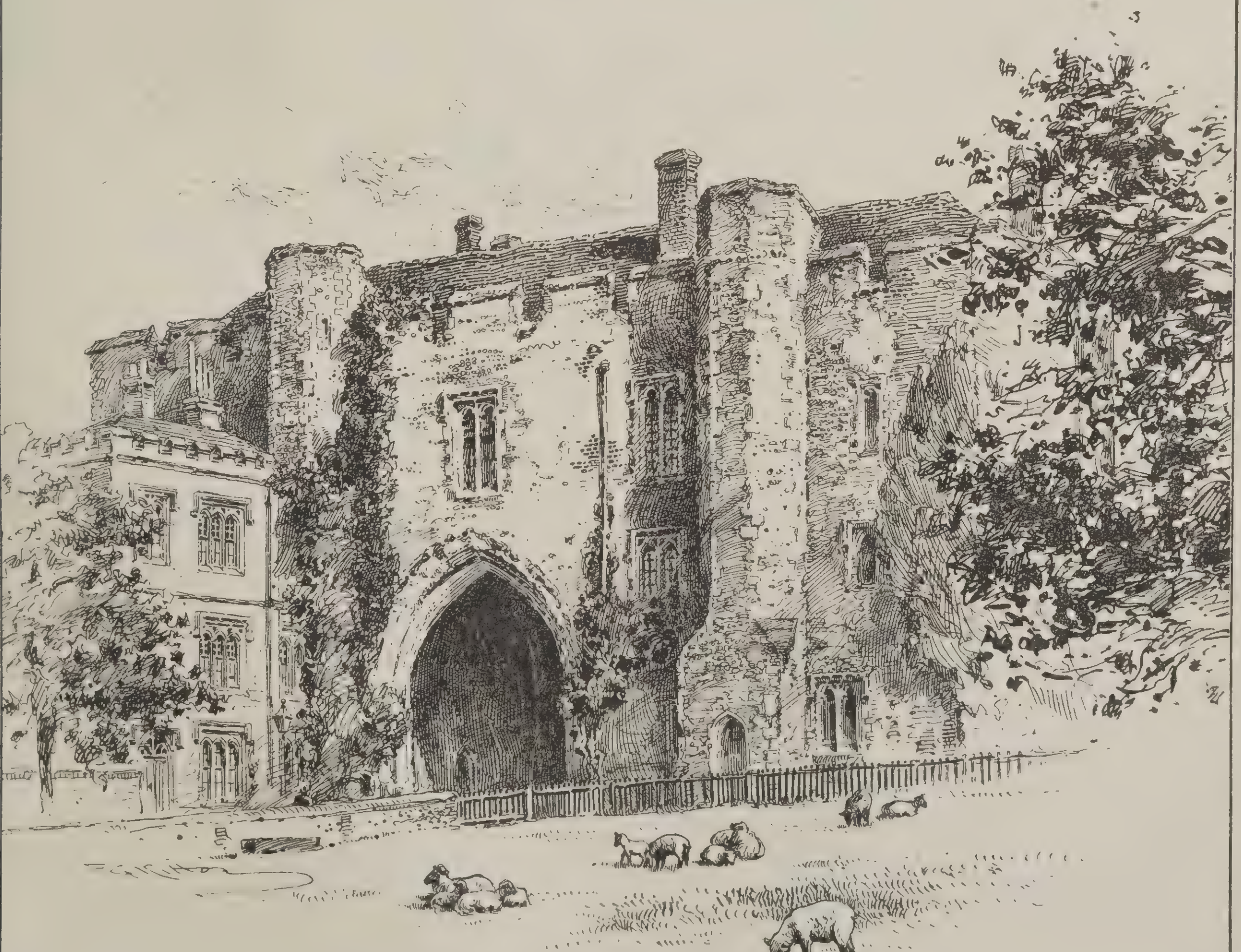


ST. ALBANS · ABBEY · ILLUSTRATED · BY · FREDERIC · G · KITTON ·

FROM "ST. ALBANS · HISTORICALLY & PICTURESQUE" BY · CHAS · H · ASHDOWN · F.R.G.S ·



THE · GREAT · GATEWAY · OF · THE · MONASTERY ·

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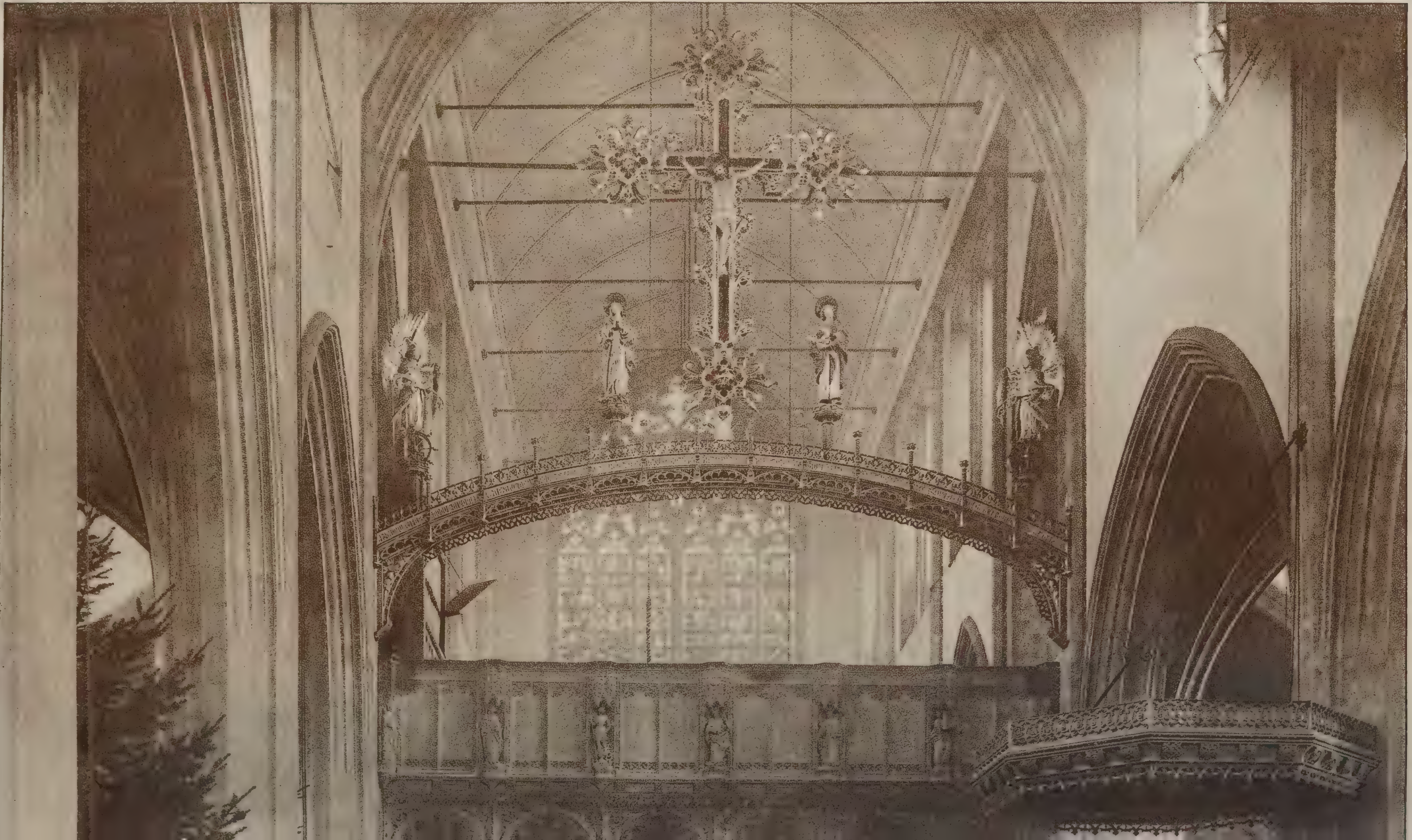

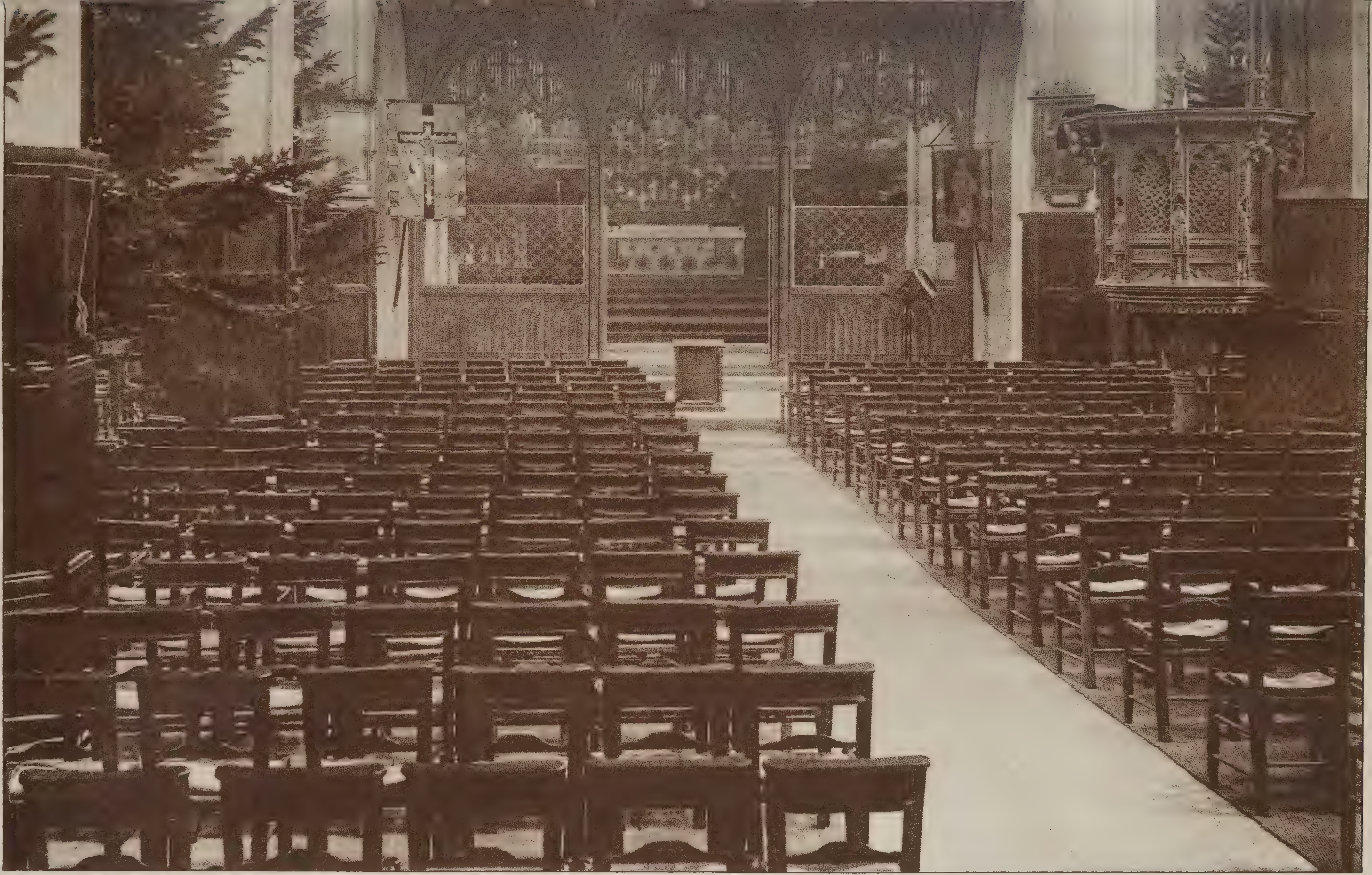

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

INTERIOR·OF·ST AGNES' CHURCH·KENNINGTON·PARK· G·GILBERT·SCOTT·M.A.·ARCHT

FROM·A·PHOTO·BY·MESSRS·W.&·A.H.·FRY·BRIGHTON·

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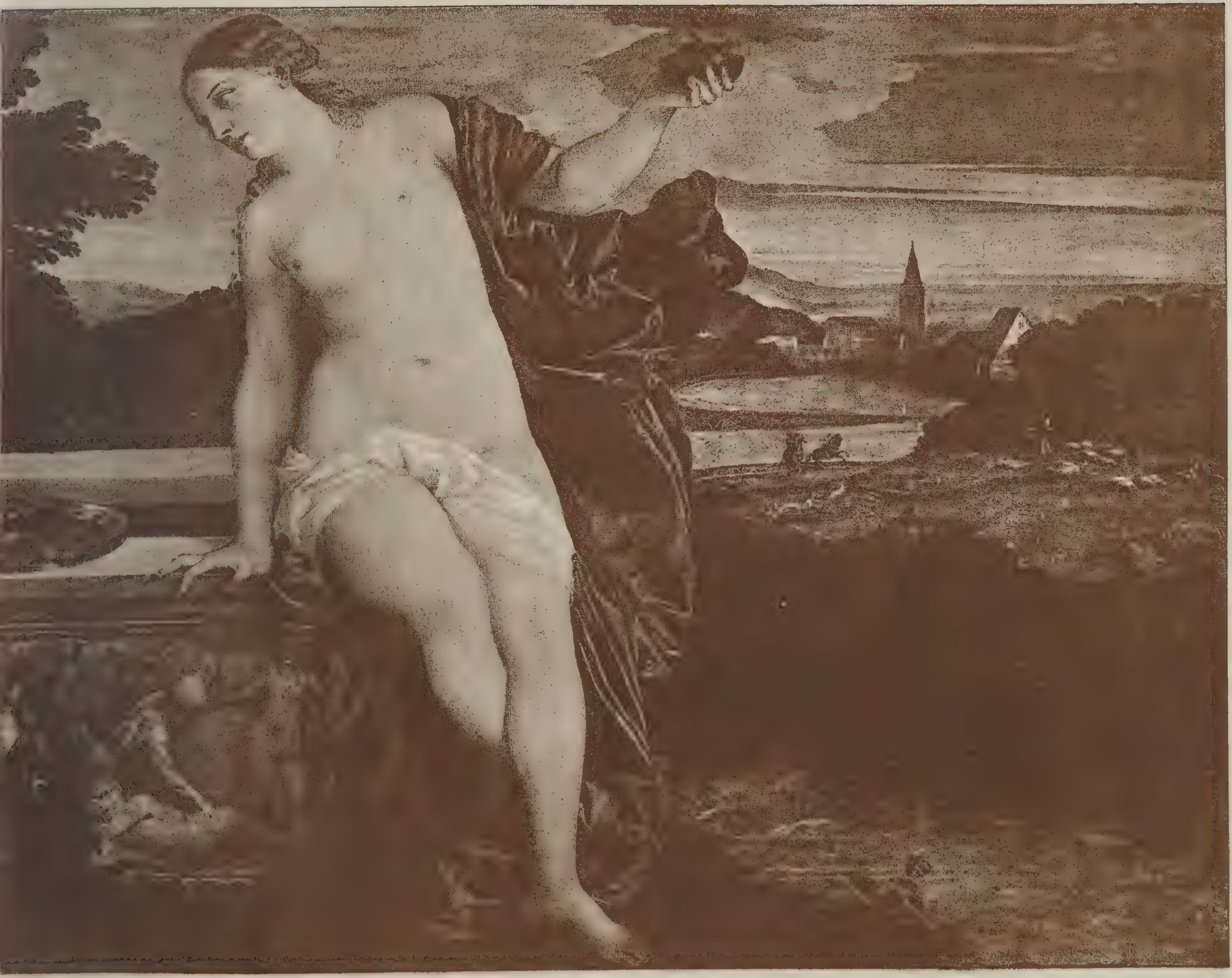
OLD·MASTERS·ON

SACRED·AND·PROFANE·LOVE· (ROME) BY

s. Nov. 16, 1894.



"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2081.

FRIDAY, NOVEMBER 23, 1894.

"AN ARTISTIC NATION."

MOST things have their uses, at one time or another; and even a wet blanket, on occasion, may do invaluable service. But it is startling when an observer of the humorous side of life, like Mr. H. S. Marks, R.A., presents himself to us in this depressing character. It is true that he does not act the part very long. Its assumption was due, we may hope, to a passing shade of feeling: to the sense, perhaps, of uncongenial surroundings, which, at times, must come over every man of cultivated tastes. Such a man soon learns by experience that the people who really appreciate him are few, and that, even if he is popular, his popularity is brought about, not so much by the best elements in his work, as by the second-best or third-best ones. The multitude learn by hearsay that so-and-so is excellent, and they praise him for his excellence; but what they really like in him is not that which is above them, but that which is on their level. When he happens for a moment to reflect on this, and to consider how much, or, rather, how little, their admiration is worth, we need not wonder if, like the courtier whom Touchstone disputed with, he "disables their judgement"; nor, supposing him to be an Englishman, if he says in his haste, as Mr. Marks does in his recent volume, that "England never was, and never will be, an artistic nation."

Yet, if taken seriously, an utterance like this, by an artist of eminence, may do a great deal of harm. It is bad for the student who aims high to be impressed with the idea that his very nationality is against him. We are only beginning in these days to learn the immense power of suggestion. A hearty belief in one's capability to do a thing goes a long way towards making the thing possible: a sincere disbelief, on the contrary, may produce a kind of spiritual paralysis. If anyone thinks that he has already attained, and is already perfect, by all means disabuse him; but do not discourage him in the race by prophesying beforehand that he will never win. You don't know what you can do till you try. You don't know what desperate mistakes the most successful men have, at one time or another, made. You have never seen what miserable failures the greatest workers in every art have produced, even side by side with the masterpieces which have made them famous. Most important of all, you have never looked upon the slow, painful steps by which they gained their height. Nothing would be more instructive, nothing more encouraging, than to study, if we could, the long series of attempts by which the masters of our craft came to be what they were. But it is with the great men of old as it is with some great works of antiquity: the result remains, the means which produced it have disappeared. The traveller comes upon an enormous monolith, raised and left where all the engineering resources of to-day could hardly put it, and he thinks a race of giants or magicians must have set it there. Not at all. The people who reared it were not as big—perhaps not half as strong—as an English labourer. But they worked with a will, and took no count of time. Year after year, it may be, they built up a mountain of earth. Month after month they dragged their monolith up its sloping side—an inch in a day. At last they set it in its place with rejoicing, and then they dug away the mound. So it has been with many a great accomplishment: the monument remains, the mound has disappeared, and the faint-hearted say, "There were giants in those days."

There is no need to point out how likely Mr. Marks's words are to aid and comfort the Philistine, who is already too strong in the land. "If we never were, and never shall be, an artistic nation," he will say, "what is the use of spending all this money and trouble in trying to make us one? How much does the Science and Art Department cost us? How much do we pay yearly for the National Gallery, and how much for the Kensington Museum? Here is an opening for the reformer; here is a possible saving for our pockets in these hard times." The "practical man," with an R.A. to back him, is likely in this way to become more rampant than ever! Like the wife of Andrea del Sarto, in Browning's poem, he can only be pacified and kept quiet while noble work is being done, by having it constantly whispered in his ear how much money that work will bring in. If we once let him think that our work, in the sphere of art, will never bring in enough to pay for the training of the workers, he, as far as in him lies, will stop that training for the future. Let us see what the facts are.

We will leave the prophetic part of the utterance. One prophet is as good as another, when neither can show anything to support his claims; and a prophecy on our part, or on the part of anybody who agrees with us, that England will be an artistic nation, would be a fair set-off against Mr. Marks's prophecy that she will not. But the historical side of the question can surely be settled, one way or the other. Has England ever been artistic? The answer to this depends on what the word "artistic" means. Some people—and we rather suspect that Mr. Marks in this place is amongst them—use it in as limited and conventional a sense as that in which other people use the word "moral." A, they tell us, is envious, and hateful, and uncharitable, but at the same time highly moral. B has been convicted of theft, and C of murder; but their morality has always been above suspicion. To be moral, with people who talk in this way, is to keep one particular commandment; and to be artistic, with people who talk in a parallel way, is to be versed in one particular art. This, of course, is the art of painting.

With this enormous limitation, England may, perhaps, plead guilty to the impeachment, and feel none the less hopeful for the future in doing so. For, after all, painting is not an art which very deeply affects the daily life of a nation. Poetry, which is infinitely higher, is incomparably more pervasive. Very few of us can have a picture of Titian's, very few can so much as have a sketch by Constable; but we can all keep beside us the best that has been written, from Chaucer to Tennyson. Here is an art in which England has held her ground for twenty generations, and bids fair to hold it still. But it may be said that a score or two of poets do not show that a whole nation is artistic. Even this is not so certain. If, now and then, a man arises who can thrill the world by the expression of his feelings, it is because he had ancestors and contemporaries who could feel, though they could not express. But in the most universal arts of all—in architecture and its offshoots—England was for ages, and in the most literal sense, an artistic nation. What nation was more so? Scarcely even Italy, and assuredly no other state in Mediæval Europe. France, in the Middle Ages, dreamed of magnificent cathedrals, and left them unfinished. England counted the cost beforehand, and, in the main, effected what she set her hand to. It was not only a few great architects who did this. Every workman in his way was an artist. The village mason—too obscure to leave so much as a gravestone behind him—yet bequeathed us some fragment of a moulding, some boss or finial, which tells us that he, too, was a maker, and one not easily rivalled. The village carpenter worked his door or his bench-end, or, perhaps, his porch, so soundly that it has stood till now, and so beautifully that every cultivated person would grieve to find it gone. The blacksmith, in the interval between his horseshoes, wrought, perhaps, a hinge, perhaps a stanchion-head, that proved his "mystery" worthy to rank with those of his fellows; while—most astonishing of all—the very plumber was human and had an eye for beauty. And all this did not happen only in one place. It was not at some favoured spot, where the monarchs of the period had set up the Middle Age equivalent for a School of Art; it was everywhere, from the Channel to the Thames, and from the Thames to the Tweed.

We shall be told, perhaps, that down to the 16th century or later all Europe, and not England only, was artistic. This is true. But, judging from the remains that are left, art in England was more universal and went deeper down into the nation than almost anywhere else. In Italy it belonged chiefly to the rich and powerful. Its accomplishments there were too costly for common use, they were for popes, and princes, and kings. In France, too, they were chiefly for the Church and the nobles. Germany and the Low Countries had less ambitious works mixed with their great ones; but it is in England supremely that we find a homelike, unpretending loveliness, even about the very cottages of the poor. And this outlasted the decline of all of English art in general. A certain feeling for quiet beauty had become part of the very selves of Englishmen, and it was long before it could be preached and educated out of them. This, indeed, was effected for a time, their nature was expelled with a pitchfork; but we have seen, in our own days, how quickly and enthusiastically they return to the abandoned types. The artistic instincts of the country have not been dead, but sleeping, and they bid fair, in another generation or two, to be as active as ever.

No race, perhaps, is wholly without capabilities for art. Even the Jews, who seem to have left nothing in Palestine but tombs, and those mere excavations in the rock, have since given to the world noted painters and great musicians. Our ancestors, or a powerful section of them, tried hard, some three hundred years ago, to make their own tastes and habits Jewish. Like all imitators, they found it easiest to copy the weak points in their model. The grandeur of Hebrew literature was beyond them, but the Hebrew incapacity for producing art and the Hebrew intolerance of it when produced by others were quite within their reach. This imitative spirit has scarcely died out yet. Some of us can remember how a Quarterly Reviewer once tried to send us back to Solomon's Temple as the very fount and source of all perfection. This sort of teaching, more than anything else, made England for a time an inartistic nation. But its influence is passing away. We shall again be ourselves; and, though we may never equal the sculptors of Greece or the painters of Italy in their particular lines, we shall once more, as of old, be first in our own. There are far finer flowers abroad than at home, but they do not line every wayside and cover every field, as English ones do; and a great living naturalist has declared that in all the glories of the Tropics there is nothing so fair as a common full of gorse or a wood full of bluebells.

COMMERCIALISM.

THE Catalogue plays a large share in the practice of architecture and building, As the outcome of industrial enterprise, there is much to be learned from these publications of our great firms. They show the progress made in various branches of building and manufacture, and they to a certain extent indicate the practical results of science in many directions. Often the catalogue is of more practical value than the treatise, for it gives what the treatise does not—the actual working-out of the problem to the requirements in such matters as heating, ventilating, draining, and plumbing. Many important branches of construction, like those of fireproof floors, lifts, and roofs, are detailed in these published pronouncements of the trade, which are of much use to every architect and engineer. There is another aspect of the trade catalogue equally instructive, which shows the development of the commercial and competitive spirit, and it is on this we wish more fully to dwell. Commercialism is destroying the vitals of all art. Let us take a few instances. Pictures are no longer confined to the studios of artists, but are vaunted in galleries which have become rather bazaars for picture buyers and gossips who have more leisure than appreciation of painting. Their subjects and handling are often chosen with the ostensible object of gratifying the popular taste for thrilling incident, domestic commonplace, or for a kind of landscape and seascape which invariably appeal to people who like their walls adorned by gilt frames. Like the reader of novelettes and sensational fiction, the average picture-buyer looks rather for a kind of cheap effect than for any higher or deeper motive that can only be discerned by educated and critical persons. In fact, the modern painter must paint "down" to the level of the ordinary British public. It is the same with furniture and art decoration. The makers of marketable furniture of the Curtain-road style are quite alive to the class of goods which command the largest sale, and it would be useless for them to keep in stock any designs after those masters of the 18th century like the Adam Brothers, Chippendale, or Sheraton, or those revivalists of the period which the high-class manufacturers produce. The architectural furniture designer who turns out work from the designs of Mr. Norman Shaw, Mr. Edis, and others find only a limited sale for their goods, simply because such furniture does not "take on." In wallpapers, though, a better taste prevails: the general purchaser prefers certain decided patterns and a lighter key of colour. Subjects, rather than decorative patterns and colour, are chosen: floral devices, animals, grotesques, and even figures are the most saleable. To digress a little, people like to have a subject or story told both in pictures and wall decoration; they have not yet learned to appreciate what has been called the "Persian Carpet" theory of painting—that is to say, that a picture should be beautiful in itself, without telling any story. The advocates of this extreme school, "Impressionism," as it is sometimes called, tell us that a portrait should be reading of character, not mere delineation of feature; a landscape the ideal representation of form and colour—all that makes it beautiful, instead of the minute drawing of every object. Now there is considerable truth in this presentment of nature, and all real decoration should be of this character. Speaking of pictures, Mr. Whistler has said the "vast majority of English folk will not consider a picture as a picture, apart from any story which it may be supposed to tell"; they will not consider it, in short, as a beautiful colour study or mosaic or carpet, or blending of hues of light and shadow; but we need not now carry this discussion further.

The spirit of commercialism is rampant in architecture; every trade is more or less under its influence. At one time every artificer depended on the honesty of his trade: he sought to make it useful, his motive was to aid the architect, and to make his work harmonise with the design; it is now to make it independent of the architect's work if possible, to make it attractive as well as remunerative. Just as the painter panders to the popular taste for humorous or pathetic incident, placid lakes and mountain scenery, the manufacturer seeks to please by all kinds of devices and tricks. His catalogue is at once comprehensive and attractive. If of metal castings or ironwork, he shows us everything from a window-fastener to a wrought-iron church screen, chimney jambs, and sanctuary ornaments, and the designs are characterised by the usual desire for a tricky display and ornament which invariably captivates the vulgar and untrained eye. The tesselated paving manufacturer indulges in varied and brilliant colourings, in panels for stoves and hearths containing landscape or figure groups and other pictorial subjects, defiant of all canons of good taste. He likes embossings and bright colours, and his one aim is to quote low prices by the yard super. In almost every department we have the same evil. From the house-furnisher to the cemetery mason everybody is ready to sell us art "by the bushel," so to speak, at a bargain, and ready made. The danger, in fact, is in making art "cataloguish," of valuing and describing everything by the foot or the yard, like flooring or carpets. And it is this "shopkeeping" view of the artists' and manufacturers' work which has almost extinguished the real artistic sense, and has done so much to make the public undervalue the real artist. Again, in stained-glass work the limits and methods are wofully misunderstood. Popular taste still prefers pictorial designs. Subjects from classic legends, mythical romances, nursery rhymes, and even landscapes are forced into windows and panels of secular buildings without any restraint. As a decoration, stained glass is not understood by the general public; they will admire one of those highly-modelled, coloured, and shaded German windows, seen in a few church walls in which the tracery is entirely ignored; but they cannot see any beauty in the old examples of painted glass of many of our churches in which light is admitted as the first essential. Imperfect though the drawing of many of our old windows are, the glass is decorative, and fills the lights with a charming variety and blending of colour. There may be no design clearly traceable, as in the great west window of Winchester Cathedral; but still, it has a decorative value. Look at some of the modern glass used in panels or medallions! Atrocious colours, of blues, purples, reds, and greens, without any harmony, fill up all the space. There is no proper proportion of white glass to give light. There is a medallion or panel in the centre, filled with a badly-drawn figure or floral device; but this kind of leaded glass is turned out by the yard to suit the love for decorative display. Like cheap pictures and engravings, people will have stained glass and tesselated tiles, and ornamental chandeliers and electroliers, and decorated stoves and furniture; but as to the real merits of the designs, or who produced them, they do not trouble. If they are bad copies of Burne-Jones, or Norman Shaw, or Aldam Heaton, or any of our leading furniture designers, they are sought after, it may be with greater eagerness; but the element of personality or individual genius is, after all, a minor matter with the public, who go in for decoration at any price.

In the old days such new-fangled productions were not known; there was no attempt to make glass, or leather, or wood assume other appearances than their own, or to treat them otherwise than plainly and honestly. But now the commercialism of the age has introduced a number of products—plastic, fictile, and textile—which are all more or less counterfeits for obtaining decorative effects. We have not only our "Chippendale," "Sheraton," "Empire," and bamboo chairs and tables, but machine imitations of lacquer goods, "crocodile" glass and "leather." Some very pretty effects are obtained by subjecting glass to certain agencies, by which the crystalline forms of hoar frost and other natural forms are produced; but we may have too much of this sort of thing, and at a serious expense to true art. Perhaps one of the most remarkable instances of imitating hand-work is to be seen in the decorated panels of our rooms and West-end buffets and large passenger steamers, in which the wainscot panels are carved or engraved by a mechanical process, with the ground gilded. Italian and French arabesques are reproduced with precision, and the general effect is all that can be desired. Perhaps, after all, it will be impossible for our architecture and its allied industries to recover the position it once held, but we can endeavour to raise the level of public taste. Several influences at present are at work in making art commercial. The first and foremost is that of competition, which, as at present conducted, prevents a fair contest amongst real artists. The big firm with machinery and plant makes it impossible for one man to compete single-handed. He is "over-weighted." The contract is too much governed by tender, too little by honesty of purpose. The payment of the profession by commission is equally inimical.

As long as architects are paid in the same way as the auctioneer and the broker, the public will not be able to distinguish their services. As long as the architect charges 5 per cent. for buildings, good, bad, and indifferent, it will be hard to make the ordinary man think there is anything artistic about his work, or that it stands in the same category as that of painting. The eminent painter's work commands a high price in the market, which is estimated by his artistic genius; the skilled physician and lawyer both command fees in excess of those paid to average practitioners; but the architect's fees are uniform, like those of the auctioneer and house-agent. Can we be astonished that the art he professes is measured accordingly? If payment for services is on one uniform scale, can we wonder that the business and money-making architect prefers to take the most remunerative kinds of work, and even pander to tradesman-like devices in obtaining commissions?

Lastly, the want of education stands in the way of any immediate improvement. The average client looks at nothing but the barest results of mechanical labour, the quantity of bricks and timber, or the finished structure. He cares little or nothing about design or plan, motive, or artistic sense; how much thought has been expended on paper. A book of designs or patterns, or a trade catalogue is of far more interest to him, so that he can select what pleases his fancy. The architect soon finds out that he may throw away much more time, thought, and invention on the work than he will ever get paid for. It is like throwing pearls before swine; he accordingly does not scruple to make use of those expeditious means which are suggested to him by everyday practice. The "provisional sum" is an easy way to transfer his duty; the illustrated catalogue offers itself readily in questions of fixtures and decoration. The phrase "not exceeding so much per foot run," or "yard superficial," or "per piece," as the case may be, supersedes labour and invention, and in those ways the commercial spirit creeps into every transaction.

The new board schools, Cardiff, are being warmed and ventilated by means of Shorland's patent Manchester stoves, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

THE EXAMINATION QUESTION.

TWO or three important questions have been raised at recent opening meetings. The examination question was broached at the meetings of all the three leading bodies of the profession, and from the remarks made it is evident there are two views of the subject—one coming from those who wish to make the entrance into their own ranks secure, the be-all and end-all, the other from those who wish to institute a test of qualifications for all who enter the profession. The first party are anxious to make all competent men members of their own body, and ignore any legislation which seeks to impose a test of competence on all outsiders who practise architecture. This imperfect and "dog-in-the-manger" policy has been pointed out in our pages as only benefiting a very small proportion of the whole profession. The President of the Society of Architects, Mr. Hamilton, has spoken of this qualifying test in a comprehensive sense and more liberal spirit. As a test for membership, some form of examination is absolutely essential to secure that modicum of professional knowledge which every member ought to possess. It should undoubtedly take cognisance of the candidate's general education, his acquaintance with materials and construction, and his general ability in questions of art and design.

That he should submit satisfactory proofs of his architectural powers, in the form of designs and executed buildings, goes without saying. But the intentions of a professional body or any society should not stop here: they should be directed to the education of students and pupils, and of assistants already engaged in architects' offices, who one day may claim to be admitted, or to a course that will be preparatory for any examination under a Registration Act. We are, therefore, glad to see that the S.A. council contemplate the formation of a students' section, and in this connection we may suggest that all students, whether members or not, may be admitted under certain conditions. Instruction to be really useful must embrace a bold acceptance of all modern as well as old materials and inventions. It is too much the rule to direct the student's mind to academical or archæological studies first, with the consequence that the mind gets filled with ideas and forms before it is able to master the actual conditions which gave birth to those forms, and which ought logically to be learned first. Mr. Beresford Pite rightly pointed out the weakness of the Institute Art section examination when he said its syllabus seemed to imply that the materials and power of design depended on a knowledge of the forms and features of ancient architecture. A more mistaken view of art cannot be conceived; but all our art schools and educational classes have assumed that it is necessary to verse the student thoroughly in the forms of ancient Classic and Gothic architecture before they teach him the fundamental principles of all building art. Models and photographs of important historic edifices are valuable helps after the student has been taught the rudimentary problem of how to design on rational principles. As Mr. Hamilton said, the aim of such studies as the best examples of Classic, Gothic, and Renaissance afford should "be fundamental, not with the object of slavishly copying, but of learning the principles upon which the builders wrought." If the instructor or professor would give the probable reason of such-and-such a feature, like a cornice, or a roof, or the form of a window, he would be doing the right thing. Instead of which, copies of Classic buildings and Gothic edifices are set before the student to reproduce, without any comment or instruction. And it is precisely the same in giving the student examples of construction like framed roofs, partitions, masonry, &c., to copy, which we find in many schools of art. They copy, but do not understand the reason of this or that construction.

One point in connection with the student's qualifications has not received the attention it deserves, though it has been incidentally pointed to—namely, in what sense and how far is an examination to be taken as proof of an architect's competence in design? We must all acknowledge that an "artistic sense," as the president of the Society called it, is, first of all, essential to an architect; but how is this sense to be tested by question and answer? It cannot be so tested. As we lately remarked, there is just a fear that an examination—excellent as it is as a test of ordinary knowledge—will be looked upon by many as the aim and end of all effort; that professional equipment in the essentials of construction will be taken to represent a complete architectural qualification. Nothing can be farther from the objects and aims of the architect. If it should tend to make the student indifferent to the prosecution of further study, its effect will be disastrous. If, for instance," the candidate who has "passed" by "cram" in necessary elementary subjects thinks he has acquired all that an architect should know on art matters, the test will have the result of bringing into the profession men who have little qualification for the title of architect. Good mechanicians, experts in mathematical analysis, surveyors, theorists in construction, business men will have the best opportunities of entering the ranks, while men who have a highly-developed artistic sense, artists and draughtsmen, will necessary be excluded. It would be injurious to the best interests of the profession if it should turn out that the examinations instituted repelled men who had naturally the instinctive faculty of art, and hence the importance of considering the subject from two sides. The examination should be made attractive to both the student skilled in science and technical subjects and to those who are by nature and training artists. We are of opinion that it would be an error to make one course or syllabus binding on all. The division of subjects adopted by the Surveyors' Institution in their examinations has worked well; and a like subdivision of subjects may be necessary for architectural students. As a preliminary qualification, however, every candidate ought to be able to prove his talent in design by some infallible criterion. There are certain subjects which every candidate would be required to pass in a preliminary examination, such as the elements of construction, the use and strength of materials, elements of surveying and valuation, law of landlord and tenant, of fixtures and dilapidation, &c.; but specific subjects or subdivisions might be left to each candidate to determine for himself.

BRITISH BUILDING STONES.—XV.

THE probable origin and mode of formation of igneous and sedimentary rocks having been considered, there is yet another class of rocks mentioned in the Building News Quarry List which are neither igneous nor sedimentary, though they partake of the characters of both. Metamorphic rocks are those which have been altered from their original condition by external or internal forces; these have affected their structure, mineral composition, and texture. Metamorphic rocks are unstratified, as some granites; stratified, as marble; and stratified with cleavage planes, superinduced as clay-slate, which splits into leaves at an angle having various inclinations with the rock-bed. As many clays and sandstones yield the same ultimate chemical analysis as some granites, and as the latter bear unmistakable evidence in many cases of having been melted down from pre-existing rock, sometimes even from granite, it is concluded that such rocks are of metamorphic origin, and are indeed clays or sandstones melted down, and perhaps remelted, always under great pressure, and in presence of water. It is well known that chalk, or ordinary limestone of any kind, if burned in a kiln, becomes converted into lime. Now limestones at present lying some thousands of feet under the surface have been subjected to heat infinitely greater than that of a limekiln by the intrusion of molten rocks, such as granites and basalts; but these limestones are not, and cannot be, converted into lime, for the air has no access to them. In other words, the carbon dioxide is shut up with the limestones, and cannot escape as it does in an ordinary kiln, and the effect of this is to convert these limestones into marble—that is, to alter the structure of an earthy limestone, such as chalk, and convert it into a crystalline rock, such as statuary marble. Chemically, both these rocks are identical; the only difference is in their structure, which difference has been induced by pressure, heat, and moisture. Hence marble, using the word to mean crystalline limestone, is a metamorphic rock. How is it known that chalk has been altered into marble in this way, if this rock so altered must, of necessity, have been acted on by fire and moisture at such a depth from the surface? In Antrim, in Ireland, where the chalk has been upheaved, and is overlain by a once molten sheet of basalt, the former is converted into hard crystalline marble. Similarly, in Donegal, carboniferous limestones are converted into marble when in contact with granite, and wherever non-crystalline or earthy limestone rocks have been invaded by igneous rocks, the former are converted into marble along the lines of contact, and the gradation from crystalline to non-crystalline is clearly traceable throughout. Ordinary white chalk powdered and melted with a little water under conditions of pressure which prevented the escape of its carbon dioxide, was converted into hard crystalline marble similar in every respect to the well-known statuary or Carrara marble. Hence it is inferred that all non-crystalline limestones may be altered into crystalline by heat and pressure in presence of water. The rock from which roofing slate is cleft was once a mass of soft clay. This clay was subjected to enormous pressure, laterally and vertically, and at the same time to intense heat. The effect of these has been to convert the clay into hard rock, and induce in it a structure called "cleavage," a property which permits the rock to be split into thin leaves in planes not coinciding with the original bed of the rock, and frequently at right angles to it. Every piece of sandstone invariably flakes off in places parallel to the original quarry bed of the stone; but a piece of a slate rock does not—it flakes off in leaves, which probably stand at right angles to the quarry bed of the stone. A slate is therefore set on a roof on its cleavage bed, not in its quarry bed; and where the original bed of the slate rock is not completely obliterated by metamorphic action, the slate will break across that bed. It is known that cleavage has been produced in this manner, for mud, beeswax, and other finely-divided substances have been poured into a box, and on being subjected therein to enormous pressure horizontally and at the same time vertically, the material so treated will have undergone a change called molecular re-arrangement, which permits it being split into thin sheets exactly in the same way as a clay-slate rock is split into slates. Now, if any rock which has undergone change since it was originally deposited is a metamorphic rock, it would be very difficult to find a rock which is not metamorphic, for all have undergone change more or less, and some have been altered several times over. Take a limestone, like the Binstead limestone for instance (Building News list, No. 36), or the "Paludina Marble" (No. 181). Here are rocks built up exclusively of shells of once-living organisms, fresh-water molluscs, chiefly Planorbis, and Paludina. Now, before these animals could secrete shells, which are calcium carbonate, this mineral must have been in solution in the water in which they lived, and could only have come into the water from the wearing down or denudation of rocks containing limestone. Again, the sandstones and millstone grits are all built up of the *débris*, more or less finely ground, of other rocks, such as granite, basalt, &c. One of the typical constituents of granite is mica. This is very clearly seen in many sandstones, chiefly in the "old red," and it is sometimes present in such quantities that it gives the stone a fissile character, the mica occurring in distinct planes, and always with the surfaces parallel to the bed of the rock. Rocks Nos. 55, 77, and 221 are striking examples of sandstones which can be readily cleft into "stone tiles," owing to the presence of mica. All these rocks have, therefore, undergone change since their original deposition. Yet they are not "metamorphic" rocks in the ordinary meaning of that term. Page ("Handbook of Terms," Blackwood, 1865) defines metamorphism to be "that change of structure or of texture which has been effected in many rocks by the agency of heat, chemical action, or otherwise." Seeley, in Phillip's "Manual of Geology" (Griffin, 1885), p. 356, says strata are "metamorphic" when they have been "transformed in structure or appearance by subterranean heat, or heat developed by pressure applied since their deposition." He opens this definition by indicating "aqueous" strata as being the strata referred to, and closes it by adding that "all strata" may become metamorphic. Granite rocks are not deposited in beds in layers like sedimentary rocks; they cannot, therefore, be referred to as "strata" of any kind. Yet they are clearly sometimes of metamorphic origin, so that it may be added, in addition to "aqueous" rocks and "all strata," all rocks whatever may become metamorphic. Prestwich ("Geology," Clarendon Press, 1886), p. 32, says: "Metamorphic rocks are those in which the molecular structure has been altered, new chemical combinations formed, and the structure rendered more or less crystalline. So great is this change in some cases, that the line of demarcation between rocks of metamorphic and those of igneous origin is often extremely difficult to determine. Rocks formerly supposed to be of igneous origin are now commonly considered to be altered sedimentary strata. By many granites are now held to be due to changes of this character." Green ("Physical Geology": Rivington, 1882, p. 399) says: "There yet remain a number of crystalline rocks which cannot be placed either in the Volcanic or Plutonic group. Most likely they were originally, all of them, bedded, derivative rocks; but they have been altered in such a way as to acquire a crystalline texture." Further on he says that the term metamorphic is "usually restricted to those rocks which have suffered transformation of so radical a nature, that it is only by long and attentive study that we become convinced they are merely the altered forms of some of these rocks we have become already familiar with"; and in a footnote to Prestwich's definition, already given, the author adds, "There is much difference of opinion as to where the line between these and the unaltered rocks should be drawn. Some geologists would exclude ordinary slates." Now, if geologists do not know exactly what rocks are metamorphic and what original, the quarryman and stonemason may be excused if their knowledge is so limited; but the endless vista of changes opened up by this question of metamorphism is startling, for if granite is but a melted sandstone, and that sandstone was a broken down granite, then granite was probably a sandstone, and so on; all these changes forming apparently links in an endless chain, reaching from the present into a past the extent of which the mind utterly fails to grasp. The question to be decided here is, How many times has sandstone been derived from granite which has been derived from sandstone, which has been derived from granite, until we reach the original rock found in the first instance from the cooled down gases of the incandescent nebula from which our earth sprang? It is believed that not a single rock is known to exist which formed part of the original crust of our globe. It may be well, however, to mark this important fact—that though the rocks have frequently changed in their structure and in their mineral composition, their chemical elements remain constant throughout; they are neither added to nor taken from; they merely combine to form new minerals and new arrangements of minerals, so that, though all rocks have undergone constant ceaseless change, there is a substratum eternal and indestructible which knows no change. Pursuing this extremely unconventional way of dealing with the geology of the British building-stones it may be well to get into the field, and consider some of the rocks *in situ*. A visitor to the Isle of Sheppy will have noticed that the cliffs to the north of Minster Church, and lying between that place and Warden Point, are composed of a bluish putty-like clay, which weathers of a deep brownish red colour. In dry weather this clay is fissured in all directions, when it parts with its moisture. In this clay are imbedded lens-shaped masses of clayey limestone, from a few inches to a few feet in diameter. These blocks, called "septaria," when broken with a sledge-hammer, reveal a curious partitioned structure, the divisions or partings, which sometimes radiate from the centre of the block, being completely filled with calcite; they were once collected on the beach at Sheppy and Harwich, and burnt in kilns, and ground to make "Roman" cement. Here and there through the mass of this clay, glistening crystals of a mineral called "selenite" may be seen. Some of these are from 2in. to 3in. long, and deserve notice, because this mineral is the same as alabaster, from which plaster of Paris is made, selenite, alabaster, and plaster of Paris all being known to chemists as calcium sulphate. Plaster of Paris is simply alabaster, or gypsum, with the water of crystallisation driven off. Another digression into chemistry is here almost unavoidable; but the opportunity is too good to be lost. Ordinary limestone is calcium carbonate, commonly called carbonate of lime. When this is subjected to heat, the carbon dioxide (carbonic acid) is driven off, the limestone being "decomposed," and lime only left. When, however, alabaster, which is calcium sulphate, or sulphate of lime, is subjected to heat, it is not decomposed, the water of crystallisation is only driven off, and a white powder remains called plaster of Paris. This is still calcium sulphate, but it has the property of reabsorbing part of its water of crystallisation, and setting hard. The clay of the Sheppy Cliffs is also found across the water on the opposite coast, where it extends to Harwich, and inland to Sudbury. A belt of it also runs from near Dorchester, past Salisbury, under Chichester, and dies out about a mile north-west of Worthing. A narrow band runs across the Isle of Wight from the Needles to near Culver Cliffs. The stratification of this clay is everywhere obscure. At Sheppy, where it is well exposed, it appears to be one great homogeneous mass without a trace of bedding of any kind. Where did all this clay come from, and what threw it down in this chalky basin under London, and along the southern coast of Dorset and Hants? First, then, in order to know something more of this subject, it will be necessary to "take off the quantities" approximately of the material being dealt with. It is not possible to say how great an extent of surface this clay covered originally; but a fair estimate of its present contents will be about six thousand square miles—four thousand for the London basin and two thousand for the Hants basin. The area of the London basin includes the present water-covered estuary of the Thames, between Sheerness and a line drawn from Harwich to Thanet. Now as this clay runs from a few feet thick in Wilts to 600ft. thick in Essex, a moderate estimate of its entire average thickness will be about 300ft., the contents of the whole may therefore be stated at 50,181,120,000,000c.ft., and this figure will be very considerably under the mark, for the clay at one time extended across the Channel to France and Belgium. All this fine impalpable mud was certainly deposited in water, salt water, probably an estuary of the sea, the carrying-power being some great river which flowed northwards from the Tropics, bringing down all this sediment with the Tropical plants and animals swept from its banks, and spreading the whole over the 6,000 miles of surface already indicated. That Harrow, Highgate, and Hampstead Hills should at the time have have been sunk in the sea 500ft. or more, below Trinity high-water mark, seems incredible, but it is nevertheless true. Now what was about the size of the great river that did all this navvy's work? It is not possible to say; but assuming it to be as big, and as dirty, as the Mississippi, then it would have taken thirteen thousand five hundred years to have deposited the London clay in the present London and Hants basins, allowing its work to be at the rate of 3,702,758,400 (three billions and three-quarters, roughly) cubic feet annually, this being the actual carrying work done at present by the great American river. It is remarkable that, although strata representing sands and gravels underlying and overlying the London clay are found in the Paris basin, resting conformably on each other, and giving no evidence of any break in time during their deposition, yet the London clay was quietly laid down in the London and Hants basins during an interval between the formation of two of these French beds; and there is no indication whatever in these beds of any lapse of time, much less of a period of 13,000 years, or even of the great physical changes which such a deposition implies. In the preceding sentence the technical term "conformably" has been used, and it may be explained here. When ordinary three-coat plastering is being done, the rendering is laid "conformably" on the brickwork or lathing, the floating is laid "conformably" on the rendering, and the setting is laid "conformably" on the floating. "Conformably" means, then, that each successive coat is laid on in layers parallel to the preceding one. Nature does not always work so regularly as the plasterer, for she will, after laying on her "rendering," squeeze it up together into great waves or undulations, and then, again, after laying on her "floating," she may take both and turn them completely upside down? In which case the successive coats are said to be laid down "unconformably," or, in plain English, "anyhow." When a joiner wishes to make a glue joint, he takes the boards to be joined, and having fixed them on his bench, he proceeds to plane down the waves or irregularities left by his saw; the edge of his boards, in fact, suffer "denudation" at his hands. Nature treats rocks in a similar fashion. She squeezes rocks together edgewise, so that they present a waved surface, something like a deal cut by a circular saw, only on a much larger scale, and she then proceeds to plane the irregularities down with tools far more potent than jack or trying planes—viz., frost, flood, rains, and tides—until she has made a smooth surface, and then other rocks are deposited on this, but *not* conformably. It has been stated that the great river which brought down the London clay also brought down and entombed the remains of certain plants and animals not known at present in these latitudes—except perhaps in Regent's Park—and many of which have been extinct for thousands, perhaps millions, of years. What were these like? Amongst plants, there were pines, oaks, magnolias, eucalyptus, custard-apple, gourds, melons, and millions of palm fruits and seeds. Trunks of trees, considerably worm-eaten, may be seen scattered over Sheppy beach, and choice collections of the fruits and seeds have been made in the cutting at Highgate Archway, in the late brickfields in Parliament-fields, and other places. Amongst animals are turtles of greater variety than the entire world now produces; a sea-serpent, called Palæophis toliapicus, though why they should have given him this name is a puzzle, for, so far from being an "old serpent," he was a brand new one, about 12ft. long—none ever having been found before; a kind of wild duck, called Odontopteryx (geologists and chemists always like simple names!), and this must have been a very wild kind of duck indeed, for it had jaws something like a Yankee cross-cut saw, the teeth being solid with the jaw, not mere "fixtures," and it may therefore be safely assumed that Odontopteryx was well able to secure a "close season" without the assistance of any Wild Birds Act or Game Laws. The foregoing remarks have been more in the interest of brickmakers who work the London clay extensively for bricks, rather than of the stonemason, for the latter can have little interest in the formation as a matter of business, except perhaps in a calcareous sandstone of purely local occurrence, found at Bognor in the lower beds. Here sandstone rocks of the London clay once, and that quite recently, formed a line of cliffs along the coast. Mantell says that the lowermost part of these rocks is a dark grey limestone, in some instances passing into a sandstone; the upper part is silicious. The Barn rocks, the Houndgate, and Street rocks, and Mixen rocks, south of Selsea, are portions of this same bed. Mantell adds that the septaria found in this rock are sometimes cut into slabs and polished.

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL.—XI.

IN connection with the subject of the bearings or the bedding of girders, there are one or two practical considerations which require attention. The span, total load to be carried by the bed-plates, and the means to be adopted so as to deal effectually with the expansion and contraction of the material, due to the natural rise and fall of temperature, are all factors in the treatment of this detail, which are too important to be disregarded. At the same time it must be confessed that a great deal of nonsense has been talked, written, and, if we may use the term, constructed by adhering in a manner almost servile to the dictates of pure theory. We have inspected drawings and plans of bridges not surpassing the insignificant span of 40ft., in which there was more provision made for expansion and contraction over the bearings than in some structures known to us which have spans of seven and eight times that dimension. Independently of this question, to which we shall return subsequently, the absolute length of the bearing of a girder upon its supports must be first determined, and this is a matter which does not concern the girder alone, but has a special reference to the character, composition, and proportions of the supports themselves, whether they take the form of piers or abutments. It is evident that if the span, weight, and other conditions be similar, and that a certain unit of pressure per unit of area is not to be exceeded, then a comparatively narrow girder must have a longer bearing than a broader one. Obviously, also, a pier or abutment of solid masonry will withstand a much greater crushing strain per unit of area than similar erections of steel or iron, without taking cognisance of the fact that the latter materials would fail by reason of flexure long before their crushing strains were arrived at.

Let W equal the load upon the support, l the length, and b the breadth of the bearing, and w the safe load per unit of surface, which may be taken at one square foot. Then we have, keeping l and b in feet—

$$W = l \times b \times w.$$

The value of b, which is always rather in excess of the actual width of the lower flange of the girder, is nevertheless determined, as has been already amply demonstrated, by the exigencies of practical construction, and w is always a constant for the same description of building materials, so that the variable quantity is l, the theoretical value alone of which, apart from considerations to be hereafter entered into, will be given by the equation—

$$l = \frac{W}{b \times w} \text{ .... A.}$$

It is assumed that in all cases the absolute pressure brought by the girder upon the support is uniformly distributed over the whole of the bearing area by means of proper bed-plates, or if they be altogether dispensed with, as may be done in small examples, by a proper system of bedding. In the example we have selected for the plate girder, the expansion of the steel within the comparatively limited range of our normal temperatures requires but very little play. Until a span of 80ft. is attained, the arrangement shown in Fig. 1 will more than suffice for all contingencies. The points to be attended to are the following:—All the rivets beneath the bearing area of the ends of the girder are to be countersunk—that is, the holes of the rivets in the lowest or bearing plate are to be widened or drilled out, and the ordinary head of the rivet hammered in flush with the surface of the plate, instead of being hammered *in rilievo* on the outside. If very accurate fitting is considered necessary, this bearing end of the lowest plate may be planed smooth, which renders the girder the better able to slide slightly on its bed-plate. The surface of the bed-plate P in Fig. 1, upon which the bearing end of the girder rests, is planed true and smooth. It is laid upon timber half-balks, B, and consequently not less than 6in. in depth, which are let into the solid masonry or brickwork of the pier or abutment. The end of the girder, the bed-plate, and balk are all held down to the support by four bolts, which should not be less than 1in. in diameter. In order to allow the girders of the bridge to accommodate themselves to any fractional part of an inch that might occur as an element of the force of expansion, or of its negative corollary contraction, the holes for the bolts are made of an oval shape, the major axis being in the direction of the longitudinal axis of the main girders. In other words, the holes are slotted. It is not absolutely necessary to set the bed-plate B, which, in accordance with the subject we are treating of, will be of cast steel, upon a wall plate of timber; but it is usually done, especially in the case of railway-bridges or structures exposed to rolling loads of great weight, accompanied with a high velocity. The timber, which should be thick, is more or less of a slightly compressible character, acts in some degree the part of a cushion or buffer, and thus absorbs, or breaks to some extent, the impactive violence or actual shock of the advancing live load. In some instances, a sheet of lead, weighing about 8 or 9lb. to the square foot is placed betwen the bearing of the end of the girder and the cast-steel bed-plate, and in the other a thick pad or layer of asphalted felt is inserted between the same surfaces. Instead of planing the under surface of the lower plate of the bottom flange of the girder, the alternative, especially in large girders, is usually adopted of riveting or bolting a cast-steel plate, previously planed true and even, to the flange plate. The steel plate, in fact, becomes an upper bed-plate, capable of sliding, when such a movement does occur, upon its lower fellow.

Having now practically provided in the simplest manner for the expansion and contraction of a girder 63ft. in total length, it will be as well to ascertain by calculation what the elongation or shortening ought theoretically to amount to.

FIG. 1.

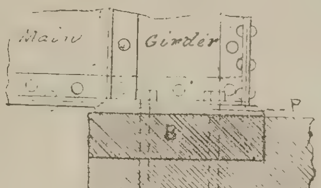


FIG. 2.

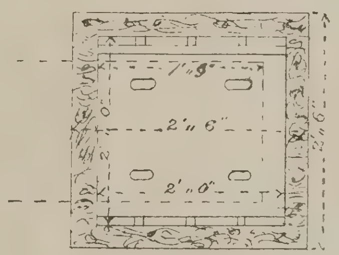
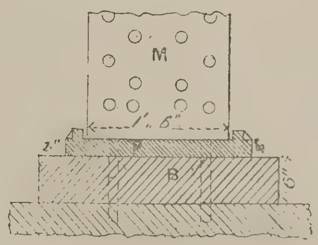


FIG. 3.



Steel, iron, all metals, and, in fact, all bodies, with one or two very rare exceptions, expand with the application of heat, and contract with the withdrawal of it. Restricting our attention solely to the former phenomenon, it follows, therefore, that each body expands a certain amount for a certain amount of heat. But as we are at present only concerned respecting the linear expansion of metals, it may be stated that steel, whether in the form of the smallest testing specimen or in that of the continuous tube of the Britannia Bridge, 1,510ft. in total length, undergoes an elongation which is proportionate to the rise in temperature to which it is externally subjected. For every rise of one degree there will be a corresponding elongation of a fractional part of the original length of the material, which will vary with the physical properties of that material itself. Consequently each material will have its own rate of linear expansion or elongation—that is, its own coefficient of linear expansion, which may be stated to be "that fractional part of its length by which it is elongated or shortened in consequence of a change of temperature of one degree." It may be remarked here that, as the coefficients for various materials are sometimes given in Centigrade and at other times in Fahrenheit degrees, care must be taken either to use the right thermometric scale, or to convert the value of the coefficient from the one scale to the other, as may be required.

We may now proceed as follows:—Let L = the original length of a girder at a temperature of degrees t, and L_1 its length when the temperature is raised to t_1 degrees, both t and t_1 belonging to the Fahrenheit thermometric scale. Put K for the coefficient of the linear expansion of steel, and we shall have—

$$L_1 = L + KL\,(t_1 - t),$$

from which—

$$L_1 = L\,[1 + K\,(t_1 - t)\,].$$

Make the actual elongation equal to E, and from the nature of the problem—

$$E = (L_1 - L),$$

so that we have by substitution—

$$E = L\,[1 + K\,(t_1 - t) - L,$$

which, by reduction, gives E a value of—

$$E = KL\,(t_1 - t).$$

But as in every instance the increase in temperature is either known or assumed, the value of the expression $(t_1 - t)$ is also known, we may write—

$$(t_1 - t) = N,$$

and we thus obtain a simple equation, in which—

$$E = KLN.$$

In the case before us, L is equal to 63ft., and if we put N equal to 70° Fahr., which will be an ample allowance for our climate, and K equal to 0·000006, we get our elongation—

$$E = 0{\cdot}000006 \times 63 \times 70 = 0{\cdot}02646.$$

As the value of L is in feet, the value of E will also be in the same denomination, so that the actual elongation or linear expansion, in inches, to be provided for in our plate girder is—

$$0{\cdot}02646 \times 12 = 0{\cdot}31752\text{in.}$$

In other words, the total elongation, owing to an extreme range of temperature for our climate, for a steel plate girder 63ft. in length, barely exceeds $\frac{5}{16}$in. Should the girder be free to expand over both abutments, which is unusual, the amount of each elongation would reach the insignificant figure of $\frac{5}{32}$in. In our own practice we have, for girders of a span of 75ft. as a maximum, dispensed with bed plates altogether, and simply bedded the girders upon two or three thick layers of asphalted felt laid upon the timber wall plates, and there they are to this day.

The actual amount of pressure which may be safely placed upon a pier or abutment must not exceed a safe proportion of the actual crushing strength of the material of which they are built. As a general rule, a weight or vertical pressure of sixteen tons per square foot may be safely placed upon an ordinarily constructed solid pier or abutment. A length of 1ft. 6in. has been taken for the actual bearing length of the ends of our plate girder of which the breadth of the bottom plate is also 1ft. 6in. It has been already mentioned that the bed-plate is in both its length and breadth rather larger than the absolute bearing area of the girder itself, and would in our present example be made about 2ft. by 2ft. By using formula A, enunciated in the first part of this article, it can be readily ascertained whether the dimensions will afford the requisite bearing area. From equation A, in which $l = \frac{W}{b \times w}$, we shall have, since the weight W supported at each end of the girders amounts to 55 tons for each abutment, the following values for the remaining quantities, b = 2ft. and w = 16 tons. From these data we obtain—

$$l = \frac{55}{32} = 1{\cdot}72\text{ft.}$$

A length of bed-plate, or, if the girder be simply bedded on the wall-plate, a length of bearing, of 1ft. 9in. will be sufficient for all contingencies. Practically, a bearing of 1ft. 6in. would meet all the working requirements; but we have, in the general tenor of our articles on this subject, as well as in those upon other cognate subjects, invariably preferred to err—if we may use the term in reference to the production of our own pen—upon the safe side. We consider it far more desirable that the young engineer and architect should be guilty of a little excess in the matters of estimation of loads, calculation of stresses, and distribution and apportionment of material, than that he should under-estimate any or all of these indispensable items and details of his design. If he accustoms himself to start on a fair, liberal basis, inclusive of the pecuniary or monetary factor, practice and gradual professional experience will, before long, amply point out to him how, and in what manner, he may safely make reductions in his original estimates. It must be kept in view that, in accordance with previous statements, a number of problems have been discussed, equations and formulæ deduced and practically worked out, and rules—some of rigid, and others of approximate accuracy—have been laid down, which obtain not merely for girders of the plate type, but for every description of girder, whether solid-sided, open-webbed, continuous or discontinuous, arch, bow-string, truss, rib, suspension, or cantilever.

It is evident that it would be futile in these days of excessive dead loads, and live loads running at exceedingly high velocities, to attempt to cause the bearing area—or what may be regarded as its equivalent, the length of the bearing—to be a constant fractional proportion of the span of the girder. A rough-and-ready rule was used in the early time of railways, in which the length of bearing was made equal to about the fourteenth to the sixteenth of the span, which in solid-sided girders was nearly the same as the proportion of depth to span. It is clear, apart from other obvious considerations, that the introduction of the open-web system of bridge-building, with a maximum proportion of depth to span of $\frac{1}{8}$, would render the adoption of this rule an absurdity, although it was not excessively disproportionate in girders the span of which did not surpass 50ft., of which there were abundance of examples in those days. A plan of the cast-steel bed-plate is shown in Fig. 2, with the slotted or oval-shaped holes, through which are passed the holding-down bolts, 1in. in diameter, which are carried down some 3ft. or 4ft. into the solid abutment, and secured to iron plates by large square heads. Sometimes special castings are made for these plates, which then take a wedge shape with the smaller end downwards. The timber wall-plate is frequently laid flush, or nearly so, as shown in Fig. 1, with the surface of the masonry or brickwork, as the case may be; or it may be raised altogether above it, as in Fig. 3, which is an end section of Fig. 2. Should there be any "beam filling," as frequently occurs when the roadway is brought up level with the tops of the cross girders and platform, the wall-plates are then necessarily imbedded in the abutments. It should be remembered, in setting steel-work in masonry or brickwork, that a small space or "clearance" must always be left between it and the other materials, for if they should happen to touch the last named are certain to get shaken, and possibly badly loosened. Again, in structures subjected to heavy rolling loads, the jar and vibration resulting from them will of themselves frequently produce an almost dislocating effect upon any work that is in any way badly put together. Sliding, rubbing, or friction plates answer perfectly well for the bearings of the main girders of bridges with spans not exceeding those alluded to; but when they pass these limits, it becomes necessary to adopt a nicer and more accurate adjustment of the details providing for the effects of changes of temperature. There are several descriptions of arrangements of this character, including the plain roller method with upper and lower bed-plates, the pin or pivot also mounted on roller beds, and a "rocker" appliance which is both new and ingenious. These will be described and illustrated in our succeeding article.

THEATRES.—XLV.

By Ernest A. E. Woodrow, A.R.I.B.A.

MUCH has been said and written upon warming and ventilating theatres; but as far as England is concerned, little has been done, especially to provide a scientific system of ventilation in our play-houses, and the little that has been done has only been accomplished within recent years.

The thorough ventilation of a theatre is a hard problem, but it is one where half measures are better than none. In order to avoid draughts, the supply should be in large volume, through large inlets, and the air should not be made to rush through small apertures at a high speed; and corresponding outlets should be provided so that the hot, vitiated air would find its way out.

Warming and ventilating must go hand in hand, for the fresh air must not be admitted so cold as to be perceptible. The heating coils should, therefore, be placed in the vestibules, staircases, entrances, passages, and lobbies, so that as the air travels up these parts of the building from the streets towards the auditorium it is warmed, and does not enter when a door is opened as a chilled draught. The introduction of the electric light has altered the arrangements of our theatres in more ways than one. The abolition of gas has removed the past-favoured method of warming, and a system of heating coils and pipes has been found absolutely necessary in the theatres which now have the electric light. We are, therefore, so much nearer pure air than we were in days gone by, inasmuch as the air is not vitiated by the gas, and being warmed before admission, can be let in imperceptibly in larger volumes than heretofore; and, again, the extracts can do the work allotted to them, and not be enticed into doing the work of inlets.

It is not my purpose to speak of any special system of either warming or ventilating as adapted in England, but only of American or Continental methods. Every building must be treated of itself; the position, number of tiers, number of people, number of doors, &c., are all factors in each individual scheme. Suffice to say that sufficient attention is not yet given to ventilating our theatres, even with our improved methods of lighting. For scientifically ventilated playhouses we must look abroad—either on the Continent, or, in a few instances, in America.

Referring to America, no doubt many of my readers have seen Mr. Dankmar Adler's articles on "Theatres," in the *Engineering Magazine*, New York. Therein he devotes some space to the part of the subject now before us. Real and popular success in heating and ventilating a theatre, he says, is even more difficult of attainment than its lighting and decoration; people consider a theatre well ventilated if in warm weather they are kept very cool, and in cold weather they are kept moderately warm; and he explains that they are little, if at all, influenced by the extent to which the air is actually changed and renewed. "The temperature which people consider respectively warm or cool varies by at least 10 degrees in different individuals at the same time, and is subject to the same range in the same individual at different times under variations of moral and physical condition." Whatever standard is therefore adopted, it will be unsatisfactory to many persons in the audience, and Mr. Adler points out that even after a standard temperature has been determined upon, it is difficult to maintain it, for it will quickly be raised upon coming in contact with the lights and the bodies of the people, while the amount of illumination varies from time to time during the same performance; the number of people in the audience changes nightly; there are variations in the external temperature, and in the direction and velocity of the wind. Bringing the matter to a practical head, this American architect advises that, in designing and operating the heating and ventilating apparatus of a theatre, all thoughts of satisfying cranks and hypochondriacs must be abandoned, and a standard temperature satisfactory to the average healthy human being must be determined upon and adhered to.

The system propounded by Mr. Adler consists of the entire banishment of window openings, and the provision of as many sets of doors (at least three sets) between the street and the auditorium as it is possible to find room for, the warming of the vestibules and lobbies between these doors, and the making of windows and skylights where they exist double or triple so as to prevent the precipitation of excessively cool air into the auditorium. These provisions are to prevent external disturbances. "The fresh-air supply should reach every person in the house, and should be approximately constant in temperature, volume, and velocity; nor should its velocity ever be sufficiently great to make itself perceptible as a draught. To accomplish all of this the ducts for both admission and removal of air must be very large, and the openings from the ducts into the rooms quite numerous and very much diffused."

Mr. Adler does not advocate the admission of fresh air through the floors and the extraction through the ceilings, as he says such air inlet openings become the receptacle for dust; the coolest air is at one's feet, and the slightest excess in velocity is felt as a draught about one's ankles. He prefers to admit the air at the ceilings, and to exhaust it at the floors, to prevent the blowing back into the room of sweepings, and having the warmest air of the room at one's feet. Ordinary disc-fans and pressure-blowers, driven by steam-engines or electric motors, constructed to operate at varying speed, are advocated as best adapted to obtain these ends, as well as the purification of the air by forcing it through water, the cooling of the air by ice or brine, and the warming of the air by heating coils.

Mr. Wm. Paul Gerhard, C.E., in a recent pamphlet upon "Modern Theatres," also dwells upon the subject of ventilation. He deals with it as a matter of "theatre hygiene," and tells how the Boston Building Law wisely prescribes that every theatre must have a system of ventilation so contrived as to provide 50c.ft. of fresh air per minute, or 3,000c.ft. per hour, for each occupant, and for each light other than the electric-light. The old-fashion central chandelier as a ventilator, Mr. Gerhard states, carried with it in more than one instance death and destruction, by creating during a fire a strong current of air from the stage towards the auditorium, thus leading the smoke and fire gases to the upper galleries and suffocating the people. Serious accidents have also occurred through the falling of the chandelier during a performance. Ceiling ventilation must be adopted, but a judicious arrangement of the ventilators and registers is required. The ventilator over the stage (of which I have yet to speak) should, according to Mr. Gerhard, be larger than the combined area of the ventilators in the auditorium ceiling; this, together with the fact that the stage ventilator is almost always higher than the one over the audience, should assure a movement of air away from the audience towards the stage, and to make quite sure of this, it is a good plan to have the vent registers in the ceiling of the auditorium, controlled from the stage, so that in case of fire they will be closed simultaneously with the lowering of the fireproof curtain. The smoke and fire gases will thereby be prevented from passing into the auditorium.

Experts differ in America as elsewhere, for we find the ventilation of the Chicago Auditorium the exact opposite of the principle described above by Mr. Paul Gerhard. Here the general movement of air is from the stage outward and from the ceiling downward. Fresh air, taken from the top of the building, is forced into the house by means of fans, and comes down through a shaft, where it is subjected to the action of a heavy spray to wash it of all impurities of dust, soot, &c. Brine is used for cooling the air in summer, steam coils for heating it in winter.

The ventilation of the Madison-square Theatre, New York, is described, according to Mr. Townsend, as being managed by means of a large shaft on one side of the stage behind the boxes, with a 7ft. suction fan in the basement, which drives the air into four air-boxes supplied with steam radiators, and placed in various parts of the building; from that again small tin pipes lead to openings under each row of seats. Thus, when the fan is in motion fresh air is drawn from a point above the roof, and after being efficiently warmed is driven into the house, to escape, when vitiated, at openings in the ceiling and under the galleries. Fresh cold air is also discharged from the downcast shaft at various other points. In summer the same system is in operation, only in place of driving the air over steam radiators, it is passed over enormous blocks of ice.

In order to show how behind the times we are in England in these matters, I purpose illustrating the manner in which the Frankfort Opera House is warmed and supplied with air fit to breathe in all weathers, before concluding with a *résumé* of the regulations enforced in this respect at home and abroad.

The description of the Frankfort Opera House, and the section illustrating it, I take from a German monograph upon the building.

By far the greater portion of the basement of this theatre, which under the auditorium consists of three stories, is used for the purposes of heating and ventilating after the manner, but on a more elaborate scale it is said, of the Vienna Opera House. The rooms used by the *personnel* of the theatre around the stage, such as the dressing-rooms, rehearsal-rooms, &c., are warmed and ventilated in a different manner to the auditorium. There the heating is done by means of coils placed in window niches, so that as the fresh air from without enters the room it is suitably warmed. By means of a handle fixed in the window board, the supply of air from without can be regulated or cut off altogether, thus allowing the coil to act only on the air in the room. If the air in the room becomes too hot, then the occupants can cut off the steam from the coil by turning off the valve, by which means they can regulate the temperature to their own satisfaction. In the walls opposite the inlets are extract gratings, one near the floor level and one near the ceiling. In the winter the air, being dense, escapes by the lower extract; in summer by the upper one, and is from thence conveyed by flues to the cupola at the top of the building (see section, Fig. 1).

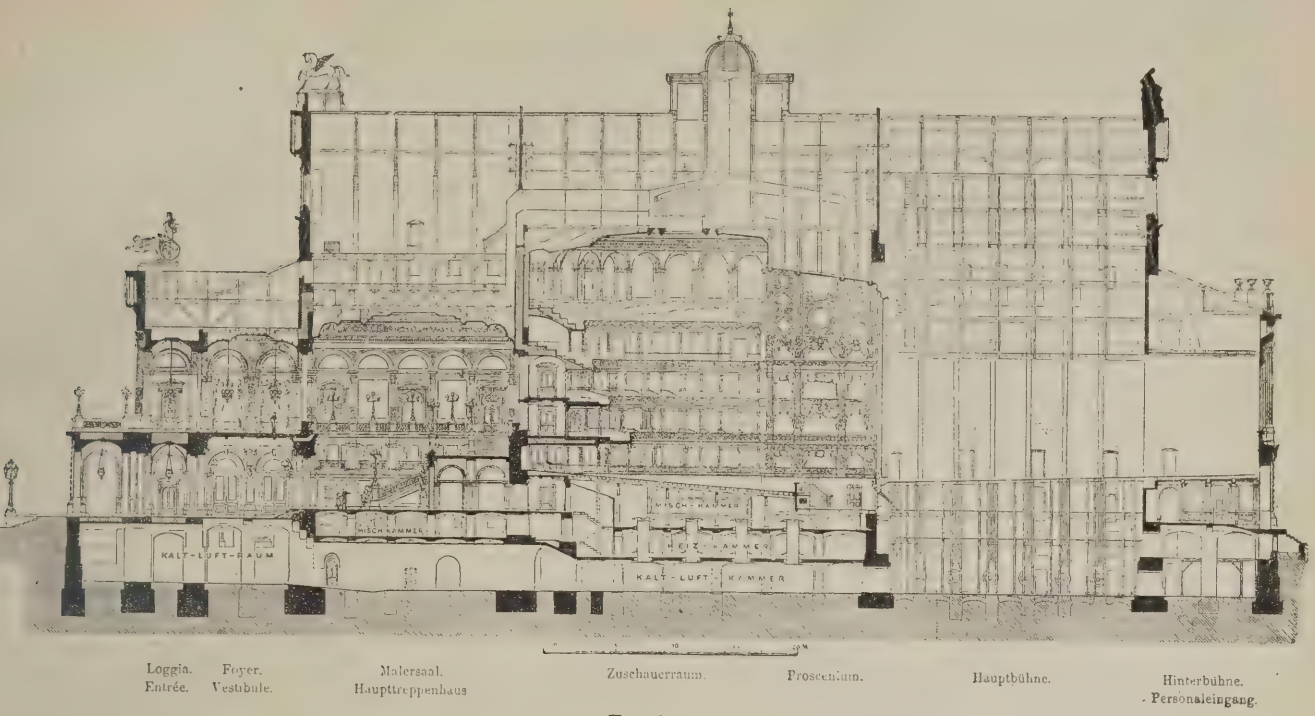


FIG. 1.

The method of warming the various rooms, passages, staircases, and auditory used by the public differs from this method, inasmuch as the air is heated before it enters the room. The Frankfort Opera House seats 2,000 spectators; 40 cubic mètres of fresh air is supplied to each of them per hour. The fresh air is brought into the building by means of a huge fan, which drives it into a collecting-room situated under the vestibule. The air is heated in this collecting-room in winter by passing it over steam coils, and cooled in summer by being forced through a three-fold sheet of water. The fan which causes the necessary 80,000 cubic mètres of fresh air to be drawn into the building each hour is three mètres in diameter, and is propelled by a 15H.P. engine, so as to revolve from 90 to 100 times a minute.

The basement beneath the auditorium is, as I have said, three stories in height; the bottom chamber, as shown on the section, contains the cold air, which rises through large perpendicular hanging cylinders composed of plate iron into the top or mixing chamber. The air also passes from the cold chamber through circular openings round the bottom of the cylinders into the middle or heating chamber, where, after passing over steam coils, it ascends into the mixing chamber simultaneously with the cold air from the lowest chamber. As the cold air passes through the cylinders it hits against a wide cover at the top, and falls over the edge of the cylinders, to mix with the ascending warm air from the centre chamber. The air passes from the mixing-rooms through perpendicular flues to the various rooms and levels of the auditorium, which it enters through gratings fixed just above the floor-level. On the ground-floor seating these gratings are placed in the floor under the seats; but in the tiers above, slits are made in the risers of the steppings, through which the air passes and supplies each individual spectator.

Corresponding with the inlets are outlets, situated in the ceilings above the seats. These allow the vitiated air to escape and be conducted through channels, which unite above the theatre in large conduits, which culminate in a large central shaft below the cupola, and passes through the louvred sides of the cupola into the outer air. A sun-burner in the top of the theatre causes the air to become rarefied, and to rise into a chamber containing heated tubes; thus the air has a constant upward motion, which is further increased by the pressure of the air from below.

If the quality of the inner and outer temperatures in summer requires a further means of expulsion, then it is performed by an exhauster, which is placed close to the cupola, having a diameter of about 3 mètres, and moved by means of a wire rope worked by the engine boiler, and having fifteen more revolutions per minute than the fan below.

In order to facilitate the working of various large valves (some are several square mètres in area) which regulate the inflow as well as the outflow of the air, the machinery of the same is all collected into a central control room. Here the engineer watches the temperature of the different rooms, which is announced to him by electric signals, and he handles the whole apparatus by regulating steam-valves, and the revolving of the fans.

NOTES FROM PARIS.

OVER six hundred applications have been made for the programme of the proposed Exposition of 1900. It is probable that not more than a hundred and fifty or two hundred serious sets of plans will be sent in, for out of the six hundred who have asked for the programme, probably more than half of this number desired the information out of curiosity to see the plan of the grounds devoted to the Exposition, and the instructions to competitors. Again a large number of those who may have commenced plans and designs have since retreated before the heavy expense of properly preparing an important and showy set of drawings, or finding that their ideas do not work out well on paper, have given up the idea of competing. There will be very keen competition between the engineers and architects, who are preparing important sets of plans and façades, for during the four months allowed for the competition a large amount of work will have been gone through, and those who have special ideas of their own for the planning of the Exposition, will have had sufficient time to properly study and work out their arrangements. The day for delivering the drawings is, however, fast approaching, and the large staffs of draughtsmen in some of the Paris offices are now "en charette," the school term for the very busy time as the last day approaches, and hastening on the effective colouring of the plans and most important façades in order to take up the less interesting buildings left to the last, and put in as far as time allows. The date for sending in is the 15th December next. The competitors will certainly be divided into three classes, those who make a clean sweep of the existing buildings remaining from the last Exposition in order to proceed on perfectly new lines of plan and arrangement; those who are perhaps more prudent and who preserve all the important buildings, altering their façades in order to change their aspect, adding new features and smaller buildings, and changing the arrangement of the grounds; and lastly, those who destroy some of the existing constructions and utilise others. The first class will almost certainly have the most followers, for the school traditions and habits of the Parisian architect make him dislike all rearrangements of existing constructions which may hinder him from planning on perfectly classic lines, preferring to be entirely free as regards space and plan, endangering often cost and practibility. It is not, however, at all certain that the premiated plans will be from amongst this class of competitors, for although the Exposition committee desires an arrangement as classic and grandiose as possible of plan and façades, doing away with many of the inconveniences of the last Exposition, at the same time it is probable that the question of economy will be largely entered into, and the spending of several hundred thousand pounds for pulling down an existing building, and the erecting of another more monumental, but perhaps not more useful, be avoided as much as possible. Several of the competitors will probably not hesitate in proposing the demolishing of the immense Machine Gallery, if it in anyway interferes with their intended planning. The spacious galleries of fine arts and liberal arts may possibly be pulled down, the Trocadero will certainly be much enlarged, and the Eiffel Tower, which will be in the way of a number of competitors, may possibly be transported by them to some other part of Paris; but as an indemnity of £400,000 would have to be paid to the owners if the tower was demolished, it will probably remain in its present place. The Palais de l'Industrie in the Champs Elysées, where the annual Salon is held, is assuredly the "bête noire" of most of the competitors: they are undecided whether to leave this building as it is, or to destroy it in order to erect in its place a more modern and elegant construction. The programme does not afford any hints on this subject: it is entirely left to the competitors to do what they think fit with any or all the existing buildings, excepting the Trocadero, on the site for the Exposition. Each competitor must therefore form his own opinion on the matter, and decide for himself whether the committee intends to spend five or six hundred thousand pounds in demolishing the existing Palais de l'Industrie, and in constructing a new building. The programme asks also for a broad bridge over the river in front of the Invalides: a number of the competitors will probably propose to cover the river along a large portion of the Seine, passing through the Exposition grounds. The public exhibition of the drawings will take place towards the beginning of the coming year, and will be very interesting. The present difficulty is the finding of galleries large enough for the exhibition of the many sets of drawings, for each competitor will send at least ten or twelve stretchers; the Palais de l'Industrie is the only available place large enough at Paris, and this building is occupied for some time to come by various exhibitions. The sub-committee of the Exposition is now meeting to go through the report, presented by the secretary, concerning the numerious ideas which have been received from private individuals for arrangements and "clous" for the year 1900. Some of these ideas are very interesting and deserve attention; but many of them seem to come from persons of unbalanced mind, so strange and grotesque are they.

An army of workmen is now busy at the cathedral of the Sacré Cœur at Paris, on the construction of the large dome, which is completed as high as the cornice. The interior and exterior cupola will be completed next year; the former will be situated at 165ft., and the latter at 270ft. above the paving of the cathedral. The completion of the campanile will take longer, and will not be finished before 1896, its elevation of 400ft., added to the height of the "butte" on which the edifice is built, 800ft. in all, will make this campanile the chief point of Páris. The offerings towards the erection of this commemorative monument amount up to the present to twenty-seven million francs.

The magnificent buildings of the new Sorbonne are rapidly nearing completion; the portions lately finished comprise the chemistry laboratory of forty rooms, and the physical laboratory, a gallery 225ft. long. In this latter laboratory a cage 250ft. high has been constructed for experiments on falling bodies. A well 110ft. deep below the ground floor of the building forms a portion of this cage. Rooms at the bottom of the well are connected by means of the telephone with the laboratories above. The decoration of the new buildings has been intrusted to the well known artists, Dagnan Bouveret, and J. Weerts: the former will undertake the painting decorating of the fine amphitheatre of letters, and the latter will paint an immense panel for the court of honour.

M. Homolle, director of the French school at Athens, informs the Academy that the excavations at Delos are giving very good results, and that very soon a complete description of the second century Greek house will be given. The musical inscription discovered in the Athenian treasury shows signs of musical notation: it is engraved in two columns on a marble tablet, and will therefore be very easy to reconstitute. The poetry is a development of the story of the birth of Apollo in the island of Delos, his arrival at Delphos, and his victory over the serpent, ending with a prayer for the city of Athens, and for the Romans, thus permitting the date of this inscription to be fixed as being at the end of the second century.

The Exposition of the Flower, which is being held at Paris, is an original and interesting effort at this moment when all attempts are being made to deliver decorative art from its Classic bonds. The organisers appealed to artists and collectors of modern and ancient art, desiring all pictures, objects, furniture, drapery, &c., where the natural flower is reproduced. All fine arts and decorative arts were thus appealed to, painting, sculpture, ceramic, metal-work &c., and examples of art work of all kinds abound in the galleries of the Rue de Seze. The object of the exhibition is to give a proper impulse to the evolution of industrial and decorative art, putting aside the imitation of old styles, and seeking in Nature herself elements which an intelligent interpretator should transform into artistic reproduction.

The inaguration of the small monument to Felix Duban took place a few days ago. It is placed in the vestibule of the hemicycle of the Ecole des Beaux Arts, on the threshold of the building which Duban loved so much, and which he made it his lasting joy to decorate. This monument is rather a tardy souvenir of the admired architect. Born at Paris in 1797, he became architect to the Ecole in 1832, and professor of one of the school studies, following up his work and studies until his death in 1870 at Bordeaux. During his stay in Italy as laureate of the Academy of France, he published many interesting studies on the Tuscan monuments, and on the ruins of the tombs of the old cities of Etruria.

The monument consists of a bust of Duban on a bracket of white marble supported by the Genius of Art, symbolised by a beautifully graceful figure of a child. The bust stands out against a background of while marble relieved by fine mosaic work, and gold laurel branches. The author is M. Eugene Guillaume.

The death at Tours of Leon Palustre has deprived France of one of her best known and illustrious archæologists of French Renaissance. His work on the Renaissance in France is world known and treasured by all architects and artists.

At the Ecole des Beaux Arts the principal competition for the month was that for a hospital or almshouse for old people. This almshouse should be large enough to receive 160 old people of both sexes. Before the entrance should be two buildings destined for the dwelling of the director and that for the sisters of mercy. The principal building should comprise, on the ground floor, a general room, two workrooms, two dormitories with lavatories, &c., two refectories, kitchen and offices, a chapel and adjoining sacristy, an infirmary, and drug room, staircases with lifts. Two dormitories, dwelling rooms, a library, and a gallery overlooking the chapel should comprise the first floor, the second floor being reserved for the rooms of the assistants. This was the programme for the holiday work. The plans and façades of M. Hurtré, to whom the first medal was awarded, were excellent, although rather too Classic and monumental for such a building. The competition sketch for the month was a monument to M. Carnot at Lyons. A great simplicity, something of the men-hir of olden times, should characterise this monument, a simple stone, 15ft. high, roughly hewn, with simple lines and sentiment, the story of the crime engraven thereon, the date of the birth and death. No medal was awarded in this concours, for such severe simplicity was beyond the imagination of the competitors, whose designs were much too elegant and elaborate.

Some very interesting excavations have been made at Vezelay, in the Yonne department, during the course of the work of leading water-mains into this interesting old town. In the centre of the town square the legendary well has been opened up. This well, excavated in the rock during the time of the religious wars, and closed up since, is 17ft. in diameter, and attains a depth of 230ft., having on its coping a very fine railing of wrought iron decorated with the French fleur-de-lis and porc-epic, the arms of the town. On the top of the hill before the famous church a large quantity of bones of the victims of the civil wars and of the famous siege of 1569 have been discovered, and behind the church a number of complete skeletons, in a perfect state of perservation, arranged methodically and separated by flat stones forming coffins, are probably those of the monks of the old abbey. A large quantity of coins of different epochs, from the time of the Romans up to the last Bourbons, has been discovered. All the most interesting of the objects found have been placed in the town museum of Vezelay.

Remnants of frescoes of vaults have just been discovered at Poissy in an old chapel, now converted into a barn. La Maladrerie, a hamlet of Poissy, was from the time of St. Louis used as a refuge for lepers. The chapel dates from this epoch, and was already falling into ruins when converted into a barn. The frescoes, which are not in a very good condition, are, however, very interesting, as containing certain portions in which figures of remarkable colouring are still visible.

The inauguration of the siphon of Clichy has just been made by M. Barthou, Minister of Public Works. This famous siphon is that which plays an important part in the new scheme of Paris drainage. The visitors descended by the air-hole of Asnières, passing under the bed of the Seine, into the town works of Clichy. During the visit the chief engineers explained the object and use of this immense siphon, and the visitors had the opportunity of witnessing a series of miniature luminous fountains which had been arranged at 80ft. below the bed of the river Seine. M. Berlier, the chief engineer, was decorated with the Legion of Honour by the Minister of Public Works.

The Academy of Fine Arts, at its yearly public meeting a few days ago, awarded the following prizes to the laureates of architecture for 1894. Prize of £60, founded for the encouragement of young architects showing ability in their art, to M. Dumesnil; the Leprince prize was awarded to M. Recoura; the Leclerc prize, £40, to M. Rey, the subject being a sacristy; the Lusson prize, of £20, delivered each year to the student laureate of the 2nd Prix de Rome, to M. Patouillard; the Delannoy prize, of £40, to the laureate of the Prix de Rome, to M. Recoura, the prizewinner of this year; the Pigny prize, of £80, to M. Patouillard; the Bailly prize, of £60, to the architect of the most important work of the year, to M. Hardy, for Notre Dame de Lourdes; the prize of the school, to the student who has carried off the most medals in the competitions, to M. Recoura; and the Jay prize to the laureate in construction, to M. Huillard.

The Prefect of the Seine has been authorised to make the following purchases of land for the spreading of drainage matter, in view of the new sanitary law at Paris. Lands at Achères, Triel, and Poissy, to the value of £50,000, together with a heavy indemnity to the company of waste-water from the city. The opposition met with from the various communes near the spreading ground has in most cases been overcome, so that now there will be little difficulty in accomplishing the important work of entire drainage during the delay fixed by the new sanitary law.

The metropolitan railway for Paris is being seriously discussed, and doubtless will very shortly be decided upon, for it is desired to complete this work in time for the Exposition of 1900. ARTHUR VYE PARMINTER.

Paris, Nov. 14.

A SPECIFICATION ANNOTATED.—II.

9. — *Sanitary Authority.* — The builder must deposit a copy of the plans with the "rural sanitary authority," and obtain its approval of the same in writing before the work is commenced. Any fines levied on the building owner, or expenses incurred in altering work through the builder's neglect in this respect, shall be discharged by the builder, and will be deducted from any balance due to him at the final settlement.

A sanitary surveyor in a rural district may be a broken-down farmer, shopkeeper, or auctioneer; his knowledge of building work will, therefore, not be profound. This will not, however, prevent his formulating his views in dogmatic terms, and as his employers (the guardians) are mostly men of the same stamp as himself, so far as a knowledge of building goes, they are always ready to sustain him in any attack on the builder, no matter how idiotic. It is quite true there is an appeal to the magistrates, which comes on when the builder is summoned to some police-court to be dealt with as the law shall determine. Now it may not be generally known that a man is raised to the bench (magisterial, not joiner's) without having previously passed the Institute examination, or even having read "Is Architecture an Art, or is it Worked Successfully by 'Eminent' Architects as a Trade?" His knowledge of building must, therefore, be represented by —0: hence it is no wonder that magisterial rulings on this subject have so frequently a fine New Southgate flavour, and so seldom deserve the respect which they have such an unpleasant way of commanding.

In many instances the builder is no doubt justly overhauled by the powers that be; but there are cases in which the surveyor, not being treated with the respect he considers to be his due—and his importance generally bears a direct proportion to his ignorance—proceeds to make it "hot" for the builder. It will be found advisable under all circumstances to agree with the surveyor whether he is right or wrong, and this as promptly as possible, for it will save trouble, annoyance, and expense. But if the builder is a novice, and allows his temper to get the better of his judgment, then, after kicking against the pricks and submitting to the inevitable, he will find a salve for his wounded spirit in Herbert Spencer's "Coming Slavery," and in Matthew v. 25, 26, where he will find the best possible advice to him under similar circumstances. This specification, and its notes are nothing if not practical. The foregoing remarks on sanitary authorities and surveyors are very general. Now for some cases in point. A builder in a certain locality, not a town or village, merely a rural district, and that not 100 miles from London, decided to do away with his draw-well and bucket and lay on an "installation" of pipe-water instead. The drainage of the entire locality was effected by means of cesspools in the chalk. These were sunk about 20ft. deep, 12ft. or 14ft. in diameter at the lowest part, and tapered up to a manhole above. Such receptacles were in use in the locality "from the time of Adam," and the inhabitants appeared to get on fairly well with them and to be utter strangers to all those fancy ailments that come into being with sanitary surveyors. In this instance, as pipe-water from the waterworks three miles away was now laid on to the premises and to all other premises in that locality, the builder naturally thought it a good idea to turn the w.c. drainage into the disused well. He argued thus: "There is a cesspool already in the garden, there are several in this locality, one at least in every garden. Moreover, they are all comparatively shallow. This cesspool will be 80ft. deep against 20ft. in the others, and no greater harm can result from this than if a new cesspool is dug, and against this there is no by-law." The reasoning appeared to be unanswerable, and the builder proceeded to connect the w.c. apparatus with the disused well. But now the sanitary surveyor appeared on the scene. He inquired if it were really the intention to turn the soilpipe drain into the well? and on being told it was the intention to do so, he at once bristled with notices, legal and illegal, and warming up with indignation at such a horrible proceeding as this desecration of a well with sewage, he finally served the builder with a summons to appear before the magistrate "to be dealt with according to the law as this case made and provided." The poor builder pointed out that though it was intended to pour sewage into the well, it was not contemplated to draw any drinking water out, as pipe-water had been laid on! But the surveyor's heart was hardened: he would have no desecration of wells in his district, and the work was discontinued. What was to be done? On thinking the matter over, the builder recollected that another builder in the same district had a near relative on the board of guardians from which the sanitary authority had been drawn. This person was naturally one of the surveyor's employers. What if this builder was employed to connect the drains with the well? Builder No. 1 communicated with builder No. 2, and, without stating any reasons, asked him to continue the drainage work so recently abandoned. This No. 2 promptly did, without let or hindrance from the surveyor; in fact, it was now discovered that the proper thing to do was to connect the closets with the disused well. It made a good cesspool, and a much safer one than the others on account of its greater depth! The moral of this tale is, of course, that a builder in a rural district should be a poor law guardian, or should have a near relative on the board, and thus comply with the sanitary authorities' *unwritten* by-laws! Yet one more instance to illustrate this paragraph No. 9:—In a village of from 300 to 400 people, a house was being built with materials in every respect sound and satisfactory, and to plans deposited with, and approved of, by the sanitary authority. This particular house was rather a large venture for the village in which it was built, and the owner had the house so designed that if he failed to let the building as a house to one tenant, a slight structural alteration would have divided the house into two, each a copy of the other, and, of course, capable of being occupied by two families. The alteration was to be effected, if required, by closing up some large openings left in what would be the party-wall. The roof was all but completed, when the owner was served with notice by the sanitary authority, that the by-laws required him to raise the party-wall through the roof of the "two houses." The owner replied (1) that there were not two houses, but one house; (2) that there could not be "a party-wall" in that house; (3) that the sanitary authority approved of the roof plans, which showed no such wall; and (4) that if the house was at any time divided into two separate houses, and a party-wall built, then, and not till then, would the owner carry such party-wall up through the roof. In this particular case, this raising of a wall through the roof affected the wall in the centre of this building only, for one gable stood completely detached by 12 or 14ft. from any other building, and the other gable rose from 10ft. to 12ft. above the adjoining and abutting roofs. The sanitary authority would have none of these excuses—the surveyor had been rubbed the wrong way—and they insisted that the roof should be reconstructed. The owner was determined he would not comply with their demand, as he had both law and justice on his side. He, however, hadn't the magistrates on his side, and they ordered the work to be done at once, to the surveyor's satisfaction, failing which a penalty of £7 per week was to be levied on the unfortunate owner for every week the order remained in abeyance. These men actually decided that the sanitary authority could, if they pleased, at any time during the progress of the works, withdraw their approval of plans given before that work commenced, and make, through their surveyor, any order they pleased! As the only appeal against this idiotic decision lay at the quarter sessions, and as the prosecuting of such an appeal would be more costly than reconstructing the roof, the latter alternative was adopted. This building now stands a monument of magisterial imbecility and official spite, with a party-wall separating rafters at one side from rafters at the other side, whilst the whole building below is divided into a number of apartments shut off from each other by ordinary wooden doors, no party-wall existing except in the roof! It is a singular fact that within one hundred yards of this house another house was being erected, at the same time, under the same sanitary authority, which contravened that authority's by-laws in the most flagrant manner, the whole roof being of boards and felt only—no tiles or slates. Yet no notice whatever was taken of this, probably because the owner was a good fellow, who kept a good table, and was rather generous with a good, drinkable beer! The moral of this is: Before a building is commenced in any rural sanitary district, invite the authority to "sample" the beer, or test it for microbes; if wine is preferred, a sample may be tried on the premises, and a few samples taken for analysis in sealed bottles, as required by law. It must be distinctly understood that these remarks do not apply to every establishment of sanitary authority, with its clerk and surveyor, but the cases mentioned have occurred, and may occur again; therefore the builder—and in the expression "builder" is now included the owner and architect—must be careful not only to comply rigidly with the by-laws, but will also pay all due respect to the authorities' officers, and to order himself lowly and reverently to his betters, that his ways may be ways of pleasantness, and his paths paths of peace. In London certain fees are payable to district surveyors working under the Metropolitan Building Act, a copy of which may be seen in every price-book; but, as a rule, no fees are payable in the provinces for approval of plans or inspection of works in progress by any public authority.

10. *Lay on Water.*—Lay on water from the company's mains to the site of the mortar heap. Pay all charges for same, and for the subsequent use of water. Make good the road and path after the pipes are laid. The stand-pipe and tap are to be cased with straw or felt to prevent damage in case of frost, and should either be injured by frost or otherwise, the pipe or tap so damaged must be renewed at once, and a new one substituted.

It is no uncommon thing to see a tap or pipe burst by frost leaking to such an extent as to flood the entire space occupied by the mortar heap, thus drowning the lime, and converting the mortar into slush. This should not be allowed. The workmen will not be anxious to remedy this defect, for the more water the less labour required to mix, or properly temper the mortar. The water may be paid for by measure, so much per thousand gallons, and registered by a water meter, or so much per rod of brickwork in the proposed building. Of course, if there is no public water supply, a well must be sunk and provision made for a windlass and buckets, or a pump. This well should be sunk in such a position that it will be available for the house supply, and this will be vertically under the pump, whether in the scullery or elsewhere. The workmen cannot have too liberal a supply of pure water for their own private use, but the less the mortar gets the better.

11. *Provisions in Cash.*—Where sums of money are provided in the specification for the purchase of grates, mantels, ranges, or other fittings, the sums are net sums—i.e., net to the trade, and from which the builder is to derive no profit or discount from the manufacturer. He will, therefore, add in his estimate to these net sums:—(1) For profits on the goods as in the way of trade, (2) for carriage to the building, (3) for fixing complete in the building, (4) for risk of breakage in transit, (5) for use of packing-cases, and (6) for returning same to the manufacturers carriage paid; and the said sums must be held at the architect's disposal to the full amount stated without deduction of any kind.

The Building News Intercommunication Column has from time to time afforded ample evidence of the necessity of this clause being made plain to the densest understanding, and it is marvellous how dense some people—especially builders dealing with such provision clauses—can be at times. It would appear that the most satisfactory and businesslike way to deal with these provisions would be to omit the net sums altogether from the contract, and let the architect inform the client of this fact, handing him at the same time a list of the fittings meant to be supplied, and the net cost of same, with an intimation that the gross amount must be expended to complete the work, but that it is not included in the builder's estimate. There is one objection to this plan—viz., the client would know too much, and this, under certain circumstances, may not be good for him, the architect, or the builder.

12. *Access to Plans.*—The architect shall always have access to the buildings, and all plans, specifications, and other documents connected with the works and furnished by him shall be kept in an office on the site for his inspection when required. No marks in pencil or otherwise, or alterations of any kind shall be made on such plans or documents, and these shall be properly preserved and delivered up to the architect on completion of the works.

The best way of preserving plans for reference or use on a building in progress will be to mount each plan—"plans" meaning sections and elevations as well as ground and other plans—on a board; yellow pine from $\frac{1}{4}$in. to $\frac{1}{2}$in. thick clamped being lightest and best for this purpose. No measurements by scaling should be made from plans so mounted unless the scale is first drawn on the plan so that it may shrink and expand with the drawing. Some architects merely write $\frac{1}{8}$in. scale or $\frac{1}{4}$in. scale on the plan; but in all cases it will be found advisable before commencing any drawing on paper, mounted or unmounted, to draw the scale at the bottom of the sheet, and lay off all dimensions from this with the compass. The scale will then be correct for the drawing, and the absurd mistake avoided of placing a $\frac{1}{2}$in. scale on a drawing to a 1in. scale, or vice versâ, an error which has frequently been made, especially when a drawing is taken up hurriedly after being put away without the scale being indicated when the drawing was commenced. When, however, the scale is worked to on an unmounted sheet, it is not always safe to take dimensions from the drawing by the scale after the sheet is mounted, for the paper pulls irregularly in drying, and straight lines on an unmounted sheet will sometimes be very crooked lines on the same sheet when mounted. Some provision should be made to protect drawings from rain when being referred to, and worked from in the actual work.

13. *Charge of the Works.*—During the progress of the works the builder must be constantly on the ground during working hours, or, in his absence, the building must be left in charge of a properly qualified foreman as the builder's accredited representative.

Nothing is more provoking to the architect than to go on a building and find no person in charge; the builder may be a man given to subletting, in which case he will probably neither look after the work himself nor keep a foreman to do so. An important addition may therefore with advantage be made to this clause thus: "No sub-contractor shall be considered a foreman within the meaning of the clause; the builder's representative must be either a paid clerk or 'day's work foreman.'"

14. *Piecework.*—No piecework will be allowed except by special consent of the architect to be obtained in writing. The name and address of the proposed sub-contractor to be furnished to the architect before any work is sublet. In every case the architect will furnish such sub-contractor with the plans, specification, and quantity relating to the trade of such sub-contractor, and the builder shall pay for preparing the same.

This is an unusual but very important provision. It is quite a common thing for a builder to sublet work, and entirely misrepresent the nature and quantity of the work proposed to be done, in which case the architect finds himself obliged to withhold his approval from the sub-contractor's work; the latter may at the same time have performed the work in strict accordance with his agreement; but that agreement was not quite in accordance with the architect's drawings and specifications, and was purposely made so in order to obtain a low price for the work. If the provisions of this clause are carried out, and the sub-contractor placed in a position to know what the architect requires independently of the builder, then if he "scamps" the work, he has no one to blame but himself when that work is condemned. As for the general question of the advisability of permitting "piecework" on a building, it may be assumed that piecework need not, and, as a matter of fact, is not, generally speaking, inferior to daywork; and when in any particular case it is attempted to scamp the "piecework," the architect should be in a position to take care of himself and his client. The whole contract is a piecework contract, and there is no reason why a system, if good in bulk should not be good in detail. In practice a piecework man will be found to take more interest in his work than a "daywork" man.

15. *Bad Work.*—Should the architect discover that work is being improperly done, or materials supplied which are not in conformity with the drawings and specification, he shall deliver to the builder, as soon as possible, a statement in writing of such departure from this contract, and should the builder consider that the architect's requirements are arbitrary and unreasonable, he shall, within 12 hours of the architect's complaint, forward to him in writing a statement of his objections to the architect's views; and if on consideration of the builder's statement the architect still persists in his opinion, or if the builder neglects to furnish any objection as herein provided, then the architect's decision shall be final and conclusive. All work done, and declared unsound, and not according to this contract, shall be taken down, and the defective materials removed off the premises within seven days of date of the architect's notice, and all work actually in progress at the time of delivering such notice shall be stopped at once, and any neglect of this condition shall render the entire contract null and void.

There is a strange superstition held by many, workmen and others, that an architect can go on to a building and pull down and destroy, or order to be destroyed, any defective material he may object to; but he has no right whatever, under any ordinary contract, to do anything of the kind. This conduct would be grossly unjust to the builder, and strangely undignified for the architect. An appeal to the County Court by the builder would teach the architect that, no matter how objectionable some building materials may be to him in any particular instance, he has no right to destroy the property of others. The architect can order its removal within a specified time, and this method of dealing with the matter will be the most equitable for all parties concerned. Nor is there anything to be gained by adopting an offensive and bullying manner, for any and every infringement of the contract. A loss of temper, and, with it, the loss of ordinary common sense, will be entirely avoided by adopting the method prescribed in this clause; and, in addition, a record in writing of the entire transaction will be preserved for future use.

OLD ENGLISH COURT AND LIVERY CUPBOARDS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THESE drawings, by Mr. William Bliss Sanders, are taken by permission from his handsome new folio, which has just been published under the title of "Half-Timbered Houses and Carved Oak Furniture of the 16th and 17th Centuries,"* with thirty full-sized plates in uniform character with the author's original volume on the same subject issued under a similar title a few years ago. The scale adopted is in all cases to a sufficient size to enable a workman to imitate the details of the furniture and inlay-work represented. Our reproductions which accompany this notice are necessarily reduced in size to accommodate the proportions of our pages. The drawings are considerably larger in Mr. Sanders's work. All his specimens are believed to be of English manufacture; but no precise opinion as to the date of some and the nationality of others can be made with any degree of certainty, as not infrequently British workmen copied foreign examples, and besides, the same design, with but slight variations, was repeated time after time all over the country, few types of make being really confined to any particular district or county. The sturdy, and even coarse, style which marked the furniture, particularly of this period, usually known as the Jacobean, had the advantage in a general way of being honestly constructed with its ornament, however crude it may be in some cases, made subservient to it structural lines, for the Old English workman naturally followed his Mediæval predecessors, and the Gothic tradition still permeated, to some appreciable extent, the vernacular style of the day. The oak grown in this country too, always very hard, presented difficulties of manipulation, to say nothing of its liability to cast, shrink, and split, and so rendered delicate details and small, scaled parts, as well as intricate construction, a matter of no little trouble, and likewise a test of skill, so that the joiner and cabinet maker had every reason to keep to elementary forms and simple outlines. The foreigner, always more fanciful in his predilections, wrought also in a material which permitted more scope and was easy to carve and shape. He, too, had richer models preserved to his hand, and he worked with no such limitations as those which governed the more prosaic craft of his English neighbours. The civil wars and the troubles peculiar to those times on this side of the channel had largely obliterated the traces of old tastes, and appreciation for the elegancies which marked the every-day articles in use during the Tudor period, and when less unsettled times permitted more prosperity, merchants and others, whose ideas were enlarged by travel, imported foreign work of great interest and beauty, such as we still find existing at Yarmouth, Oxford, Bristol, and other places, more particularly in the Eastern Counties. Of half-timbered houses no endeavour is made by Mr. Sanders at anything like a comprehensive series of specimens; indeed, his four examples are all located in Kent, so that since the time when the late Mr. Habershon issued his rather poor volume of drawings, more than half a century ago, it may still be said that no serious attempt to illustrate such buildings in a systematic way has been realised. The typical Kentish cottage, such as that which our present author has sketched just below the mill in the odd little village of Leeds, dates from a much earlier period than the 16th or 17th centuries named on his title-page. There are several similar examples still standing in a more or less altered condition in various parts of the county, and even this capital instance of its class at Leeds has at some time or other been shorn of a considerable portion of its original extent. The old house at Pluckley, one among many in the same village, is different in the arrangement of its façade, with the eaves-line broken into to light an upper window. The roadside cottage near the village of Leeds is a plainer example, with the roof-space still retained as a loft, while the house at Lenham, built at a later period, possibly in the days of James I., has two gables, with enriched bargeboards in the front, besides those at the end of the building, the chimney-stack rising in the centre. Among the wainscoting which figures in the book, are good examples from Norwich, Exeter, and Lincolnshire, and chairs, chests, tables, sideboards, and settles from a variety of places. We have chosen two or three specimens, which may be taken as fairly typical of the remainder. The larger example figuring on our lithographic plate is a Court Cupboard in an hotel at Tunbridge Wells, and on it stands a distinct piece of furniture once known as a Bedroom Livery Cupboard. The two have been fastened together, as shown by the sketch, and generally have been thought to form one article thus designed, for no one had any recollection of their having been separated. About 30 years since they were bought at a sale of furniture of a then Duchess of Kent, in whose house they had long stood as they do now, and no doubt a Livery Cupboard was usually for that matter placed upon some shelf or other piece of furniture, and not upon the floor. The Court Cupboard is 4ft. high, and the smaller one measures 2ft. 7in. The two other cupboards shown on the sheet stand in a recess in the south aisle of St. Alban's Abbey, Herts; but once upon a time they, too, no doubt were bedroom Livery Cupboards. Both are still used for their original purpose of holding food, seeing that charity bread is stored in them before its distribution on Sundays. The fund which provides for this bounty was founded in the year 1628, and it is probable that these cupboards were given to the Abbey church at the same time. The upper one is of Elizabethan date, and the lower one belongs to the Carolian period. In the contracts for the "joyners' work" at Hengrave Hall, in Suffolk, the Livery or Service Cupboards are thus specified:—"Ye cobards they be made ye facyon of livery yt is without doors." Carpenters usually constructed these fitments in three stages, or shelves, with mostly a drawer for linen. The mugs or cups in them were hung on hooks, and frequently a basin and ewer formed part of the Livery Cupboard furniture for washing the drinking vessels therein located when not in use. The volume is thoroughly well printed, and very prettily bound in a suitable cover.

COMPETITIONS.

KING'S LYNN.—No less than eighty-three designs have been received for the Municipal Buildings about to be erected at King's Lynn. Two premiums of twenty and ten guineas were offered for the first and second selected designs, and no professional assessor was promised—or, indeed, has been elected—to help the corporation in making a suitable choice. The chosen plans are to become the absolute property of the promoters. The cost was limited to £3,500. The accommodation is to consist of a council chamber, a mayor's parlour, a committee and magistrates' retiring-room, offices for the town clerk and engineer, and also rooms for the accountant and sanitary inspector. No undertaking is given to carry out any of the plans. The committee have ordered the designs to be exhibited to the public in the ball-room of the Guildhall, where they have been, and are still, open to inspection.

NEWCASTLE, COUNTY DOWN.—We understand that the Directors of the Belfast and County Down Railway Company are inviting competitive designs from architects, for the proposed new hotel at this favourite watering-place, and offer three prizes of £100, £75, and £50, in accordance with the respective merits, for the best designs. It is intended to expend a sum of £25,000 on the hotel buildings. Mr. Alfred Waterhouse, R.A., is to act as assessor.

NEW YORK.—Our old contributor, Mr. George Ashdown Audsley, and his brother, Mr. William J. Audsley, architects, formerly in practice in London, and now of New York, have brought suit in the United States Circuit Court, against the City of New York, claiming one hundred and twenty thousand dollars for "services in designing, furnishing, and delivering plans for a contemplated new municipal building." This is the first suit brought by architects in consequence of the abandonment of the scheme, for which competive designs were invited some eighteen months ago; but it is said that other similar ones will probably be brought.

CHIPS.

The Mersey Docks and Harbour Board have finally adopted the scheme which has been before them recently to provide lairage accommodation for foreign cattle at Seacombe in place of the establishment at Birkenhead. The scheme involves a cost of £400,000, and will require Parliamentary sanction.

In the case of Arthur George Barley, Dynevor-road, Stoke Newington, N., builder, the discharge has been suspended for two years, ending Oct. 5, 1896; and in that of George Beaumont, Chelmsford, builder, the discharge has been suspended for six months, ending April 15, 1895.

Her Majesty inspected at Windsor, on Friday, a new carpet made in India purposely for the Waterloo Chamber, and which is the largest ever made.

For the pier about to be constructed at Bangor, the city council have, on the advice of Mr. Webster, C.E., the engineer of the scheme, accepted the tender of Mr. Thorpe at £14,445. Mr. Thorpe is building the pier at Llandeillo-yn-Rhos.

A vicarage and Sunday-school are about to be added to St. Jude's Church, Savile Park, Halifax, from plans by Messrs. Horsfall and Williams, of that town.

The Bolton Corporation were prosecuted, on Friday, by the Mersey and Irwell Joint Committee for river pollution. It was stated that the Bolton sewage effluent was very bad, being worse than that of Salford. For the corporation it was contended that as they were embarking upon a sewage scheme costing £75,000 the prosecution was unnecessary and unreasonable. The magistrates made an order for abatement within twelve months, and imposed a nominal penalty.

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* Half-Timbered Houses and Carved Oak Furniture of the 16th and 17th Centuries. By WILLIAM BLISS SANDERS. London: Bernard Quaritch. 1894.

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ILLUSTRATIONS.

GALLERY AT KNOLE, KENT.—CARTOONS FOR WEST WINDOW OF ST. SAVIOUR'S, SOUTHWARK.—CXVI. LAMBETH WALK. —PROPOSED THEATRE, NEW CROSS ROAD, S.E.—XXXI. CANNON STREET, BIRMINGHAM.—OLD CUPBOARDS.—ST. MARY-LE-STRAND PUBLIC HALL AND PARISH LIBRARY.—THREE COURTYARD STAIRCASES.

Our Illustrations.

THE GALLERY AT KNOLE, KENT.

This admirable drawing, by the late Joseph Nash, is now in the Picture Galleries at South Kensington Museum, and is the property of the nation. No more choice example of his masterly style can be produced, although it is, perhaps, less precisely delineated than some other of his interiors in matters of detail. The subject itself is specially charming, and as a specimen of admirable plaster-work cannot be surpassed—not so much for richness of form as for suitability of scale and harmony of design, adapted to the space to be covered. Artistically the arrangement of the figures, the suggestion of distance, *e.g.*, by the nine pins with which the children are playing, and the disposition of the lights and shades of the picture, leave nothing to be desired. Our reproduction is taken direct from the original, which differs materially from the lithographed copy published in Nash's great book, "The Mansions of England in the Olden Time." We have given several illustrations of Knole; but this long upper gallery has not been before illustrated in any architectural journal, and no one is allowed to sketch inside the mansion. We published Nash's view of the staircase in the Building News for August 20, 1886, and a photograph of it appeared in our issue for Sept. 5, 1890. Two interiors figured in our pages Nov. 23, 1888, and a drawing of the "Stone Court" will be found among our plates for Feb. 16 this year. The history of the house has been several times referred to, with an account of the Sackville family, who have owned the place for centuries.

CARTOONS FOR THE WEST WINDOW OF ST. SAVIOUR'S, SOUTHWARK.

The west window of St. Saviour's Church, Southwark, is illustrative of Creation and Praise. I have represented the Six Days of Creation in the six circles, which catch the eye from any distance and give the key to the whole design. Under each of these are symbolical figures especially illustrating verses from the beautiful hymn, "O Omnia Opera," which refer to the work of each day; these, with the circles, fill the whole central mass of the window. In the centre light Christ is seated as Creator Mundi, with the universe in His hand, and the first verse of Genesis in large letters below. On either side are seraphs, singing "Holy Holy, Holy, Lord God of Hosts," and above is a group of cherubs. At the base of the lights, as a predella to the whole, is a row of figures which represent people who have been noted for their hymns of praise. Under the first day the square panel represents Nights and Days: Day, in rosy light drapery like clouds at sunrise; Night, closely shrouded in dark indigo mantle, holds a child in her arms asleep. Under the second day, when the firmament was created, are the Winds of God going out to the four corners of heaven. Under the third day, Showers and Dew, are watering the "green things of the earth"; the fourth shows the Sun and Moon; the fifth, Seas and Floods; and the sixth, Children of Men, those in the centre being the three children in the furnace, to whom the hymn "O Omnia Opera" is attributed.

Henry Holiday.

CXVI. LAMBETH WALK, S.E.

These corner premises are now in course of erection for Mr. George Evans, from plans and under the supervision of Mr. W. M. Brutton.

PROPOSED THEATRE, NEW CROSS ROAD, S.E.

We publish an elevation and ground plan of a theatre proposed to be erected on a narrow and deep corner site in New Cross-road, S.E. Mr. W. M. Brutton, 171, Queen Victoria-street, E.C., is the architect.

XXXI. CANNON STREET, BIRMINGHAM.

These premises consist of professional offices and printing offices for Mr. John Feeney, the proprietor of the *Birmingham Daily Post and Mail.* Besides the frontage to Cannon-street, shown in the view, there are frontages to Cannon-passage and Needless-alley in the rear, and of similar character. A large amount of steel-work inclosed with concrete is employed in the construction in order to keep the basement, which is one large room, as free as possible from obstructions to the printing machines. The front bricks have been supplied by Messrs. King and Co., Stourbridge, Hollington stone being used for the ground story and dressings, and Welsh green slates for the roof. The whole of the works will be completed about Christmas. Messrs. Bateman and Bateman, of Birmingham, are the architects.

OLD ENGLISH COURT AND LIVERY CUPBOARDS.

(See descriptive article on page 712.)

ST. MARY-LE-STRAND PUBLIC HALL AND PARISH LIBRARY, DRURY-LANE.

This building has been erected out of funds arising from the St. Mary-le-Strand Charity estate, and is intended to supply a great need of the neighbourhood. It contains a library, club-room, mission hall, and reading-room, and in the basement are lavatory accommodation and baths for both sexes. The caretaker has a suite of rooms on the top floor. The material used is red brick, with dressings of Doulting stone. The staircases are entirely of York and silex stone. The building has been fitted throughout with electric light, and is heated with hot water. All floors are fireproof, Messrs. Homan and Rodgers' system being used. The stained-glass fanlights contain medallion portraits of celebrated writers of the Victorian era. The architect is Mr. Albert Vicars, of Somerset Chambers, 151, Strand, and the general contractors were Messrs. J. M. Macey and Sons, of Wych-street, Strand. Mr. Ernest Avern acted as clerk of works.

THREE COURTYARD STAIRCASES.

These are capital examples of the picturesque treatment to which exterior staircases lend themselves. The central one is from a house in the Rue du Petit-Salut, Rouen, and is an ingenious and massive piece of construction, showing a clever arrangement of circular steps leading up to a Renaissance doorway, and at the same time, at a higher level, forming the starting-point of the stairs proper to the upper floors. The circular flight to the left-hand of the page, capped with a conical roof like a turret, is from a sketch by Mr. C. Malo, recently given by the *Moniteur des Architectes.* It is as unlike the former as it is dissimilar to the third drawing, which shows a more formal open staircase to a 16th-century house. This last one, too, exhibits a stone treatment with elaborately-carved close balustrade in place of the open wooden balustrading of the other two.

* * *

At the meeting of the Gainsborough Local Board on Monday, there were 133 applicants for the vacant office of surveyor to the board, Mr. MacDonald having accepted an appointment at Rugby, the salary being £175 per annum, and four candidates, Messrs. Kidd of Ripon, Currey of Selby, Saunders of Oldham, and Riley of Halifax met the board. Mr. Riley was finally selected and appointed.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Edinburgh Architectural Association.—The session of this association was inaugurated on Thursday in last week by a *conversazione* held in the Royal Institution. There was a large attendance of ladies and gentlemen, who were received by Mr. W. W. Robertson, the President of the association. After tea, the President delivered an inaugural address. He said his attention had been drawn to the recent addition to the Advocates' Library of the manuscript journal of James Playfair, extending over the period from 1783 to 1793. He had read the journal, and found it to be a plain business record of journeys taken, work done, and accounts rendered. A good deal was disclosed that was interesting—glimpses of the habits, the life, and the work of the time, but not very much of the man. He explained that James Playfair was the father of their William Henry Playfair, the distinguished architect of Donaldson's Hospital, of the building in which they were then assembled, and of many others which ornamented the city. He was a Scotsman who had migrated to London, and established himself as an architect in Russell-square. Mr. Robertson then quoted freely from the journal, beginning with business entries. At the close of his address Mr. Robertson was, on the motion of Mr. Balfour Paul, accorded a vote of thanks.

Glasgow Architectural Association.—The third lecture of the winter series was delivered on Tuesday evening in the Rooms, 114, West Campbell-street, by Mr. James Chalmers, I.A., the subject being "Egyptian Art." Mr. W. Tait Conner, A.R.I.B.A., occupied the chair. After introductory remarks dealing with the historical and geographical side of the subject, the lecturer spoke at some length of the nature of the materials employed by the ancient Egyptians, and explained the various theories held by authorities as to the methods of quarrying and transport of the huge blocks of stone. Views were shown by limelight of many notable ancient buildings.

* * *

CHIPS.

St. Hedda's Roman Catholic Church, Egton Bridge, near Whitby, was reopened on Wednesday week, after having been renovated and redecorated by Mr. White, of Whitby. New statues of the Cross, executed in terracotta by M. Zens, a Belgian artist, were dedicated at the same time.

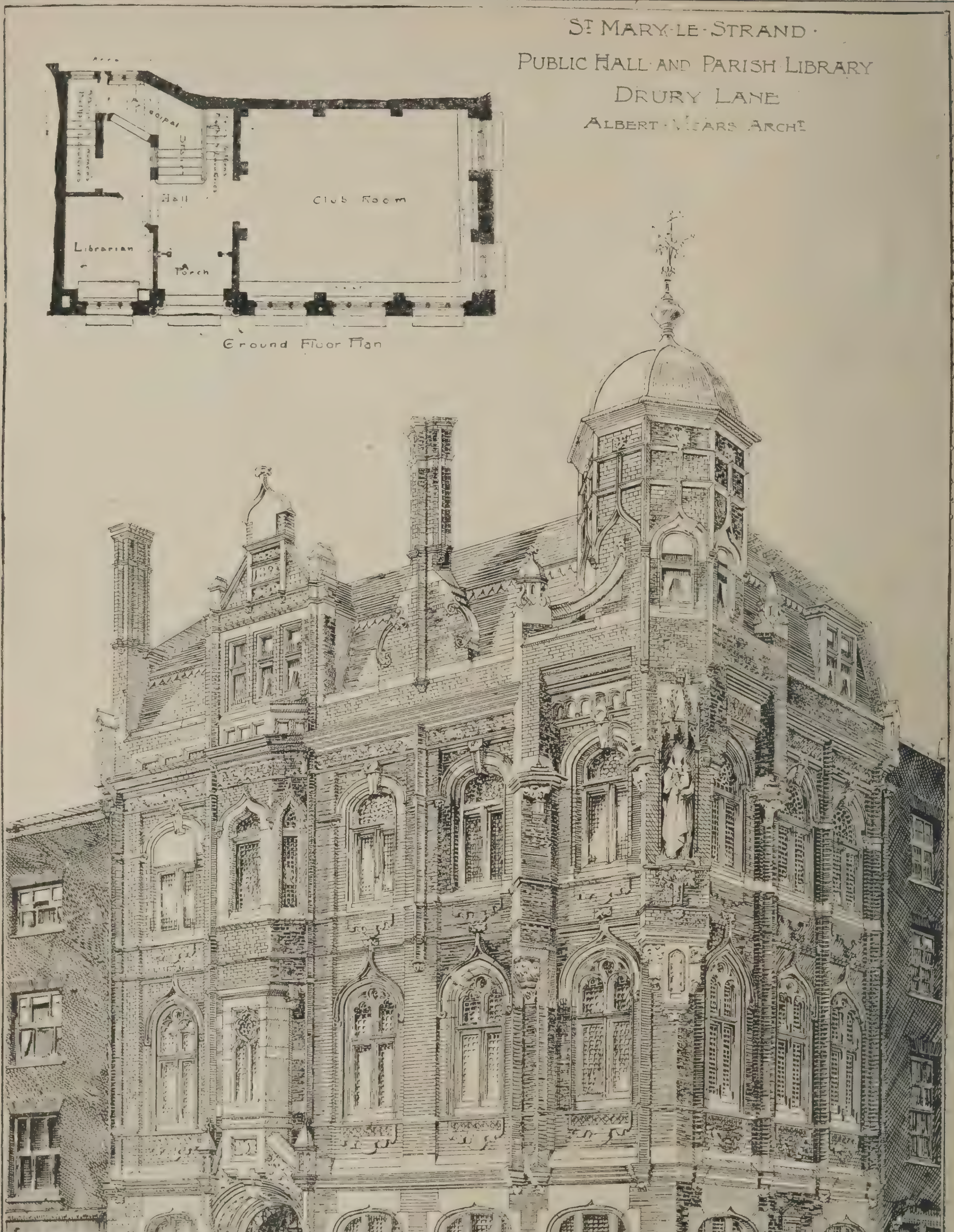
At Dunsby, near Bourne, the Governors of the Charterhouse are carrying out a waterworks scheme. The supply will be obtained from an artesian well which was made for Mr. Justice Lawrance, at Dunsby Hall, and from this source the water will be raised to a reservoir in a field adjoining the Bourne-road. From the reservoir it will be carried to the village, about half a mile distant, through 2in. mains. The contract is in the hands of Messrs. Wadsley and Son, of Horbling.

The lighting committee of the Bournemouth Corporation have recommended the town council to accept the offer of the Bournemouth and District Electric Light Company to supply current to the Winter Gardens at a reduction in cost of 25 per cent. This is in consequence of a report of the borough surveyor, confirmed by Mr. E. Matthew Lacey, consulting engineer, proposing a scheme for the corporation to generate their own supply of current, whereby a saving of £150 per annum was shown. Mr. E. Matthew Lacey also reported on the proposed scheme for lighting the pier and pleasure-grounds.

At St. Marychurch Town Hall, near Torquay, on Friday, an inquiry into the application of the local board for sanction to borrow £2,000 for the purpose of pleasure grounds was held by Colonel John O. Hasted, R.E., Inspector of the Local Government Board. There was some opposition, a ratepayer saying the proposed site was only a "swamp."

The personalty of Mrs. Mary Ann Atkinson, 47, Gordon-square, has been sworn at upwards of £72,000. The testatrix bequeaths £1,000 to the Female School of Art, Queen-square, to found a scholarship in perpetuity, to be named the "William Atkinson Scholarship" for the benefit of those studying at the said School of Art for the purpose of obtaining a livelihood, and £500 to the Artists' General Benevolent Institution.

The partnership heretofore subsisting between C. Kirk and H. Kirk, architects, of Sleaford, under the style of Kirk and Son, has been dissolved; as has also that heretofore subsisting between R. Evans, sen., W. Jolley, and R. Evans, jun., architects and surveyors, Nottingham and Burton-on-Trent, under the style of Evans and Jolley; so far as regards W. Jolley.


St MARY-LE-STRAND·
PUBLIC HALL·AND PARISH·LIBRARY
DRURY LANE
ALBERT·VICARS ARCHT
Area
Principal Stair
Hall
Club Room
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Porch
Ground Floor Plan
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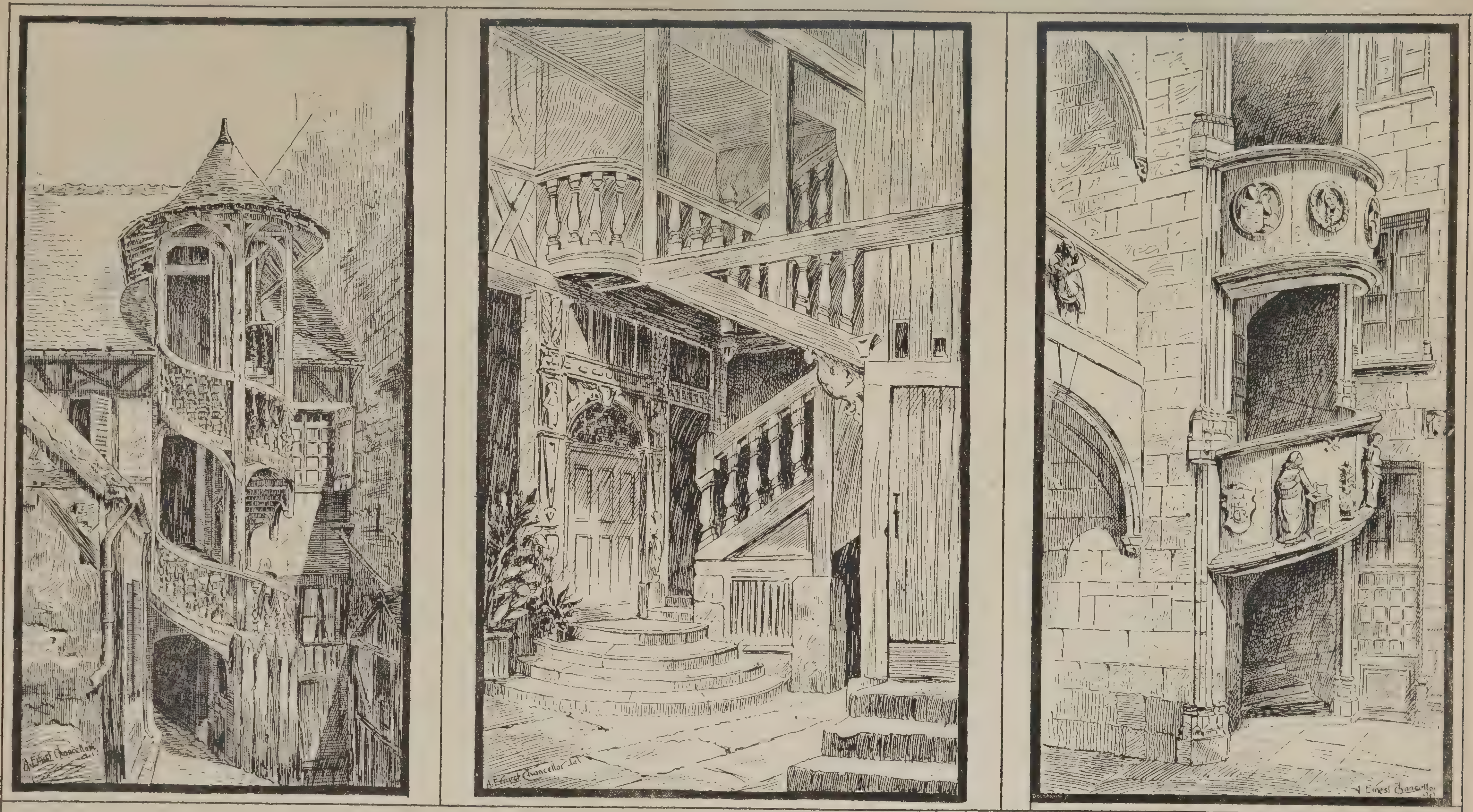

THREE · COURTYARD · STAIRCASES ·

WAYSIDE NOTES.

A MEETING of the Portland cement manufacturers of the Thames and Medway districts was convened at Cannon-street Hotel on the 12th inst., to take steps for the formation of an Association to protect their interests. Mr. Bevan, of the firm of Messrs. Knight, Bevan, and Sturge, was called to the chair, and representatives of about thirty of the leading manufacturers were present. A circular signed by a firm of solicitors was read, stating that, "It is becoming notorious that several manufacturers of English Portland cement are largely adulterating their manufacture by the mixture of Kentish rag stone, other stone, furnace or oven ashes, disused or exhausted firebricks or other inert material, and so bringing disrepute upon the good name English cement has hitherto borne in comparison for quality with cement of foreign manufacture. Such practices are so detrimental to the best interests of the cement trade, both by the discredit which is therefore attached to English manufactures, and the unfair competition in prices thereby rendered possible, that it is now proposed to establish an Association of English Cement Manufacturers for the purpose of dealing with, and, if possible, putting a stop to, a practice so unprincipled and disreputable, and so calculated to perpetuate an injury to the trade."

The Chairman suggested that the Association should only include members of the trade who had utterly clean hands, and it was agreed that all joining should sign a statutory declaration expressly stating that the member's firm or company had not during the past three years sold any adulterated cement. The movement did not meet with unanimous approval, for Mr. Holt, of Messrs. Macevoy, Holt, and Co., asserted that Kentish rag stone, far from being an adulteration, was a vast improvement to cement, as it improved the colour and power to resist tensile strain, while the sand tests obtained from cement so treated were higher than from cement made of chalk and clay only. These assertions he supported by tests covering over a year's trial. He contended that the true checkmate to adulteration was the specification, and that customers should alone be the judges of what materials should enter into the composition of cement. Mr. Holt was pressed to give details of his manufacture, but, with much show of reason, declined to give himself away. Mr. Wilders, of Messrs. Wilders and Carey, corroborated Mr. Holt. Mr. Porter and Mr. Leedham White (Messrs. J. Bazley White and Brothers), neither of whom had used Kentish rag in their cement, strongly urged that the London Chamber of Commerce was the proper body to deal with the question, Mr. White suggesting that as there were "certain substances" which, within small limits, might have an important effect in improving the properties of Portland cement, they should follow the strict rule laid down by the German Association, which permitted of the introduction of 2 per cent. of ingredients other than the raw materials of which Portland cement was primarily made. The amendment was declared lost, and it was agreed to form an Association on the lines suggested, the declaration being signed by representatives of Messrs. Knight, Bevan, and Starge, the Wouldham Cement Co., Messrs. F. C. Barrow and Co., and the Tower Portland Cement Co., among others. It is certainly time that we knew for certain "What *is* Portland cement?"

The Parliamentary projects foreshadowed in the advertisements relating to next session promise to be less numerous and important than for many years past. The L.C.C. are promoting Bills for the acquisition of the eight Metropolitan water companies' undertakings; for the rebuilding of Vauxhall Bridge and the construction of a southern approach to the Tower Bridge; and also for an amendment of the London Valuation and Assessment Act of 1889. The London and South-Western Railway Company revive the project for a new railway from Holsworthy to Stratton and Bude, on the coast of North Cornwall, and seek powers for various works of widening near some of their principal stations. The promoters of the Great Northern and City Railway scheme will apply for an extension of time for the completion of the works authorised by the Act of 1892. The Tenterden Railway, although brought forward as an independent scheme, is a proposal to construct a railway from the L.C. and D. station at Maidstone, *viâ* Headcorn and Tenterden, to a junction with the Ashford and Hastings branch of the S.E. system at Appledore. The North-Eastern Railway propose to construct a loop line between their Newcastle and Berwick main line and the Blyth and Tyne branch, from Cramlington and South Blyth. Parliamentary powers will be sought for the formation of a new railway company, under the title of "The Leigh and South Central Lancashire Railway Company." The proposed line, about ten miles long, will diverge from the Lancashire and Yorkshire Railway at Walkden, and, passing through Boothstown and Astley, will continue through Leigh and Abram, and rejoin the Lancashire and Yorkshire Railway near Ince. Leigh would thus get direct communication with Wigan, Southport, and Liverpool on the one hand, and with Manchester on the other.

Mr. Silvanus Trevail, J.P., County Councillor for Cornwall, who was recently elected on the council of the Society of Architects, has been chosen as Mayor of Truro. The *West Briton* remarks:—"As chairman of the Sanitary Committee of the County Council, he has, during the last two or three years, done more than anyone else probably to improve the sanitary condition of Cornwall; and for his work in this respect the county owes him a deep debt of gratitude. It is further indebted to him for the part which he played in 'The Battle of the Railways' last year. By his prompt and resolute action in acquainting Parliament with the real state of public feeling in Cornwall in regard to the question of railway development, he accomplished an unprecedented feat in inducing the House of Commons to reject the Truro and Newquay Junction Bill, after it had been passed by the Select Committee. By his action in the matter he won the thanks of the whole county; and the feeling of gratitude will shortly find tangible expression in the presentation to Mr. Trevail of a testimonial of over £300 value."

For the first time, ladies are coming forward as candidates at the vestry elections in the Metropolis. There are lady candidates alike in Kensington and in Hammersmith. For the latter parish your contributor, Mrs. Halliday Sparling (Miss May Morris), daughter of Mr. William Morris, and another lady are before the electors, and both give good evidence that they will be able to help efficiently in administering the complicated laws with which London vestries have to deal.

It always disturbs the "Christian Member for Northampton" to fancy anyone else is for the moment a greater favourite with the Almighty than himself. And so, accordingly, Mr. Labouchere falls foul in *Truth* this week of an old acquaintance after this fashion:—

> "A Mr. Harry Hems, of the Ecclesiastical Art Works, Exeter, has won a prize in a weekly paper with an article entitled, 'Why I succeeded in Business,' which is about as sickening an effusion as I have read for a long time. This pious individual proclaims that 'all through his life he has had the blessing of the Almighty rest upon his efforts.' One of these efforts was to beg his way from Florence to Boulogne rather than write home for money. 'I made a very good cadger,' he says, and then goes on to boast that he actually saved money on the journey! Hems declares that he has 'educated himself into considering his own business his greatest delight,' but 'money-making has always been a secondary consideration.' Still, he reckons that he has secured two fortunes—'one in houses and land, whilst the other is *banked up aloft!*' If this is not cant, I should like to know what is."

Well, Mr. Labouchere ought to know pretty well by this time! He is a past master of the cant of Radicalism, and aspires doubtless to the monopoly of the article. Better retire to educate "infant phenomenons" into boring afternoon assemblies with Shakespeare, and cease to get his shirt out at the other favourites of Providence.

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In the series of art lectures promoted by the Glasgow Corporation, Dr. J. Forbes White lectured on "Velasquez" to a large audience in the Corporation Galleries, Sauchiehall-street, on Saturday evening.

Mr. William Harrison, builder and contractor, Cotham-street, St. Helen's, Lancs, died on Saturday from the effects of a fall sustained on Sept. 23. Mr. Harrison, who was 71 years of age, was at one time foreman for the late Mr. George Harris, a local builder, but had been in business on his own account for over 30 years. Among the buildings erected in the town by the late Mr. Harrison are those of Messrs. Beecham, the Cowley Schools, and the gymnasium of the St. Helen's Young Men's Christian Association.

OBITUARY.

We regret to announce the death of Mr. FREDERICK HEMINGS, A.R.I.B.A., of 20, Budge-row, E.C., at the comparatively early age of 39 years. Mr. Hemings was articled to Messrs. C. G. Searle and Son, of Bloomsbury, and afterwards in the offices of Mr. T. Chatfeild Clarke and the late Mr. G. E. Street, R.A., and then became chief assistant to Col. R. W. Edis, F.S.A. Twelve years since he joined the Institute as an Associate, and soon afterwards commenced independent practice. His work principally lay in commercial buildings and residences in the City and West-end, and included the south wing of the buildings erected on the site of St. Paul's School in the Churchyard, Mr. Delissa Joseph being the architect of the northern portion; a large block of warehouses at Paul's Chain; Cheyne Court, Chelsea, a block of residential flats covering an area of an acre; a still block of like character beyond the Albert Hall, and known as Prince Albert Mansions—this unfinished work remains stationary at the third floor, being one of the schemes involved in the Liberator crash; the Kings and Keys in Fleet-street, illustrated by us on February 13, 1885; shops and offices at the corner of Finsbury-pavement and Chiswell-street; and Clement's Inn Chambers, Strand. He had in progress at his death a series of six blocks in flats in Grey Coat-street, Westminster, for the governors of the Grey Coat Charity. Mr. Hemings, who died from bronchitis accelerated by weakness of the heart, leaves a widow and two children.

MR. JOHN FARRELL, who will be recollected by many readers as having been for many years the energetic and kindly secretary of Claridge's Patent Asphalte Company, Limited, of the Victoria Embankment, died on Saturday last at his residence, Putney Park-avenue, Putney, aged 80 years. Few men probably have had such lengthy careers in connection with a single industry as Mr. Farrell, and certainly none worked harder to secure the well-merited success he achieved. Keen and business-like, and as straight as a needle, Mr. Farrell was wont to hide from superficial acquaintances a good deal more depth of feeling than some gave him credit for beneath a veil of brusque humour. Familiarity, however—not that it was every man with whom Mr. Farrell readily became familiar—soon revealed the kindly disposition and genuine cheerfulness of the man, and made all kindred natures at home with him. Few men will be more missed in their own circles. We are glad to hear that Mr. R. T. Wilkinson, who has been for nearly forty years assistant to Mr. Farrell on the staff of the Company, has been appointed his successor.

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CHIPS.

The Earl of Derby opened, on Friday, the new wards and dispensary in connection with the Hospital for Women, Shaw-street, Liverpool. Mr. Powell, of Messrs. Sinnott, Sinnott, and Powell, of Liverpool, is the architect.

Lord Kinnaird visited Croydon on Saturday, and laid one of the memorial stones of the Young Men's Christian Association Jubilee Building, which is being erected in North-end, at a cost of £7,000.

The Blaydon-on-Tyne Local Board have recently applied to the Local Government Board for sanction to borrow £1,275 to carry out works of sewerage and sewage disposal at Spen, and the usual inquiry was held on Friday at the Board office, Blaydon, by Colonel Coke, an inspector.

The City Court of Common Council decided at their last meeting to abolish the vacant office of surveyor to the City Lands and Bridge House Estate. In future the duties will be discharged under the personal responsibility of the City Surveyor by members of his staff, and the appointment of an officer as distinct from the City Surveyor will be discontinued.

A memorial window has been placed in the north aisle of St. Stephen's Church, Willenhall, in memory of the late Mr. John Wakelam. This window was executed by Mr. T. W. Camm, of The Studio, Smethwick. Subject: "Lord, to whom shall we go? Thou hast the words of eternal life."

A new infant school has just been opened at Dunston-on-Tyne; it has been erected from designs by Mr. T. C. Nicholson, F.S.A., Grainger-street, Newcastle.

The architectural section of the Glasgow Philosophical Society met in Glasgow on Monday evening, when Mr. T. L. Watson delivered the presidential address, his subject being "Glimpses of Four Great Periods of Italian Art."

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE second ordinary meeting of the Institute was held on Monday evening, Mr. Alexander Graham, F.S.A., vice-president, in the chair. The deaths were announced of Mr. Charles G. H. Kinnear, of Edinburgh, Fellow; and of Mr. Frederick Hemings, of London, Associate.

NOTES ON THE ARCHITECTURE OF CHINA.

A paper on this subject, illustrated by many drawings and photographs, was contributed by Mr. Frederick M. Gratton, Fellow, and was read, in the author's absence (Mr. Gratton being on the return voyage to China), by Mr. William Kidner, who was able to supplement the paper by his own experiences in the country. A brick from the Great Wall at Kopie Koa, and measuring 20in. by 10in. and 4in. in height, was shown by Mr. Hugh Leonard. Mr. Gratton endeavoured to refute the common allegation that China had no architecture properly so-called, and showed that all Japanese art was derived from Chinese sources. The very novelty and grotesqueness of Chinese architecture constituted its greatest charm, and it was surprisingly adaptable to local circumstances and climate. He traced the effect of the successive religious systems on the architecture of the land, and referred to the great destruction of architectural monuments through wars and earthquakes. In referring to existing examples, he alluded to the cities and their walls, and the famous Great Wall, the very existence of which was denied a few years since by those who had never visited China. At the present time, 1,281 cities were encircled by high crenellated or embrasured walls, generally averaging from 25ft. to 30ft. in height, sometimes flanked with towers. The simpler form was a single wall, with an earth-slope downwards from the top to the general level on the city side; sometimes double, like the Great Wall. They were of stone, of brick with stone or granite bases, or with stone or granite facings; substantial structures of carefully prepared and good material. Three other cities are surrounded by earth mounds or "mud walls." The cities were quadrilateral or circular in plan, the principal gates being placed to face the four cardinal points of the compass. A moat usually encircled the walls, and water-gates were placed near the main entrances, over which were the watch-towers or guard-rooms. Pekin, the present "yellow" capital, covered an area, exclusive of suburbs, of about twenty square miles. It consisted of the Tartar and Chinese cities, each encircled by immense walls slightly exceeding 23 miles in length. That of the former was loop-holed, crenellated, and bastioned at intervals of about 60yd.; it averaged about 50ft. in height and 40ft. in width, with three-storied pagoda-like erections surmounting the principal gateways. In the heart of the Tartar city was the walled enclosure of the "Forbidden City." The walls of the Chinese city were about 30ft. high, 25ft. thick at base, and 15ft. wide at top. Nankin was formerly the capital of the empire. Its thick, embrasured walls consisted of three concentric circles, the outer pierced with eighteen gates, some of which were now blocked up and disused; the second with thirteen gates; and that of the Imperial, or Sacred, city with four gates. Rich as had been this city in architectural monuments in the day of its supremacy, none of its wonders remained except in the ruins of its royal palace, pagodas, temples, and marble-paved causeways. There were, however, several modern buildings of note in its Confucian temples. The city of Hangchow was also formerly the imperial capital, and was of great historical interest. Its walls, which were said to have measured at one time thirty miles, were now only twelve miles in extent, and embraced some interesting relics. Having described other cities, the author then passed on to describe the beamless and bronze temples, the ornaments and images of the latter metal; the palaces, pagodas, towers, and pavilions; the official residences, philanthropic institutions, and pawnshops, closing with an allusion to the bridges, mausolea, and tombs. In conclusion, Mr. Gratton expressed the opinion that, although there might be nothing *grand* in the Chinese architecture as seen to-day, there were remains and proofs of a distinctly national architectural style. The slender and elegant monolithic columns of stone, bronze, and wood, with base, but without capital; the decorative dragons encircling or enriching them; the shape of openings; the form of roofs, ridges, and terminals; the pattern and design of the ornamental woodwork or pierced stone; the shape of mouldings; the grotesque character of all carved work (except foliated); and the curious but beautiful neutral notes of applied colour—all these, he maintained, constituted a "style" as distinct as the most rigid Gothic or Classic rules could be said to form. Any definite deviation from recognised proportions or accepted conventionalities, and the "custom" established by the work of centuries, should be considered, as it would surely be, as grave an error in the one case as in the other.

At the close of the paper a short discussion followed, in which Mr. George Aitchison, A.R.A., Sir Henry Howorth, M.P., Mr. R. Phene Spiers, F.S.A., Mr. H. S. Ashbee, F.S.A., and Mr. William Emerson took part, and a vote of thanks was passed to the author and reader of the paper.

BUILDERS' BENEVOLENT INSTITUTION.

ANNUAL DINNER.

THE forty-seventh annual dinner in aid of the funds of this Institution was held on Thursday, Nov. 15, at Carpenters' Hall, London-wall. Mr. Basil P. Ellis, the president of the Institution, occupied the chair, and was supported by Sir J. Whittaker Ellis, Bart., Mr. John Aird, M.P., Mr. Thomas Blashill, F.R.I.B.A., Mr. N. Smith (the Master of the Carpenters' Company), Mr. A. Lucas, Mr. F. J. Dove, Mr. J. Randall, Sir W. Pearson, Bart., Mr. B. E. Nightingale, Mr. H. H. Bartlett, Mr. Howard Colls, Mr. C. Bussell, Mr. J. W. Duffield, Mr. T. Stirling, Mr. W. Shepherd, and Mr. T. Hall.

The Chairman, in proposing the toast of the evening, "Success to the Builders' Benevolent Institution," said it had now been established for nearly half a century, and there was no doubt that during that long period much good had been done by the charity. At the present time the Institution paid pensions to 48 persons, all of whom, in consequence of old age or infirmity, were unable to earn their own living. The committee made very careful inquiries before placing anyone on the list for election, and went personally into all these matters. To enable the committee to pay the pensions, an income of certainly not less than £2,000 a year was required. The investments yielded about £650 a year, which was a great help, but still it would be seen from these figures that a considerable part of the income was derived from annual subscriptions and donations. It was generally admitted at the present time that the building trade was depressed, and for that reason, he was sorry to say, some portions of the income of the charity had fallen off; but he hoped with the hearty assistance they had received from all quarters, and which he gratefully desired to acknowledge in the name of the committee, they would manage, notwithstanding their difficulties, to maintain the Institution on a thoroughly satisfactory financial basis. The charity was very carefully managed; they did not run into debt, and ask their friends to help them out of the difficulty, but they endeavoured to keep within their income. The trade of a master builder was subject to even greater risks than most trades were. A great item to be considered in making a contract was the question of how much the labour was to cost. It was not generally difficult to state pretty nearly what the material would cost, but the labour was a very open question. He believed those who were his elders would admit that it was more difficult than it was 20 years ago to make an estimate as to what the labour would cost in any particular contract. There was all the more reason, then, why this Institution should be well supported. Builders might be well up to their work; but through circumstances over which they had no control, it happened from time to time that they lost a good deal of money, and, in consequence of ill-health, were not able to get up again. As in other trades, the elder men were gradually going out of business, and younger men coming in, and he hoped they would do all they could to get the younger men to subscribe to this Institution.

Mr. F. J. Dove, who replied, said he had been asked to do so in the regretted absence of Mr. G. Plucknett, one of the staunchest friends of the charity. Builders nowadays were so keenly alive to cutting one another's throats, that it was a wonder they were not all applicants for the benefits of the Institution.

The President also gave the toast of "The Worshipful Company of Carpenters," to whom they were indebted for the use of the hall in which they were met, and for their handsome donations to the funds.

The Master of the Carpenters' Company replied, and said that the Company took a great deal of interest in this Institution. The Company had been deprived of a great many of their old functions, but they were doing their best to promote technical education.

In the course of the evening subscriptions and donations to the amount of £966 were announced, of which £804 appeared in the President's list. The President further announced that the members of his firm present had agreed to increase their subscriptions so as to make the total amount up to £1,000.

BOOKS RECEIVED.

First Principles of Building, by Alex Black, C.E., architect, illustrated (London: Biggs and Co., Salisbury-court), is a practical handbook for technical students, in which an attempt has been made to point out to the student the various steps necessary in building, beginning with the primary essentials, such as building materials and the trades connected therewith, and proceeding to discuss the art of planning, estimating, the choice of a sanitary site, soils, staking out buildings, foundations, masonry, carpentry, and the mechanical principles involved in the consideration of stresses, &c. The volume is chiefly taken up with the description of building materials, stones, bricks, cements, plastering, &c., the methods in use of applying them. These remarks will be found pretty comprehensive and useful, as many practical suggestions are made. Paints, painting, glass, glazing, timber and its conversion, metals, and ironwork are dealt with. The principles of construction in masonry and carpentry are next discussed, and are illustrated by diagrams. Graphic statics in its application to determine the stresses on roofs, &c., is explained in a plain and elementary manner, and the joints in timber construction illustrated. We recommend the volume as an elementary manual for the student.——*The Old Churches of Our Land:* the Why, How, and When, of Them. By Francis Baldwin, Architect. (London: Society for Promoting Christian Knowledge.)—For "those in search of a hobby" this little book is intended by its author to be an introduction to the subject of our national church architecture, and to awaken an interest in those who read it by impelling them to study old churches, and to make the subject a holiday hobby. Mr. Baldwin simply and lucidly sketches his subject from the very beginning. A glance at Egyptian, Greek, and Roman architecture prepares the way for the description of the Early Christian or Basilican church. Crypts, Gothic vaults, and their development from the simple barrel or Roman vault, are assigned separate chapters; thus, the vaulting problem is explained so as to make it an interesting step. The churches from the 5th century to the Norman era, and the features of Anglo-Saxon and Norman architecture are very fully described and illustrated. The introduction of the pointed arch and its consequences to vaulting are simply discussed. The Early English and following styles are treated and explained in a way at once to interest and instruct. The forms of window tracery, vaulting, buttresses, cloisters, chapter-houses, baptisteries, gable-crosses, corbel-tables, wall arcades, mouldings, capitals, arches and other features of each period are discussed and illustrated, and the illustrations of these features have been well selected and drawn. To all those who wish for an introductory manual to our national architecture we can recommend this book.——*A Textbook of Mechanics and Hydrostatics*, by Herbert Hancock, M.A., F.R.A.S. &c. (London: Sampson Low, Marston, and Company Ltd.), is a compendious treatise on these subjects for students, and the author has endeavoured to make the student think for himself. The book appears to be in every way adapted for the purpose of teaching the fundamental principles of mechanics and hydrostatics, and the elementary parts of trigonometry are explained simply and clearly, the geometrical meanings of angles, sines, cosines, tangents, &c., being given; and the chapter on "Motion, Velocity, and Acceleration" gives in simple language, and by the aid of familiar examples, the chief laws. Graphical means of estimation are used, and the numerical examples are well calculated to assist the mental process. Such propositions as the parallelograml triangle, and polygon of forces are thoroughy explained in the chapter on "Force and Forces," and the mass-centre and centre of gravity are geometrically demonstrated by reference to excellent diagrams. The illustrations and letterpress are all that can be desired for clearness, and the textbook contains a capital exposition of fluid pressure and the pressure of gases, and an appendix of examination papers is given at the end.——*A Handbook of Ornament*, by Franz Sales Meyer, second English edition, revised by Hugh Stannus, F.R.I.B.A. (London: B. T. Batsford), is a new and revised edition of Herr Meyer's valuable handbook of ornament which we noticed some time ago. Mr. Stannus, Lecturer on Applied Art, South Kensington, has simply revised the chapters and terminology so as to make the German edition more presentable to English students. As a classified handbook of ornament Meyer's work has few equals, and is an acknowledged treatise in the leading art schools in Germany and America. The illustrations are numerous and well-drawn, and represent every class of applied ornament. Three main divisions are recognised:—(1) the elements of decoration, such as geometrical elements; natural forms, as those of plants, leaves, and flowers, animal and human organisms; artificial objects; (2) ornament applied to features like bands, borders, panels, diapers, &c., (3) decorated objects under which every variety of vase, drinking vessels, candelabra, utensils, jewelry, &c., are described and classified. Thus the arrangement is thoroughly scientific, and ornament is discussed according to its functions, and the student is taught on what principles decoration is applied to objects such as vases, utensils, furniture. These several objects are briefly described, and their main features analysed.——*The Story of Selby Abbey* (London: David Nutt, Strand; Selby: W. H. Spencer) is a narrative in popular form by the author of "Old Time Stories." Several illustrative sketches and photo. blocks are given, freely drawn, and are chosen to give a general idea of this fine old abbey and its details. The author and publisher have both done their best to convey in a small compass the chief incidents of the history of and features of this fine example of monastic church architecture in Yorkshire, from the time of its foundation to the restoration of the church by Mr. Oldrid Scott. Few abbeys retain so much that is pure and beautiful from the Norman to the Perpendicular; the Transitional features from Norman to Early English and Decorated being well preserved as in the triforium of nave. The east end of choir is a most beautiful example of Late Decorated. This little guide-book will be found to be a valuable summary of all that is interesting in the abbey.——*The Villagers' Magna Charta*. By J. Morrison Davidson. Reprinted from the *Weekly Times and Echo*. (London: William Reeves. 6d.)—In this vigorous little book of fifty pages, Mr. Davidson, who describes himself as a "literary watch-dog of Democracy," has told the rural population of England just what the new Local Government Act is, and what are their powers and opportunities under it. Mr. Davidson thinks with reason that average villagers will find much difficulty in dealing "with the dense mass of intractable matter embodied in this most complex and perplexing statute," and therefore he has provided the villager with a popular digest of the Act, interspersed with those pungent and biting phrases and happy quotations which are characteristic of Mr. Davidson's style.

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John Park, a plumber, died on Tuesday in the Glasgow Royal Infirmary from injuries sustained on the previous day through falling from a house in George-street. He was being raised to the roof by a pulley, when a dislodged brick knocked him off his seat and into the court below, a distance of 25ft.

At the meeting of the Baths Committee of the Bath town council, on Friday, the letter from the Local Government Board giving sanction for the raising of a loan of £30,000 for the Pump-room extension was read. The Board stated that they retained the views which they had conveyed to the town council respecting the expediency of setting back the proposed building; but they had not considered that the refusal of the town council to act on those views would justify them in withholding their sanction to the loan. The chairman stated that the architect, Mr. J. M. Brydon, of London, would attend a special meeting of the committee to consider a modification of the plan, so that the water of the Roman baths might not be covered over. Sir Jerom Murch also suggested that room in the new building might be used as a permanent art gallery.

Building Intelligence.

Bishopsgate, E.C.—The new buildings of the Bishopsgate Institute will be opened by Lord Rosebery to-morrow (Saturday). They comprise hall, library, reading-room, board-room, offices, and caretaker's house, and have been designed by Mr. C. Harrison Townsend, F.R.I.B.A., of 29, Great George-street, Westminster, and erected by Messrs. John Mowlem and Co., of Grosvenor Wharf, Millbank, Mr. Thomas Lee acting as clerk of the works. The elevation of the principal entrance in Bishopsgate-street has been carried out in light yellow terracotta, the modelled work having been executed by Mr. Aumonier. Above this entrance are the board-room and the clerk's offices. The institute has also side and back entrances in Brushfield-street and Duke-street, the frontages of which have been carried out in red bricks, with dressings of terracotta. For general access a corridor runs the whole length of the buildings, and to insure perfect quiet and convenience to the public, the library and reading-rooms have been placed as far as possible from the traffic of Bishopsgate-street, and are also cut off from the hall by another corridor. The corridors and staircases have been lined with glazed tiles. The floors of the corridors and vestibules are of marble mosaic set in red cement. The floors of the library and hall are laid with oak block flooring, and are of fireproof construction, upon Messrs. Homan and Rodgers' system. The stairs to the library and board-room are of solid teak. The hall, 80ft. long, 48ft. wide, and 42ft. high, will seat about 500 people. In addition to the high clerestory windows, a toplight is provided with a view to the hall being occasionally used for exhibitions of paintings, &c. The lending library, director's room, and reference library on the ground floor are 15ft. 6in. high. The height of the reading-room on the first floor is 15ft. The fittings throughout this portion of the building have been executed by Messrs. Lascelles and Co.; those on the ground floor in English oak, and those on the first floor in walnut. The gas-fittings are by Messrs. Sugg and Co., of Westminster. The foundations are in concrete, carried down to the gravel, and the outer area and basement walls are constructed of solid brickwork faced on exterior with asphalte.

Bride-lane, E.C.—The Lord Mayor inaugurated, on Tuesday, St. Bride's Institute, in Bride-lane, Fleet-street. The building, of which we gave a double-page illustration and plan in our issue of Nov. 17, 1893, has been erected from designs by Mr. R. Cunningham Murray, of Racquet-court, the contractors being Messrs. W. Brass and Son. It has a frontage of 107ft., and an average depth of 75ft., and consists of a basement and four other floors. In the basement are a swimming-bath, 75ft. by 27ft., washing-baths, and laundry. At the east end on this level are the lending library, boys' reading-room, and a gymnasium, 48ft. by 23ft. On the ground floor is the hall, and on the floor above are a reading-room, 50ft. by 27ft., and a lithographic printing school. On the mezzanine floor, in front, the Passmore Edwards modern technical library, printing museum, and William Blades library are arranged, and on the floor above are a letterpress printing school and girls' reading-room. The fronts are of red bricks, with Portland stone and terracotta dressings. The cost has exceeded £20,000. Tuesday's ceremony took place in the Hall. At noon the Chairman and Governors of the St. Bride's Foundation, with their clerk, met the Lord Mayor and Lady Mayoress, Alderman and Sheriff Samuel, Sheriff Hand, and their ladies at the west entrance, Bell's-buildings, Salisbury-square. On arrival at the William Blades and Passmore Edwards Libraries, Mr. Drummond invited Mrs. Wm. Blades and Mrs. J. Passmore Edwards to unveil medallion portraits of their respective husbands. These medallions, executed in terracotta by Messrs. Doulton and Co., are from Mr. George Tinworth's studio, and were illustrated in our issue of the 2nd inst. Mr. William Blades' portrait is presented by Sir Henry Doulton, and that of Mr. J. Passmore Edwards by an anonymous donor. After the portraits had been unveiled, Mr. Alfred E. Blades and Mr. Harry Passmore Edwards briefly replied, the latter gentleman remarking that among the many works with which his father had been associated there was probably none in which he took greater interest than in this library of St. Bride's. The Lord Mayor congratulated the parishioners heartily upon having such a magnificent building

London School Board.—The last report of the late School Board states that during the year ended March 25 last the Board were engaged in purchasing interests in 50 sites. The land was acquired on 13 sites for erecting new schools or enlarging existing schools, and in the case of the remaining 37 for completing sites previously purchased, for enlarging the playgrounds of existing schools, or for carrying out general improvements to schools. The total expenditure on the sites was £350,363, with £35,816 costs. The total number of sites for schools purchased at Lady Day last was 435. In the case of 295 of these sites, where the building accounts have been closed, the cost of the land has been accurately ascertained at £2,321,226; and as the schools erected upon them provide a total accommodation for 341,756 children, the cost of the sites per head is £6 15s. 1d. Fourteen new schools were opened during the year at a total cost (including sites, building, and furniture) of £377,278 17s. 8d., or £28 7s. 1d. per head, the accommodation being for 13,305. Enlargements of 25 schools, affording accommodation for 8,246, were also completed and opened in the 12 months, the tenders for which amounted to £153,907. Tenders were accepted for four new schools, 21 enlargements, four new junior mixed schools, and two pupil teachers' schools. The drainage of all the 430 schools of the Board has been reported upon, and the Board have appointed a sanitary surveyor for the purpose of preparing plans and superintending the drainage and sanitary work required. Much of the work has already been carried out. An event of the year has been the completion of the head offices of the Board on the Victoria Embankment, including a new Board room and a library.

Rotherham.—The school situate in Ferham-street and Devonshire-street, Rotherham, is now complete, and was opened on Nov. 15, the total accommodation being for 800 children. The boys' and girls' school, a two-story building, faces Devonshire-street, the boys being on the ground floor, and contains a large schoolroom, 61ft. 6in. by 20ft., giving accommodation for 120, and two classrooms, each 33ft. by 20ft., and accommodating 65 each. The school is built of rock-faced wallstone, with ashlar dressings, the whole being surrounded by stone boundary walls and ornamental palisading. The centre of the street front of boys' and girls' school is surmounted by a bell-turret. The general treatment is of a bold type of modern Classic. The contractor for the work was Mr. Charles Green, and the architect to the board, Mr. H. L. Tacon, of Rotherham, under whose direct supervision the work has been carried out. The clerk of works to the board is Mr. F. Jenkinson. The total cost of the school has been about £7,200, exclusive of site.

St. George, Bristol.—The new High Grade and Technical Schools, erected by the St. George's School Board, were opened on Friday. The schools have been erected at a total cost of nearly £14,000, from plans by Mr. F. Bligh Bond, of Liverpool Chambers, Corn-street, Bristol. In the basement is provided a metal workshop, 52ft. by 31ft., and this is supplied with a forge. There is also a wood workshop, 58ft. by 21ft. On the ground floor there is a central hall, 52ft. 6in. by 32ft., having a classroom 27ft. by 25ft., connected therewith, the divisional arrangement being a movable glazed screen, which can be run back. On the ground floor there are double classrooms, 59ft. by 22ft., and another 25ft. square. In precisely the same manner the first floor is laid out, the ground floor being for boys and the first floor for girls. The buildings are of brick and terracotta, and the roofs are covered with green slates. The style of architecture is pure Renaissance. Internally the floors are fireproof, having been constructed of concrete and iron. The builder was Mr. C. A. Hayes, of Bristol.

Southampton.—The new post office erected by H.M. Office of Works in the lower part of the High-street will be opened in December. Mr. Henry Tanner, F.R.I.B.A., is the architect, and the contract was let in November, 1892; but owing to delays the building operations were taken over by the Office of Works in February last. The street façade is in the French Renaissance style, and is carried out in Fareham bricks and terracotta. The public office is 34ft. 6in. by 25ft. 6in., and has a height of 15ft. The outer office is dadoed with glazed bricks panelled in design in colours, and the whole office is heated by hot-water pipes and open fireplaces. The flooring of office and the main staircase are of silex stone. The first floor is divided into two rooms—that on the south, 18ft. by 19ft., being appropriated as the office of the postmaster; and the larger room, 27ft. by 18ft., will be occupied by the staff. On the second floor are a store for stationery, 17ft. by 18ft., and two other rooms, and the upper floor is occupied by the caretaker's apartments. At the back of the public office on the ground floor is the sorting-room, which is about 191ft. long with an average width of 44ft., and a height to the apex of the roof to 21ft. It is ventilated by Kershaw's pneumatic extractors. The wood blocks for flooring were supplied by Mr. R. L. Lowe, of Farnworth, near Bolton; the joiner's work in the carcase of the building was executed by Mr. Elliott, of Newbury, and the rest by Messrs. Playfair and Toole, of Southampton. The terracotta, mainly, is from Doulton's of Lambeth; the facing bricks were supplied by Mr. Plummer, of Fareham; and the rest by Mr. Sydney Nichols, of Southampton. Mr. James Atkinson, of H.M. Office of Works, has been clerk of the works throughout.

Usk Priory, Mon.—The interesting old house known as the Priory, Usk, has just been considerably enlarged by the addition of a new wing, comprising a large smoking-room with garden entrance, servants' hall, and staircase on the ground floor, and additional bedrooms and bathroom on the first floor. The new buildings are Domestic Gothic, in the Tudor style, stone built, and the roof covered with stone shingles obtained from old roofs; the dressings are in St. Aldhelm Box Ground stone. The whole of the works, including all the oak woodwork, have been carried out by Messrs. Knox and Wells, contractors, Cardiff, to the designs and under the superintendence of the architects, Messrs. Veall and Sant, of Cardiff.

Engineering Notes.

Institution of Junior Engineers.—The opening meeting of the 14th session of this institution was held on Friday evening at the Westminster Palace Hotel. The retiring president, Mr. John Wolfe Barry, C.B., took the chair. His successor, Mr. Alexander Siemens, M.Inst.C.E., delivered a presidential address, in which he remarked that few works of any importance could be carried out by the civil engineer without circumstances occurring which compelled him to exercise his ingenuity in suitably modifying his methods. Another factor which operated in a similar way was the constant development of new requirements in the course of the progress of civilisation. Every novelty introduced brought in its train a fresh set of requirements, which made a demand on the resources and the versatility of the engineering mind. Those problems constituted, in fact, one of the principal attractions of the engineering professions. Generally, they might say that, in order to approach a problem with the most certain prospect of success, it was necessary (1) to define, as accurately as possible, the want that existed, or the particular object that was to be attained; (2) to be well acquainted with the scientific principles which came into play; (3) to know how the want was met, or the object attained in practical life; (4) to find out what proposals had been made by others in the same or in a similar case. A careful attention to these requirements would prevent much disappointment and waste of energy.

◆

A new Wesleyan chapel was opened at Burton Leonard, in the Ripon circuit, on Friday. It is Gothic in style, and seats 114 persons, and has at one side a schoolroom, and will increase the sitting accommodation, when required, to about 180. The building is of brick, and it is faced with red pressed bricks from Leeds, while the quoins and dressings are of local limestone. The work has been carried out under the superintendence of Mr. T. Stokes, Thirsk. The cost has been about £600.

A porch has just been completed at the east end of St. Margaret's, Westminster. It is of a character corresponding with the western porch erected some few years since, though of much more modest proportions. It is entered by a wide archway in two orders, enriched with carved pateræ, and flanked by buttresses terminating in square gabled and crocketed pinnacles. The sides are plain, the roof is flat and covered with lead and protected by an enriched parapet. The porch is vaulted in stone internally in lierne groining with carved bosses. The interior will be enriched by sculpture.

Correspondence.

STAINED GLASS.

To the Editor of the Building News.

Sir,—I am sorry to trouble you, but I must ask you to put in the next number of the Building News an apology for your having published a libel against me, in that you *published in your last issue* a libel contained in certain remarks made by Mr. H. Bacon in regard to myself. I have no doubt that you will do so immediately, and that we shall have no further trouble.

I have received letters giving a very luminous account of Mr. H. Bacon.—I am, &c.,

W. B. Richmond.

Beavor Lodge, Hammersmith, W., Nov. 21.

[We fail to see wherein *we*, at any rate, have libelled Mr. Richmond. We regret, of course, if any statements made by Mr. Bacon were inaccurate, and we have given full publicity to Mr. Richmond's contradictions, and to all others which have reached us. But the report was a fair one of Mr. Bacon's paper, and Mr. Richmond surely does not mean to insist on apologies from *us* for Mr. Bacon's remarks, and for which Mr. Bacon is responsible?—Ed. "B. N."]

Sir,—The tone of Mr. Richmond's letter is not at all calculated to disarm opposition. The ego looms so large in his constitution, that he even presumes himself to be the cause of my "advertising article." However hurtful to his *amour propre*, I must undeceive him. My invitation to read a paper to the Manchester architects was accepted by me five weeks before he spoke at Exeter. Mr. Richmond is in no sense the cause or even the matter of my paper, but merely an incident *ad rem*.

His taunt as to self-advertisement I pass by as irresistibly droll, coming from him; one naturally thinks of the old-time adage about Satan rebuking sin. He is kind enough to traverse my statements in the singularly courteous manner so exclusively his own; but mere verbal accuracy apart, he undoubtedly substantiates them, as he admits the ornament was drawn by another, and the major portion of the glass-painting was done by unknown assistants; and until the generality of folk know their names and status on the work, it does savour of cant for him to lecture people as to the necessity of contact between the public and the actual worker. The *bald* inscription of a string of names upon the generally invisible cathedral archives won't help us, and I don't gather that his glass painters even achieved that publicity. He thinks Messrs. Powell would have enlightened me, and from what I know of these gentlemen, I agree with him; but Mr. Richmond is probably unaware that Percy Bacon and Brothers won for them several window competitions, the donors, of course, being quite ignorant of their existence, in accordance with the commercial system. That being so, I could hardly ask them information as to the conduct of their business. Understand me, Sir, I lay no complaint to Messrs. Powell, who always knew what they wanted, invariably the best we could do, and which was promptly paid for with many courtesies.

I do not assert of Mr. Richmond that he deliberately suppressed, either actively or passively, the names of his subordinates, but state a simple fact—i.e., "they are unknown"—and about this I feel acutely, and, I think, with good cause. For eight years, Sir, my brothers and myself, together or singly, acted as designers, draughtsmen, or painters for 15 of the largest so-called stained-glass artists in London, besides many provincials, with a result that, instead at the end of that period of reaping the reward for such long service of a good reputation, we were as absolutely unknown to Mr. Richmond and everybody else as if we had never started.

Can he wonder at our jealousy for fellow-workers who are in this chrysalis stage?

He says he spent three weeks in double-glazing a window, and doubts if I would, or any other commercial firm. I have seen most of the old glass in England, France, and Holland, and made tracings of a great deal of it, but have never come across an example of such a thing, and conclude Mr. Richmond must have made a blunder in calculating the effect of his glass, and thus repaired it. Be this as it may, he is pleased to treat us to another sample of his Exeter screed, where he assumed all the virtues, constituted himself the judge of all sacred art, and contemptuously dismissed everybody else, architects, sculptors, and painters. So he now condemns us by the epithet "commercial" firm.

Architects and others are well able to take care of themselves; but, as a decorative artist, I enter my most earnest protest against such un-English methods of controversy. What does Mr. Richmond know of me or my firm to warrant this scandalous inference? I venture to say, absolutely nothing! I doubt if he ever heard of us in his life.

Mr. Richmond places us under the stigma we most dread, and do everything possible to avoid. In our studio works are invariably designed, drawn, coloured, partly painted, and superintended from start to finish by ourselves personally. Assistants, where necessary, are treated as creative craftsmen, and not as "hands." They know the clients, and are known by them; are at liberty to, and sometimes do, execute commissions over their own signatures. To Mr. Alfred Higgins I may say that, while admiring the chivalrous championship of his friend, I cannot agree that my "libel," as he phrases it, was gratuitous or unprovoked. Mr. Richmond at the Church Congress made a wanton and savage attack upon all his brethren—architects were reduced to tradesmen, sculptors were described as tradesmen-carvers, all (or nearly all) stained glass was valueless, panel paintings resembled oleographs, &c. As a glass and panel painter, have I, therefore, no provocation? It is true, no names were singled out; but all were pilloried together. It is probably true he has never seen a single work of ours; but the great Art Censor has uttered his *ipse dixit*, and we, in common with all others, hang dangling on the gibbet Mr. Richmond so kindly erected—a spectacle for gods and men. This position I am not at all anxious to occupy, and do not intend to without a struggle.

It hardly seems fair to score off Mr. Higgins, who writes so amiable and well-meant a letter; but he surely sees, in naming the sculptures of the Parthenon, a complete surrender of the point in controversy. It is most certain many assistants were employed. I want to know their names! I don't, and doubt if Mr. Higgins does.

Finally, Sir, I am able to state with confidence that from the studios of at least three London artists, putting our "advertising" selves quite out of the question, works in glass and oils are continually issuing which are not unworthy of a place alongside the productions of a more artistic age, and I should be very happy to give Mr. Richmond their names, that after studying their works he may qualify his most extravagant and unwarrantable assertion.—I am, &c.,

Herbert Bacon.

11, Newman-street, W.

Sir,—Having just returned from abroad, I have read, successively, Mr. Herbert Bacon's capital paper upon the above subject in last week's paper, and Messrs. W. B. Richmond and Alfred Higgins's letters of protest in the current issue of the Building News. Without wishing in any way to intrude upon a subject (stained glass) I know very little about, it is, perhaps, only fair to remark that at the recent Church Congress, held in this city, most of Mr. W. B. Richmond, A.R.A.'s, listeners seemed to treat his gratuitous attacks upon architects as very funny, and nothing more!

Messrs. Powell and Sons have recently executed some excellent mosaics for me, for St. Augustine's Church, Highbury, N., under the personal supervision of Mr. J. Douglass Mathews, F.R.I.B.A., and when I called at their place of business in Whitefriars, E.C., a few months ago, I was certainly asked how I liked *their* mosaics at St. Paul's Cathedral. Down here Mr. Richmond, certainly by inference, took the credit of that work wholly upon himself.

It must be a quarter of a century ago—perhaps more—that, from the designs of Mr. Ewan Christian, F.R.I.B.A., Messrs. Powell and Sons carried out much exquisite mosaic work for me for a Wiltshire church, so I know, personally, that these artists do, and have long done, mosaic work of the highest class.

I have nothing to say for or against the trade catalogue people, of whom Mr. Richmond made such fun. They are entirely outside my own province, and I have no wish to split a lance with them. But as an architect's man—as one who has for a lifetime been engaged carrying out work direct from architects' designs, and under their personal supervision—I distinctly protest against the scornful and satirical manner in which Mr. Richmond recently pooh-poohed the profession before a crowded room of parsons in this city.

If Messrs. Powell and Sons practically carried out the mosaic work lately executed at St. Paul's Cathedral, then Mr. Richmond was, to say the least, most inconsistent in his remarks, and fully merits the lashing that Mr. Bacon is reported to have given him at Manchester.—I am, &c.,

Exeter, Nov. 17. HARRY HEMS.

SIR,—Mr. Richmond, in describing Messrs. Bacon Bros. as a "commercial firm," has unintentionally done them an injustice: "commercialism" is their *bête noir*. Doubtless Mr. Richmond spends many valuable hours without remuneration for love of his art; but so do other people.

Mr. Bacon, for instance, has recently, with the full consent of his brothers, given five weeks to painting in oils and gesso an elaborate panel picture, which he presented to my church. There was no hope of reward or advertisement, for St. Gabriel's is an unknown church in an unknown suburb, and is the very reverse of a "show" church.

When preaching a mission in Kent this summer, I heard that two beautiful little windows had been given to the Sisters at Malling Abbey by Messrs. Bacon Bros. Again, here there could have been no possible return looked for, nor could it be an advertisement, as the windows are in the private chapel of the Sisters.

Of both these works, given without hope of reward and without any inspired paragraphs in the Church newspapers, I can speak in the highest praise, as one who knows pretty intimately a good deal of sacred Continental art, and the panel I constantly saw Mr. Herbert Bacon working at with his own hands.

I am entirely in sympathy with Mr. Bacon, and so is Mr. Richmond, I think, in desiring the regeneration of the system of production of works of sacred art, and I can testify that at Messrs. Bacon's studios the assistant artists are seen and known by name to their clients;—for instance, I am always glad to shake hands with their assistant draughtsman, Mr. Wilfrid Hill, who was introduced by his employers. The very atmosphere of the place savours of artistic comradeship, and cannot possibly with the very slightest particle of truth be described as "commercialism."—I am, &c.,

T. C. ELSDON.

St. Gabriel's House, Bounds Green.

FIREPROOF PLASTER.

SIR,—We concur, in the main, with Mr. Thomas Potter's letter in your last issue, regarding the recent trials made in York-road for the purpose of testing the resistance of plaster ceilings to fire. It is somewhat surprising, however, that the power of plaster, under certain conditions, to arrest the progress of fire should be hailed by so many persons as a new discovery, inasmuch as it has been a perfectly well-known fact for many years.

The system of plastering most suitable for this purpose is admittedly in the form of "slabs," which contain no combustible ingredient, and are toughened by an inner layer of galvanised wire netting. These "slabs" are of great strength and durability, and possess the additional advantage of being applied dry. Further than this, they must surely be considered less expensive than "metallic lathing" treated with wet plaster.

Mr. Potter is undoubtedly right in saying that a plaster ceiling makes the best "first line of defence," that "the second is to thoroughly encase and protect the metal joists, more especially the bottom flanges, upon which the stability of the floor largely depends, and the third is to avoid as much metal, otherwise, as practicable, and allow it room for expansion."

In corroboration of Mr. Potter's view, we refer to a series of fire-tests made during the winter of 1887-8 by Mr. W. H. Stanger, C.E., F.C.S., at Messrs. Middleton's, in Southwark. These tests were attended by several well-known architects, and were fully reported at the time by your contemporary, the *Builder*, in their issue of 25th February, 1888. We may here state briefly, however, that the object was to test the action of fire (over 2,000°) on a pair of iron girders embedded in concrete, as against a pair coated with our patent combination casing—*i.e.*, fireproof wired plaster padded inside with our *non-conducting, fireproof* silicate cotton. The result, as expected, was absolutely in favour of the latter system, the soft padding of silicate cotton allowing the girders to expand and contract without cracking the casing. The girders embedded in concrete gave way in 1 hour and 45 minutes, whereas those incased as described showed no perceptible deflection, nor was the casing at all affected, at the expiration of 7 hours, when darkness set in and the furnace cooled down. Wooden joists treated in a precisely similar manner were found to be equally impervious to fire.

We are in entire agreement with Mr. Potter that practical tests are of immense value, and we have a suspicion that a good many of the so-called fireproofing systems now advertised, if subjected to such severe tests as we have described, would rapidly pass into oblivion.—We are, &c., FREDK. JONES AND CO.

WATER CARRIAGE v. CLOSET SEWAGE DISPOSAL.

SIR,—Mr. Donkin's somewhat invidious way of dealing with the above subject in the BUILDING NEWS of the 9th inst. perhaps requires some reply to his advocacy of a return to first principles—dry-earth closets—as the remedy required to modify the sanitary evils of which he complains, possibly through oblivion of the cause, or causes, to which they are due. If the earth closet provides a remedy, it will be easy for Mr. Donkin to point to the benefits derived by populations from its use, say, in Birmingham or other large towns. The questions to be answered are: first, is zymotic influence less prevalent; secondly, is there a reduced death-rate; and thirdly, is sewage cost reduced? These, Sir, are the real questions of public interest involved in sewage procedure, rather than methods of treatment for liquid sewage or disposal of its sludge products, which are probably those present to Mr. Donkin's mind.

With regard to our present procedure and the undoubted evils to which it gives rise, there are probably few who have studied the question in its "practical details," keeping in view the principles and living laws which govern the subject in nature, but are aware of the chief originating cause, and possibly of the remedy which public interests demand. The difficulties in the way of a radical reform are admittedly great, but possibly not insurmountable. Permit, Mr. Editor, the suggestion, that as Parliament will probably be asked to amend the law relating to river pollution "early next session," probably with a view to greater stringency in regard to trade liquids, the time is opportune for England to follow the example of America, France, Germany, and other nations, to appoint a State Commission of Inquiry into the question, and best method of treating the problems involved in sewage procedure, and its relation to organic pollution of the air, the water, and the soil.—I am, &c.,

Sheffield, Nov. 19. HILL-HARTLAND.

* * *

The Brading Harbour Company will apply for powers next session to carry out a scheme for improving the harbour and for giving additional facilities for shipping. It is also proposed to deepen the entrance channel and to enlarge the area of the harbour. The expenditure is estimated at £20,000. The engineers are Mr. P. W. Meik and Mr. A. C. Schonberg.

The marble bust of Cardinal Vaughan by Mr. W. Charles May, of London, has now been delivered to the memorial committee, and, pending the formal presentation to the corporation of Manchester, it has been placed in the sculpture gallery at the Town-hall of that city. The pedestal, which is of Derbyshire alabaster, bears the inscription, "Cardinal Vaughan, 20 years Bishop of Salford."

Memorial stones of a Primitive Methodist chapel were laid in Ford-street, Coventry, on Wednesday week. The building is Early English in style, and will consist of a nave, 51ft. by 31ft. 6in.; shallow transepts (to be hereafter extended), and a chancel, 12ft. by 9ft.; and organ chambers. Sittings are provided for 340 persons, and underneath are an assembly room and five classrooms, affording accommodation for 300 scholars. Mr. John Wills, of Derby, is the architect, and Mr. W. J. Norwood, of Coventry, is the builder. The cost will be £2,000, exclusive of site.

During the last quarter the amount of sewage dealt with at the Purification Works at Dalmarnock, Glasgow, was 92,795,000 gallons in excess of the previous three months. The cost of chemicals was 26s. 1d., against 22s. 4d. per million gallons last quarter. The total expenditure per million for this quarter was £3 11s. 3 2-10d., against £3, 14s. 2 5-10d. last quarter, or 2s. 11 3-10d. less, and it is expected that the next quarter will show a still further reduction of cost.

Intercommunication.

QUESTIONS.

[11251.]—**Salisbury Cathedral.**—Can any member of the architectural profession or R.I.B.A. inform me whether there have been any measured drawings made at any time of the top stage of the tower, and if so, where they may be seen?—KIRKCALDY.

REPLIES.

[11239.]—**Open-Timbered Roofs.**—"Improver" would hardly expect an essay on the construction of roofs in answer to his question. I repeat that with a well-designed truss the chase is unnecessary, and the statement about weight upon the corbel is part of the design. The point is, What is the construction of the particular roof in question? Other roof-trusses cannot have wall-chases; why should that described by "Improver"?—H. L.

[11246.]—**Lettering Marble or Stone Surfaces.**—There is nothing better than dove-tailed grooving filled in with lead planed off flush.—H. L.

[11247.]—**Architect's Duty.**—The architect should have gone through the heads of specification with his client; but surely few clients would object to a small expenditure on such a necessary matter as ventilation.—H. L.

[11248.]—**Formulæ for Long Columns.**—Both the equations referred to by "Mystified," in the last issue of the BUILDING NEWS, are only particular examples of Gordon's general formula, which may be stated briefly as follows:—Let W represent the safe load that may be placed on a column, or, in fact, any long strut subjected to a compressive stress, A the net sectional area of the column, l the length, and d the least dimension of the cross-sections, the value of which will altogether depend upon the particular form of the cross-section, and for which no general rule can be given. Putting C for the safe compressive stress per square inch of the material, we have—

$$W = \frac{A \times C \times d^2}{a\,l^2 + a^2}.$$

In this general equation, a is a constant derived from experiment, and is equal to 1/400 for circular solid cross-sections, and to 1/800 for circular hollow sections, which I think will explain the difference in the two equations which seem to have puzzled "Mystified." I may also state that engineers and architects differ in the value to be given to C, which will account for the apparent discrepancy in the numerators of the two fractions.—P. S. STRETONNE.

[11249.]—**Window Tracery.**—A treatise on "The Rise and Progress of Decorated Window Tracery in England," &c., by Edmund Sharpe, M.A., London. John Van Voorst, Paternoster-row, 1849. This book may not be the best for the purpose required; but it is very interesting and instructive, and ought to be studied by anyone desirous of producing a tolerable window. The type and finish are exquisite, so the number of copies cannot have been excessive. Perhaps a sight of the book may be hard to come by; but there must be one at the British Museum.—H. W.

[11250.]—**Abutting Buildings.**—The owner of a new erection has no legal right to insert flushings; the matter is usually the subject of mutual arrangement. Does "Doubtful" prefer to have his building injured by the damp?—H. L.

CHIPS.

The town council of Southampton are seeking Parliamentary powers to construct bridges in Chapel-road and Bevois-street, in place of the existing level-crossings over the South-Western main line near Southampton West Station. The scheme has been prepared by Mr. W. B. G. Bennett, the borough surveyor.

A new Gospel mission chapel is in course of erection at Watersfoot, near Rossendale. The chief room on the first floor is 40ft. by 27ft. and 18ft. in height. Mr. Ormerod Ashworth, of Crawshawbooth, is the chief contractor.

A memorial statue of the first Marquis of Argyll is about to be placed in St. Giles's Cathedral, Edinburgh, as a commission from the Marquis of Lorne. Mr. Charles McBride, of Edinburgh, is the sculptor.

The French Ministry have asked for a *crédit* of £2,000 for the repairs of the Roman theatre at Orange. An equal sum is likewise required in order to begin works of reconstruction at the Cour des Comptes, on the Quai d'Orsay.

Progress is being made with the scheme for a new railway through the Yorkshire Dales, and application will be made for powers to construct a line from Skipton to Hellifield, where it will form a junction with the Midland, and thence through Middleham, Coverham, Leyburn, and Richmond, to Darlington. Mr. E. O. Ferguson, of Chesterfield and London, is the engineer; and Mr. Perkins, engineer, of Bishop Auckland, and staff, have been engaged for some time past in the survey of the proposed route.

A movement has been started for the complete restoration of Morland Church, near Penrith, at a cost of nearly £1,500, exclusive of porch and chancel. The edifice is one of the oldest in the North of England. The Ecclesiastical Commissioners will restore the chancel, and the porch will be repaired at the cost of Mrs. Markham, Morland House.

Legal.

ARCHITECTS' RESPONSIBILITIES.

In a case reported in our issue of last week (16th November, 1894, page 701) from Walsall, an attempt was made to extend the responsibilities of architects somewhat seriously. There an architect had been summoned for erecting five new houses and a shop without putting in the necessary damp-course. The defendant, as architect for the buildings, had given notice to the local authorities of the work that was going to be executed. This notice contained a printed note appended in these words: "Further, I will make myself responsible for the work being carried out in accordance with the by-laws." It was argued by the town clerk in support of the summons that the defendant, by signing this notice, and especially with the note appended as quoted, became liable for any breach of the by-laws as if he were the "person erecting the building" within the meaning of the Act. On the other hand, it was urged that the defendant merely signed as architect, and he could not be held responsible under a general statute. The words used in such an Act, which was of a quasi-criminal character, as it imposed fines and penalties, must be strictly construed, and therefore they could only apply to the person actually erecting the building. They could thus only include the builder or contractor, and neither the owner nor his architect could be held liable, whoever signed the formal notices sent to the local authorities at the beginning of the works.

It appeared that, as a matter of fact, the defendant, an architect, had called the attention of the borough surveyor to the omission of the damp-courses, stating that he had told the contractors about it, and that no doubt they would attend to it before the buildings were completed. After hearing arguments, the magistrates dismissed the summons, but they consented to grant a case for the consideration of the High Court, as the point was one of much importance. It seems hardly likely that the Court will hold that the signing of a notice by the architect makes him the "person erecting the building," and so liable for the statutory pains and penalties resulting from a breach of the by-laws. But if this decision should be given it will not be difficult to take care that the actual builder signs such notices himself. **Fred. Wetherfield**, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

R. S. B.—Brickfields.—Nuisance.—I am obliged by your letter, but cannot go into the technical details in this column. The magistrate's decision is binding while it stands.

R. W. P.—Agreement.—Holding Over.—Tenancy.—The tenant having held over and paid rent after the expiration of his agreement, has become a yearly tenant, subject to the terms and conditions of that agreement, as far as they are not inconsistent with a yearly tenancy. In this case, I think he can, therefore, be made to insure and to do reasonable repairs, as agreed.

Doubtful. — Payment. — "In Settlement." — On Account.—The creditor cannot be compelled to return a cheque which is for a smaller sum and is marked in "full settlement," and he may keep it if he chooses on account, and send a receipt accordingly. The mere fact of his so doing would not prevent his suing for and recovering the balance, if it were really owing.

Nadum. — Building. — Nuisance. — Damage.—If the nuisance by vibration and otherwise is really serious, it would seem to be a good ground of action for an injunction or damages. But the whole question is really one of fact, and it would be for the Court to decide after hearing all the evidence on both sides. Clearly a case for a local solicitor, who could see the premises, &c.

◆

A meeting of the supporters of voluntary schools was held at Eastbourne on Tuesday to commemorate the completion of three new elementary schools. The buildings have cost £11,000, and accommodate 1,725 children.

A new pulpit, the gift of Lady Sykes, has just been added to the Catholic Church, Spanish-place. It is designed by Mr. E. Goldie, of Kensington-square, and executed in alabaster, with detached Purbeck marble shafts below the floor line. The figures of SS. Paul and John, seated under canopies, divide the body of the pulpit into three equal parts. The interior is lined with cedar, and the same material forms a covering to the top of the cornice. With the exception of the metal handrail and gates, which are by Hart, Son, and Peard, the whole of the work has been carried out by Earp and Hobbs, sculptors, of Lambeth and Manchester.

LEGAL INTELLIGENCE.

In re W. H. Waterman.—The Official Receiver states, in the case of William Henry Waterman, of King's Arms-yard, Moorgate-street, that the debtor commenced business as an architect on his own account in 1888 with no capital. On January 1, 1890, he entered into partnership with two others, under the style of "Holmes, Ballantine, and Waterman," no capital being found by either partner. About September, 1890, this firm was dissolved, and the debtor with only one of his late partners continued to practise as Ballantine and Waterman. This second partnership was also dissolved in April, 1892. The debtor states that since April, 1993, he has carried on business on his own account only. He attributed his insolvency to liabilities incurred by him as a partner in the firm of Ballantine and Waterman, which, he alleges, he has paid. The Official Receiver says the debtor admits that he has been aware of his insolvency ever since 1888, but he alleges that his largest creditor, a relative, to whom he states he now owes £1,484, would never have pressed for payment of his debt. The accounts show gross liabilities £3,760, of which £3,333 are unsecured, with assets of £545. The Official Receiver states that of the unsecured indebtedness, sums amounting to £2,407 are in respect of money lent to the bankrupt.

Serious Charge against a Director.—At the Mansion House, on Monday, Mr. William Templeton Hawkins, a J.P. for Kent, and member of the City Corporation, of 18, Bloomsbury-square, was charged on a warrant, before Alderman Sir Walter Wilkin, that being a director of the National Dwellings Company, Limited, he unlawfully and fraudulently applied to his own use a cheque for £1,200 with intent to defraud. Sir George Lewis said he was instructed to prosecute the prisoner for embezzling and stealing various sums of money, he being at the time the managing director of the National Dwellings Company, Limited. The company was formed in 1875. The prisoner had the entire management of this and other companies. The Alderman remanded the prisoner for a week, and fixed the bail at two sureties in £3,000 each.

Charge against a Builder.—Mr. W. J. Winsford, builder, 4, Charlotte-street, Blackfriars-road, a member of the St. Saviour's District Board of Works, appeared to an adjourned summons, on Wednesday, charging him with laying down a drain at 75, Blackfriars-road, in such a manner as to be a nuisance and dangerous to public health. The defendant said he had supervised the work of laying the pipes, and they were imbedded in concrete. He suggested that the leakage complained of might have been caused by the construction of a lavatory immediately over the new drain. After some further evidence in support of the defendant's contention, Mr. Fenwick said he would give his decision on Monday.

Surveyors' Fees.—Theobald v. Gregar.—At the Lord Mayor's Court, on Monday, this case was heard by Mr. Roxburgh, assistant judge, and a jury. The plaintiff, Mr. Henry Theobald, a quantity surveyor, of 87, Finsbury-pavement, sued the defendants, Messrs. W. Gregar and Son, builders, of Stratford, to recover the balance of an account for professional fees. In the early part of last year the defendants were engaged in erecting a factory and offices for Messrs. Johnson and Butcher at Stratford. The plaintiff was employed to take out the quantities for a number of "extras" at a commission of 2½ per cent. on the total amount of additions, and the like for omissions plus the usual out-of-pocket expenses. His total account amounted to £44 12s. 6d.; he had been paid £32 4s., and now he sued for the balance. In his evidence plaintiff stated that Mr. Jennings, one of the architects, had, after certifying his account, stopped payment of it because plaintiff would not give him a third of his commission. The defence was that Mr. Jennings, the surveyor employed by the ground landlord, was the person responsible, he having stopped payment of the account. The jury found for the plaintiff for the amount claimed.

◆

Professor Joseph Durm, of Carlsruhe University, the author of a treatise on Classical Architecture, and himself an architect of distinction, was summoned to Athens on Wednesday, by the Greek Government, to advise on the measures requisite for the preservation of the Parthenon.

An inquiry was held on Tuesday at the Local Board Offices, Thornhill, by Mr. R. D. Sweeting, M.B., an inspector from the Local Government Board, relative to an application for sanction to borrow £4,000 for the erection of an infectious diseases hospital on the site of the old workhouse at Thornhill Edge. The clerk to the board stated that in the proposed hospital there would be accommodation provided for 12 beds; these would be in two blocks, together with an ambulance shed, mortuary, and other conveniences. As usual, the proposal was warmly opposed by landowners and occupiers whose property would be depreciated by the erection of the hospital.

Our Office Table.

The pictures of the Dutch and Flemish schools at the National Gallery have been rearranged during the past month, under the superintendence of Mr. C. L. Eastlake, the Keeper of the Gallery, and with manifest advantage in classification. Room IV., until lately filled with works by Early Tuscan painters, has been cleared of its former contents, some of which have been placed in the north vestibule at the top of the central staircase, while others have been hung in Rooms II. and III., with the other works of the same school. To Room IV. have been transferred the examples of Early Flemish and German art, hitherto lodged in Room XI., and now supplemented by the Longford Castle Holbein, which had since its acquisition been inappropriately exhibited in the Umbrian Room. All the Dutch pictures now in the Octagonal Hall, together with some others in Room X., will be rehung in Room XI., which has thus been set free. The necessity for the early enlargement of the Gallery, by building over the site of St. George's Barracks, becomes more urgent every year, and ought not, in the interests of the institution, to be much longer delayed.

"Malta and its Antiquities" was the subject of a lecture delivered at the Imperial Institute on Monday night by the Rev. W. K. R. Bedford. The lecturer, who has travelled in the island on ten occasions, said that Malta was rich in historical remains, especially in its Phœnician temples, and there were a few traces of Roman art still to be found in the island, although the spoiler had for some time been at work. Malta was remarkable for its subterranean chapels, one of which was known as the Chapel of Bones, which was situated within one of the fortifications and was very extensively decorated with human bones. Italy, France, and Spain had left their sign-manual on the streets and public buildings of Valetta. The main feature of Valetta, however, was that it was the place of residence of the knights of the Order of St. John, whose church of St. John was one of the most beautiful of its kind now to be seen.

From a letter in *Indian Engineering*, it would appear that engineers are coming round to the conclusion that red-lead and linseed oil make the best paint for iron. Sir William Arrol has been quoted as to the condition of Old Hammersmith Bridge. The iron in that structure after more than 60 years was found to be as good as new and uncorroded, and he attributes its preservation to the use of pure lead paint. The writer in our contemporary observes: "The oil forms a definite chemical compound with the oxide of lead, which adheres closely to a metallic surface, and has great elasticity. Other pigments are merely held on the resin formed by oxidation of the oil, without the formation of a compound proper. Experience is the only means we possess of judging of the preservative quality of any paint. Most of the suggested new preservatives cannot give this proof."

Mason's non-slipping coal plates have before been deservedly commended in these pages for their non-slipping qualities, and the self-locking gear which has now been applied is simple and most effective, as if the plate is dropped into the frame in any position it is at once effectively locked, and cannot be unfastened, only from the inside, but there it can be easily done, either with a stick or a broom-handle. These coal plates are a sure protection against any claims whatever through coal plate becoming worn and slippery, as they remain non-slipping until quite worn out. They cannot tip up, as they automatically fasten as soon as they are put into the frame. They can be opened from the inside only, and it is impossible for them to be left unfastened by neglect.

◆

Mr. E. F. Augustus Spratt, architect and surveyor, Kingston-on-Thames, has received instructions to thoroughly restore Beaumont Manor, near Broxbourne, Herts.

At a meeting of the Aird District Committee of Inverness County Council on Tuesday, Mr. Manners, C.E., reported that the fine old stone bridge across the river Beauly, which was almost entirely destroyed by the great floods a few years ago, had now been restored. It had been inspected by Sir John Fowler, C.E., who expressed his approval of the manner in which the contractor had carried out the work. The cost of reconstruction was £5,728.

WATER SUPPLY AND SANITARY MATTERS.

Douglas, Isle of Man.—At a meeting of the Douglas Town Commissioners, on Friday, the report of the committee recommending an improvement of the present sewerage system of the town, which is on the gravitation principle, by the provision of new brick main sewers, an extra storm outlet, and extra ventilating shafts at a cost of £15,000, was brought up, and its adoption was moved. The chairman of the board, Mr. E. Chadwick, moved as an amendment the adoption of a new high-level system with Shone's ejectors, based upon the report of Mr. Pritchard, C.E. He urged that this system would be more effectual than the gravitation system, and pointed out that though the cost would be £11,000 more than that of the committee's scheme, an extra rate of only one penny in the pound would be involved. The amendment was negatived by a large majority, as was another amendment providing for the high-level system without ejectors, and the motion for the adoption of the committee's report was agreed to.

◆

There is to be a new harbour at Rotterdam on the other side of the Maas, near the village of Katendrecht. The cost is estimated at £22,500.

On Saturday Lord Balvaird declared open a new bridge across the river Almond at Millhaugh. The bridge, which has been erected under the direction of the Central and Perth District Committees of the County Council at a cost of £1,243, is a steel girder structure, built by Sir William Arrol and Co., and will supersede the old Millhaugh bridge, which dates from 1778.

Museum Sunday will be celebrated on December 2, when more than fifty clergymen in London, Edinburgh, Manchester, Birmingham, Bradford, Bristol, and other towns will preach in support of Sunday opening. During the afternoon six special exhibitions will be opened to the members in London, and the Sunday Society has induced the trustees of the Sir John Soane Museum to open that institution for the first time on a Sunday on Museum Sunday this year. The list of towns in which institutions will be open free on Museum Sunday already reaches forty.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Surveyors' Institution. "Incidence of Taxation on Land," by A. Dudley Clarke. 8 p.m.

Tuesday.—Society of Architects. Special meeting to confirm resolution *re* Examinations for Membership. 8 p.m. Paper by Ellis Marsland, hon. sec., on "The London Building Act, 1894." 8.30 p.m.

Institute of Civil Engineers. Discussion on "The Machinery of War Ships." 8 p.m.

Wednesday.—Society of Arts. "Experiments in Aëronautics," by Hiram Maxim. 8 p.m.

Friday.—Glasgow Architectural Association. Annual Conversazione.

◆

The Society of Architects.

Founded 1884. Incorporated 1893.

A SPECIAL GENERAL MEETING of the Society of Architects will be held at the Rooms of the Society, at St. James's Hall, Piccadilly, W., on TUESDAY. November 27th. at Eight o'clock p.m., for the purpose of CONFIRMING the RESOLUTION relating to the Examination for Membership passed on October 30th, 1894.

Subsequently, at 8 30 p.m., the SECOND ORDINARY MEETING of the Society for the Session 1894-5 will be held, when Mr. ELLIS MARSLAND will read a PAPER, illustrated by drawings, &c., on "THE LONDON BUILDING ACT OF 1894"

ELLIS MARSLAND, Hon. Sec.
A. MONTEFIORE, Secretary.

◆

CHIPS.

The new hall erected in connection with the Redland High School for Girls was opened on Wednesday evening. The building has been erected by Mr. Veals, from designs furnished by Mr. J. Craik, architect, of Bristol.

The council of the Royal Academy has appointed Mr. G. Birch to succeed the late Mr. Papworth as curator of the Soane Museum. The appointment carries with it an official residence in Lincoln's Inn-fields.

The Cambrian Archæological Association will hold its 49th annual meeting in Cornwall in August of next year. The 50th anniversary of the association will be celebrated in 1896 at Aberystwyth, where its first meeting was also held.

Mr. Jaspar Isherwood Helm, clerk, surveyor, and collector to the Rishton Local Board, was dismissed instantly on Wednesday evening for appropriating money belonging to the board. The audit disclosed the fact that there was a deficit of £4,104, and Helm made a declaration admitting it. He has repaid a sum of £1,065. He had been clerk to the Rishton Local Board for many years.

A curious instance of the passing off of a new picture for an old is mentioned by Mrs. Ady in this year's "Art Annual." Mr. G. F. Bodley, A.R.A., some thirty years ago had given Sir Edward Burne-Jones a commision for an altarpiece for St. Paul's Church, Brighton. The original picture did not suit the position, and was sold to a private collector. Thence it passed through several hands, and was eventually offered to Mr. Bodley himself by a gentleman who had picked it up at a sale for a few pounds. It was, said the seller, the work of an "old master."

Extensive alterations and additions are being made to the Staffordshire General Infirmary. A new south wing and children's ward is being added, and the administrative block is being remodelled from the designs and under the superintendence of Mr. Aston Webb. The whole of the fireproof floors and constructional steel work is being executed by Messrs. Mark Fawcett and Co., of Westminster.

A formal visitation was made last (Thursday) evening to the Trade Training Schools, Great Titchfield-street, W., by Sir Henry Roscoe, M.P., and others. The buildings were formerly the habitat of the West London School of Art, but they have lately been acquired by the Worshipful Company of Carpenters.

For the purpose of conveying natural gas from Greentown to Chicago, a distance of 115 miles, two mains, 8in. in diameter, have been laid down. The gas comes from the wells at a pressure of 315lb. per square inch, and this is increased to 600lb. per square inch by pumps, at which pressure it enters the mains. The pipes are of wrought iron, and have proved to be very tight. The loss of pressure in three days, when closed at each end, after having been previously pumped up to 600lb. per square inch, is said to have been under 1 per cent. The capacity of each main is about 700,000c.ft. per hour, delivered at Chicago.

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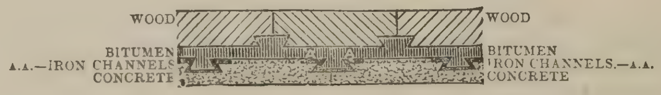

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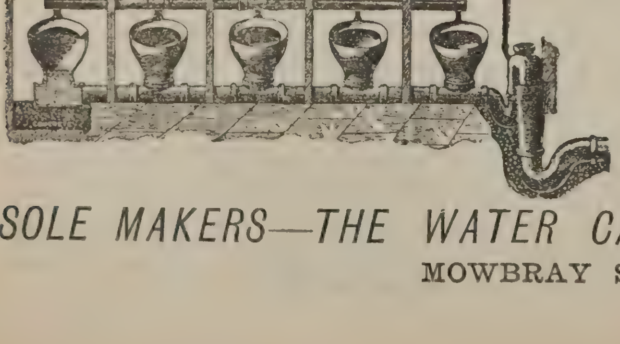

All the water utilised through the flushing rims, none being wasted in charging outlet syphon or by dribbling in as after-flush. Ten inches of water to receive soil. Basins absolutely separated.

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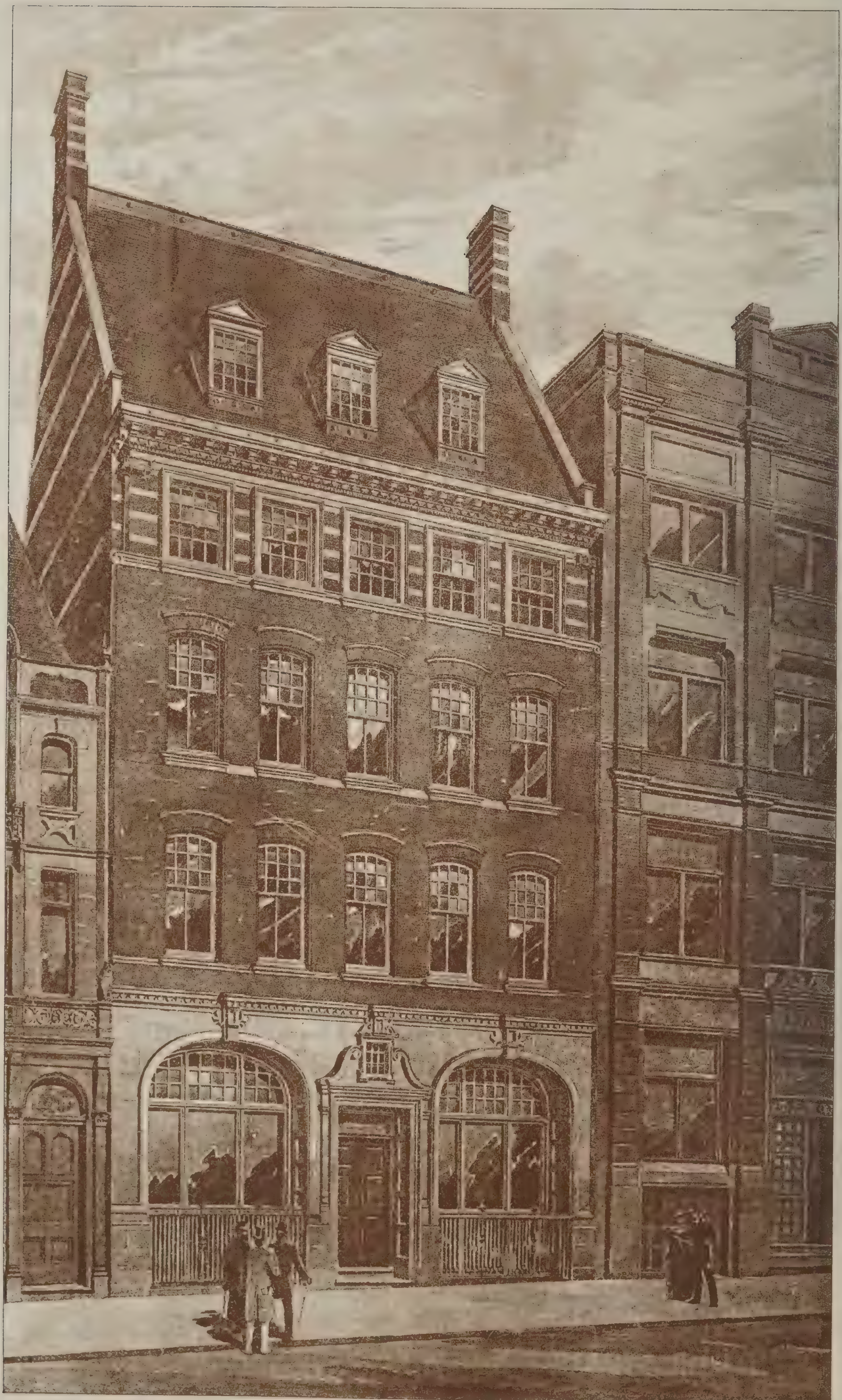

"PHOTO-TINT," by James Akerman, 6, Queen Square London, W.C.

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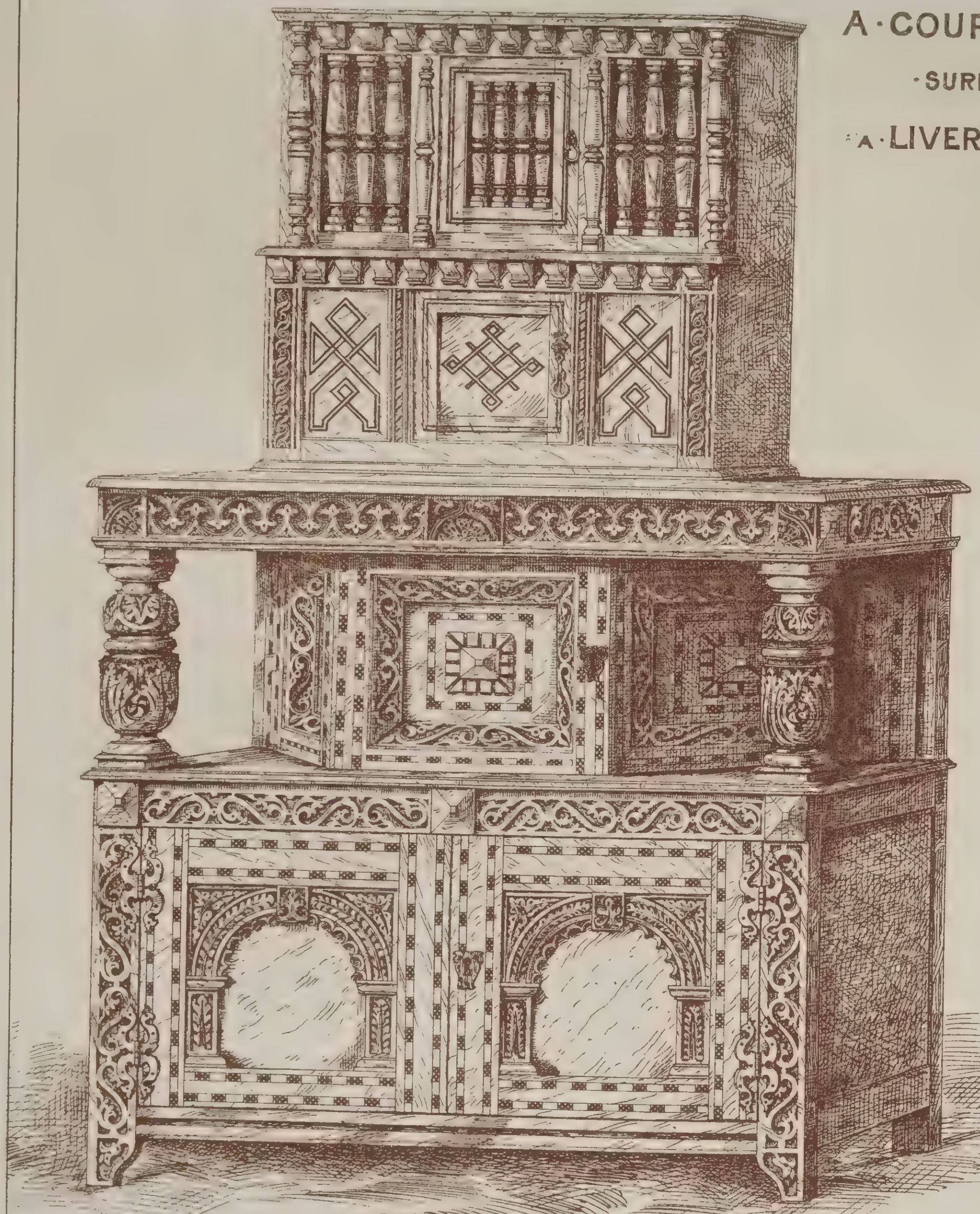

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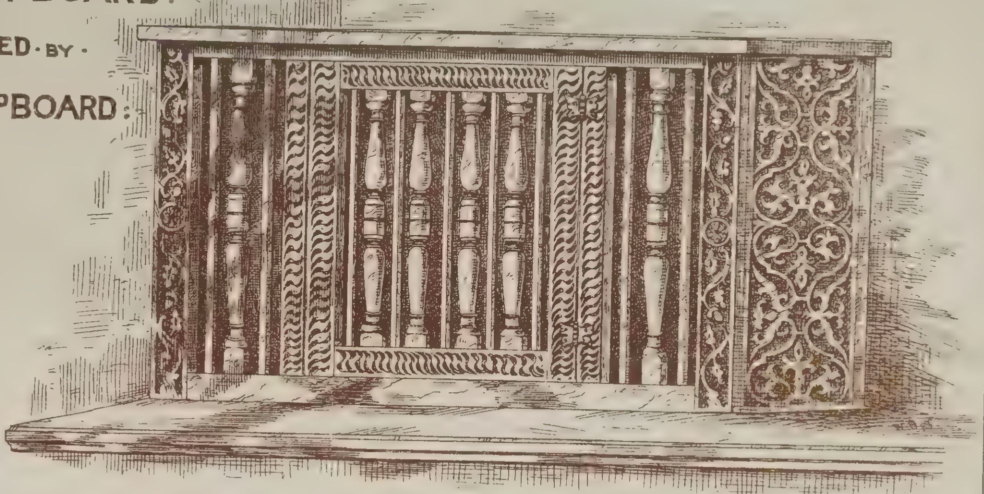

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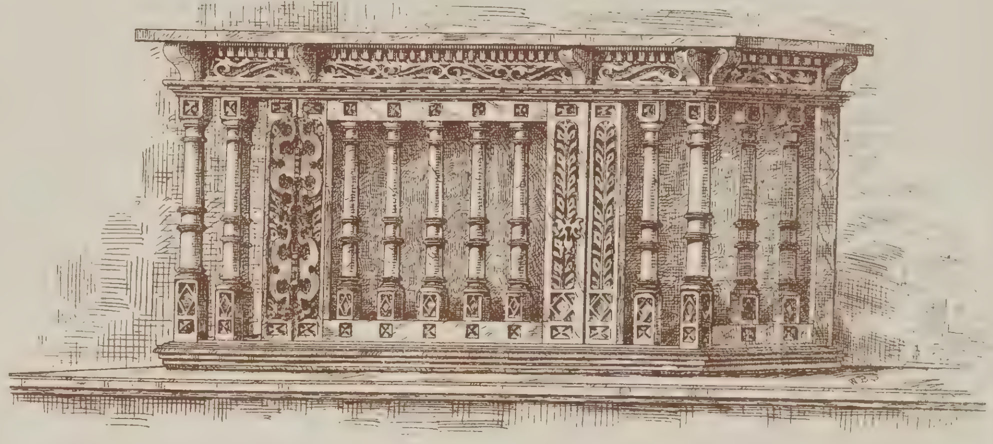
Old·Oak·Cupboards·
in·St Alban's·Cathedral·Herts·



No. II

DRAWN·BY·W·BLISS·SANDERS·

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ins 12 9 6 3 One foot

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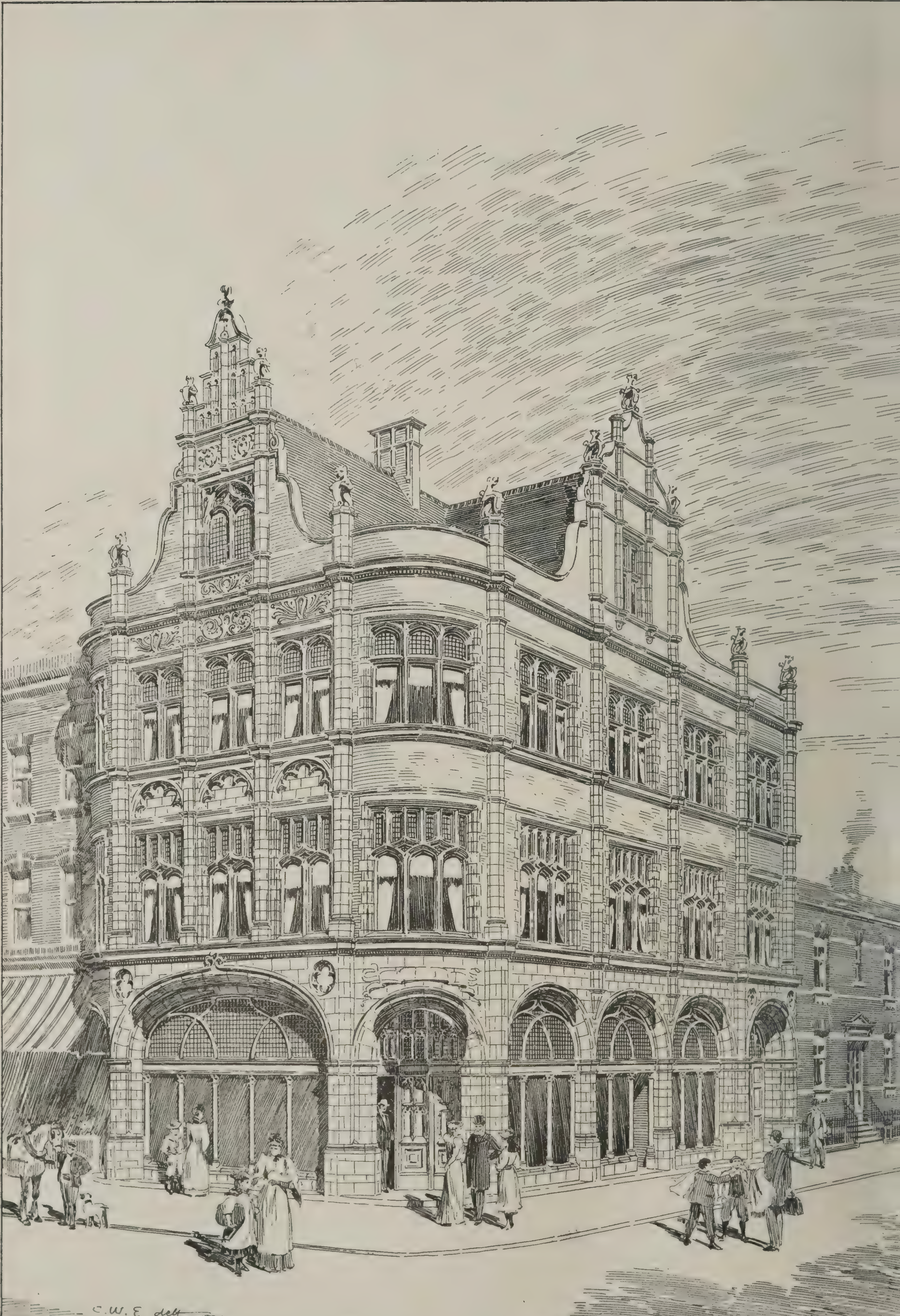
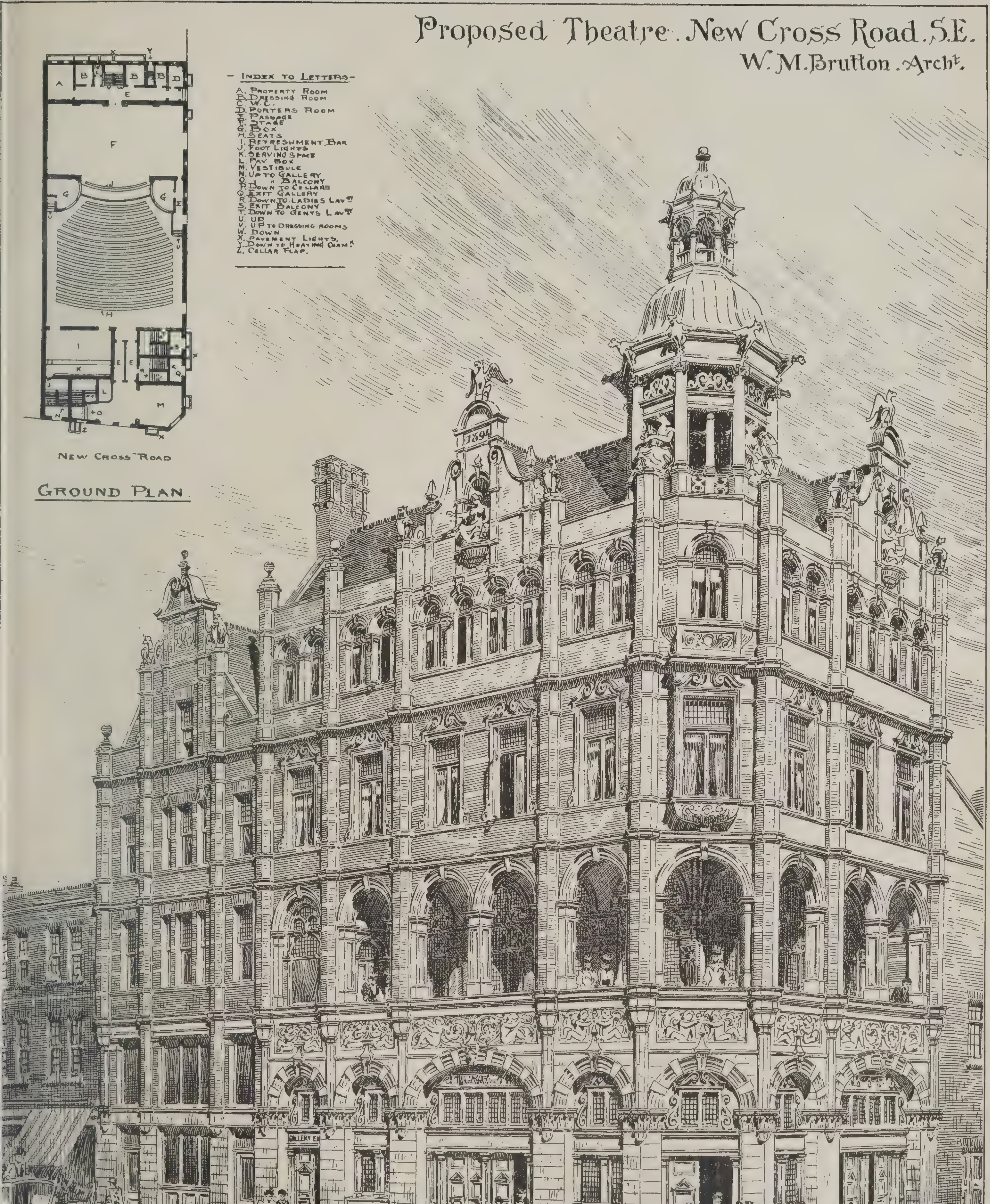

C.W.E delt 1894.

No 116 Lambeth Walk S.E. in course of errection for Mr George Evans W.M. BRUTTON ARCHT 171 QUEEN VICTORIA ST

Proposed Theatre. New Cross Road, S.E.

W. M. Brutton, Archt.



GROUND PLAN.

- INDEX TO LETTERS -

A. Property Room
B. Dressing Room
C. W.C.
D. Porters Room
E. Passage
F. Stage
G. Box
H. Seats
I. Refreshment Bar
J. Foot Lights
K. Serving Space
L. Pay Box
M. Vestibule
N. Up to Gallery
O. " " Balcony
P. Down to Cellars
Q. Exit Gallery
R. Down to Ladies Lavy.
S. Exit Balcony
T. Down to Gents Lavy.
U. Up
V. Up to Dressing rooms
W. Down
X. Pavement Lights.
Y. Down to Heating Cham.
Z. Cellar Flap.

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

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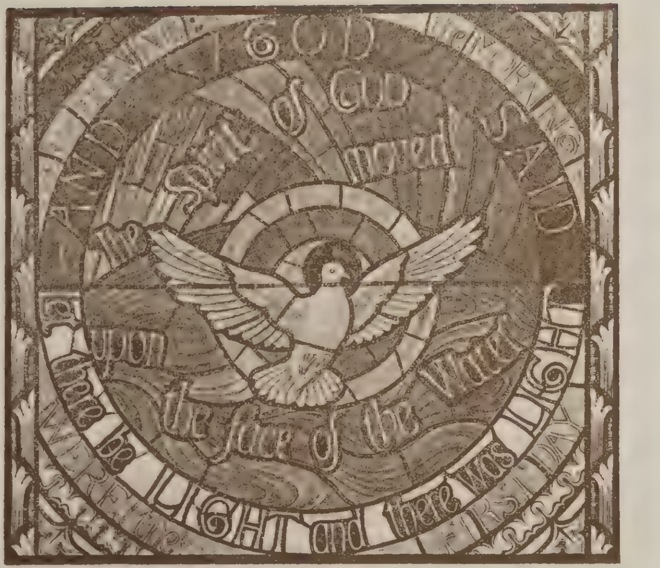
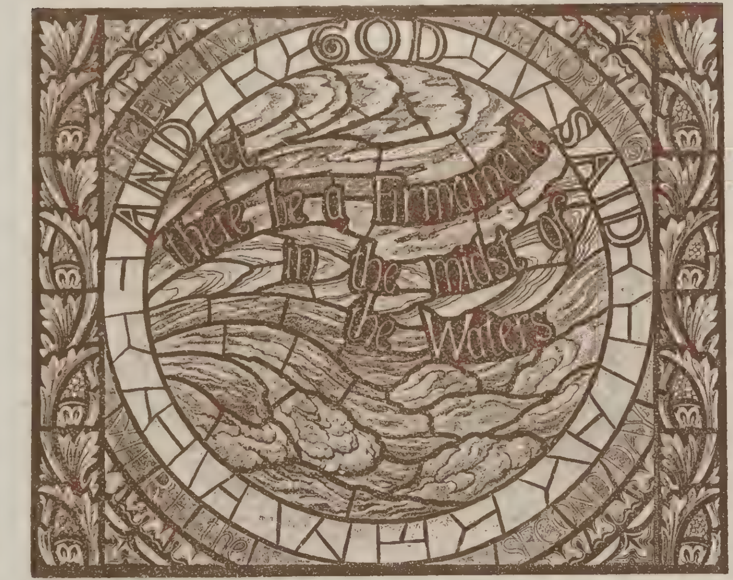
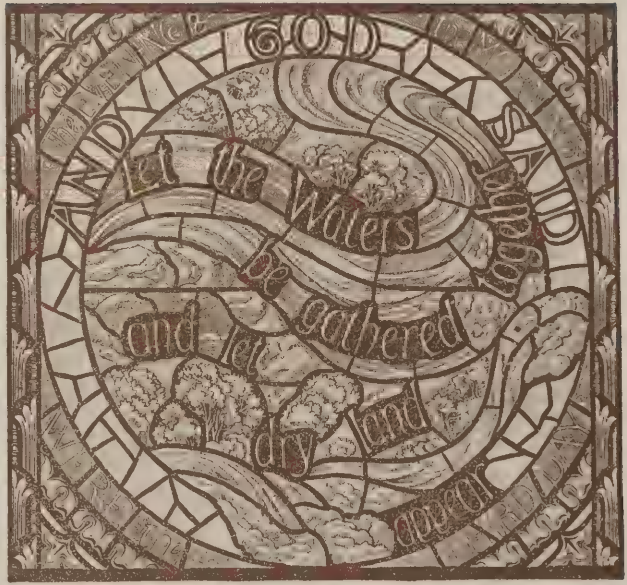
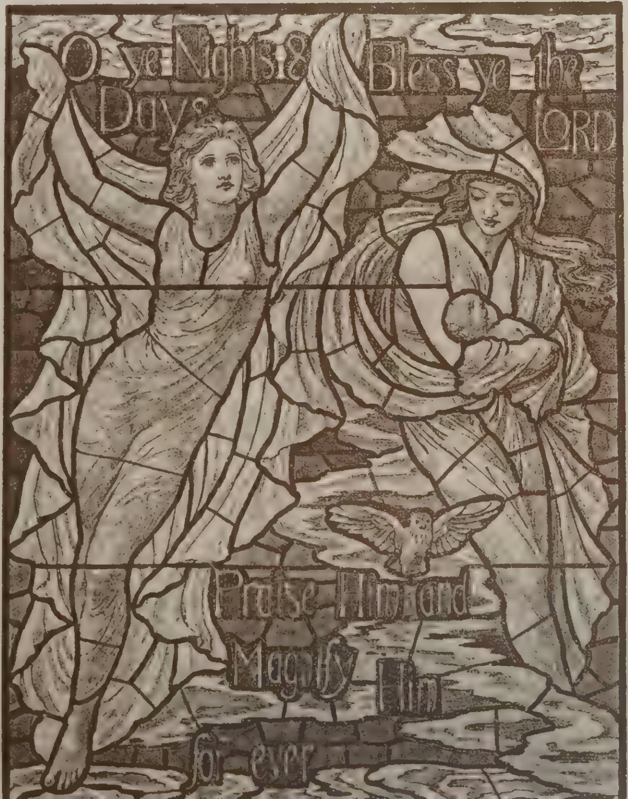
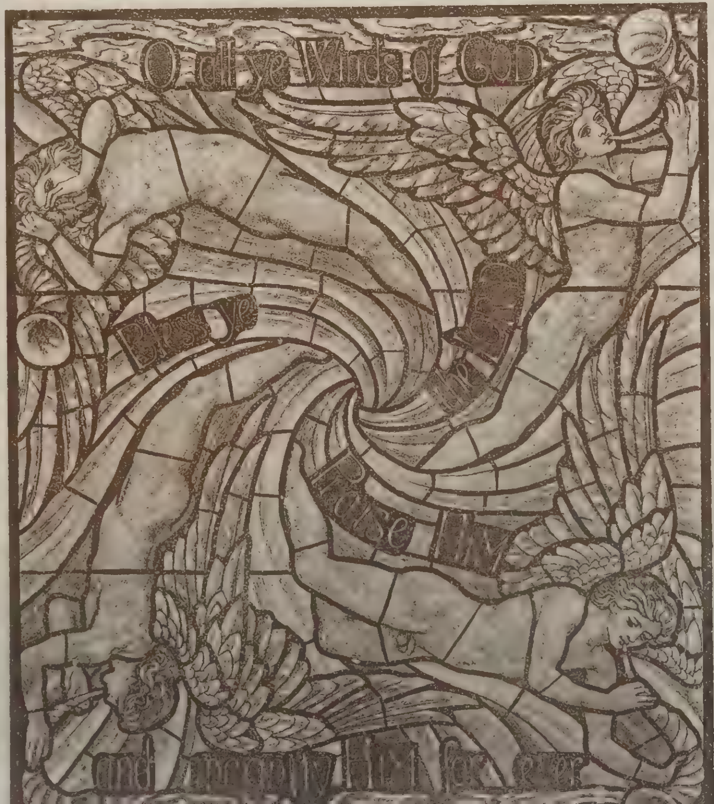
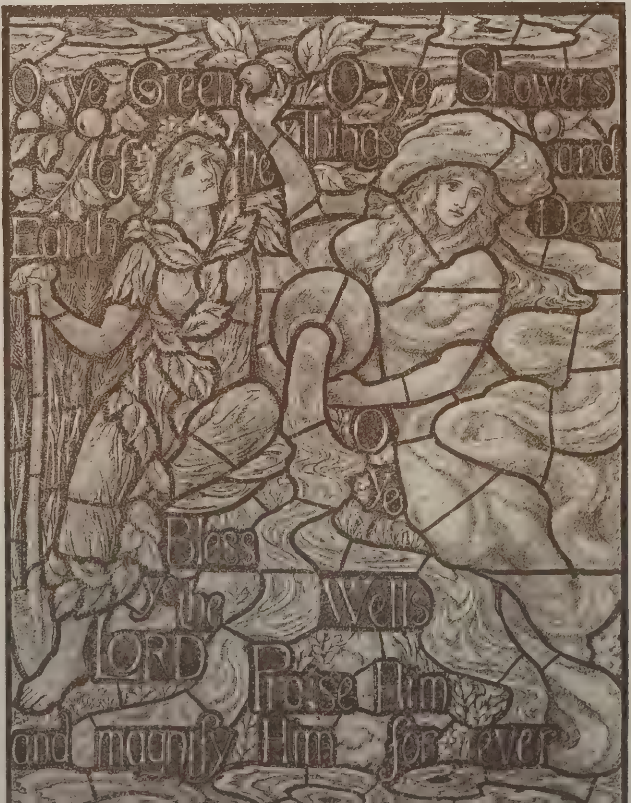

AND GOD SAID
The Spirit of GOD moved upon the face of the Waters
Let there be LIGHT and there was LIGHT
the EVENING and the MORNING WERE the FIRST DAY

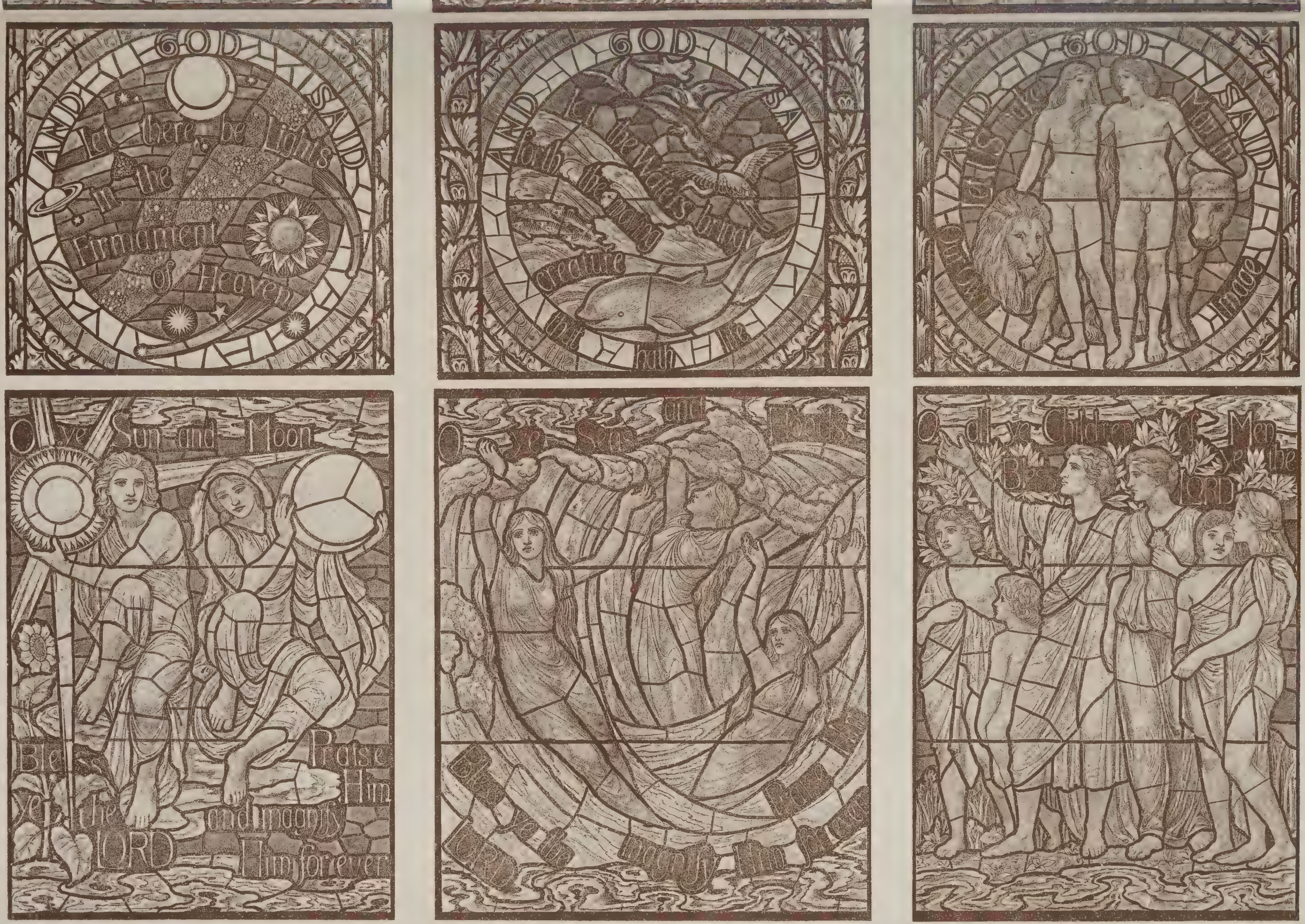

AND GOD SAID
Let there be a firmament in the midst of the Waters
the EVENING and the MORNING WERE the SECOND DAY


AND GOD SAID
Let the Waters be gathered and let dry land appear


O ye Nights & Days
Bless ye the LORD
Praise Him and Magnify Him for ever


O all ye Winds of GOD
Bless ye
Praise Him
and magnify Him for ever


O ye Green Things of the Earth
O ye Showers and Dew
O ye Wells
Bless ye the LORD
Praise Him and magnify Him for ever


And God said Let there be Lights in the Firmament of Heaven
And God said Let the Waters bring forth the moving creature that hath life
And God said Let us make Man in our own Image
O ye Sun and Moon Bless ye the LORD Praise Him and magnify Him for ever
O ye Seas and Floods Bless ye the LORD praise Him and magnify Him for ever
O all ye Children of Men Bless ye the LORD

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

" THE · CREATION · " · CARTOONS · FOR · LOWER · PART · OF · WEST · WINDOW · AT · ST SAVIOUR'S · SOUTHWARK · BY · HENRY · HOLIDAY ·

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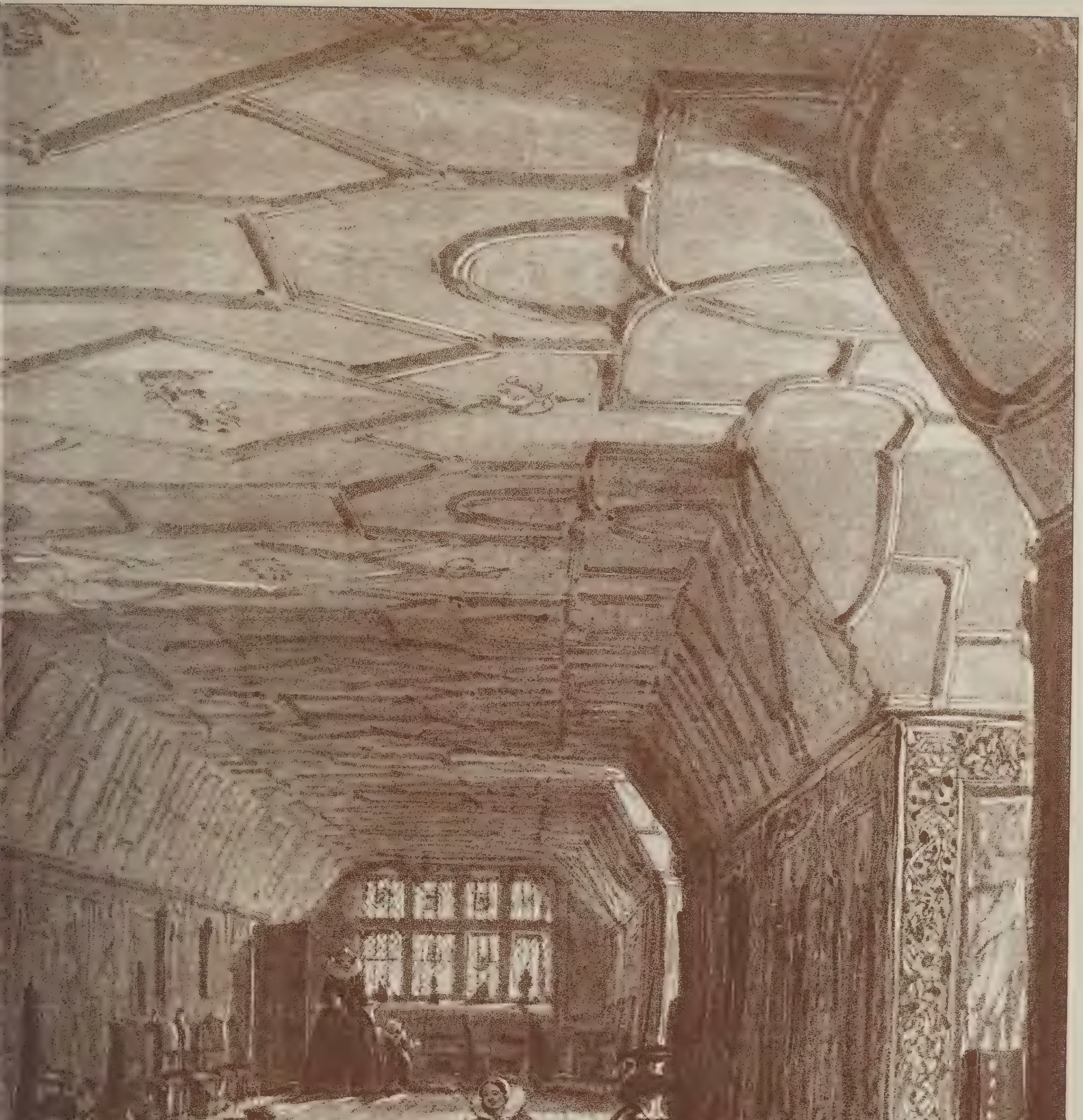
GALLERY · AT · KNOLE · KE



"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

· FROM·A·DRAWING·BY·JOSEPH·NASH·

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NEW DEVELOPMENTS.

THE practice of architecture was once confined to the adoption of certain rules and forms of ancient examples, together with a practical acquaintance of the building trades. Everything architectural was, so to speak, crystallised; buildings were looked upon as huge fossil-shells of a primæval epoch; they were drawn and redrawn, classified, and catalogued as if they had been relics of a prehistoric or historic age. Students regarded a great architectural period as they would a cave deposit, or a "valley drift," or a formation caused by glacial phenomena. And it was in this light they studied architecture, just as the geologist would an English cave occupied by man in Palæolithic times. Walls and porticos, columns, and towers were studied as the outward signs of past civilisations, if possible to be reproduced and revivified. The modern revivalist only added the practical knowledge of building to that of the archæologist. How great is the change? Architecture is now regarded not merely as the imitation of the "five orders," the Classic temples, or the Mediæval styles, but as a living art, in which structure and function have superseded the mere reproductive art, capable of giving form and expression to every requirement; and the professor of the art as one who has not only an acquaintance with archæology and building, but with a variety of subjects which have a more or less intimate relation to architecture. Its boundaries have been extended in many directions—wherever, in fact, necessities have forced attention to new structural purposes. The architect is called upon to apply his skill to various kinds of building, and to bring to the task not only knowledge of style and building as an art of construction, but sundry other kinds of technical and applied science—as, for example, hygienic construction in its many phases, the drainage, warming, ventilation, and lighting of buildings. But has he done so with any success? These requirements have been forced upon him from without, because people will have sanitary and healthy buildings. He has scarcely woven them into the fabric of his building, or made himself a master of a number of things. But if architecture is to develop, he must know more of them than he has hitherto done. The modern practitioner is constantly in danger of being pushed on one side by the specialist. This, no doubt, is the danger to be apprehended by every profession, but, by none more so than that of architecture. One way of averting the danger is for the architect to make himself more familiar with certain subjects, instead of leaving them to a brief specification recital as somebody else's work.

As an instance of the neglect of special matters, let us take an electric lighting installation. Not many architects have given it the study it deserves, amongst the recent developments. Yet, after all, it is as much a function of modern architecture to light, well, as it is to build comfortable and ventilated rooms; at least, if we bear in mind our definition of architecture, that it should be functional as well as structural. Good lighting by natural as well as artificial means is quite as necessary as convenience of plan or fitness of structure; they are things which the architect ought to study. And there are two ways of looking at such a matter as an electric installation, which we do not think will be questioned. Firstly, it should be designed to give the best results; and secondly, it should be arranged in connection with the structure, and harmonise with it. These two requirements we may call "Structural and Decorative." The structural requirements of an installation are little understood by architects. They demand certain care being taken, and rules observed to prevent the risk of fire by the use of stranded wires of proper size, so as to have a margin of safety, and to prevent the possibility of an arc being set up at a fracture of wire. Other rules are that conductors or their casings should be placed in sight, and accessible; be properly insulated, that the insulating material be damp-proof, and not soften under a temperature of 170° Fahr.; that where "leads" pass through roofs, floors, walls, and where they cross or are near to metallic substances, like bell-wires, iron girders, or pipes, they should be protected by additional covering; that conductors should be kept well apart. Again, the structural conditions require that switches, commutators, lamps, &c., should be mounted on incombustible bases; that all circuits should be protected by cut-outs. These and other details connected with arc-lamps, switches, dynamos, and transformers form the points of every specification for an electric-lighting installation, and ought to be as closely followed as the description and plans of a scheme of drainage or plumbing. How often are the engine and dynamo fixed as they should be, and on a dry foundation of concrete of proper thickness, quite clear of the walls of the main building, so as to prevent vibration and noise of the engine passing to the walls, often so disturbing to neighbours as to give rise to litigation? Thorough insulation also is required of the armatures, field-magnet, coils, and batteries. Every architect would do well on this subject to specify the rules issued by the Institution of Electrical Engineers.

The decorative side of the question is one equally claiming attention. Yet, strangely, the architect is content to forego his opinion on these matters; he thinks the client or the electrical engineer is capable of deciding upon how the "wiring" is to be done, and what sort of lamps are to be used. These are things he complacently regards as details or fittings, like gas-brackets, or stoves, or door furniture. But they are just as much decorative, and all require the same exercise of taste as the scheme of a wall decoration, if properly considered. They demand a programme, for they are visible to the eye, and will remain an eyesore, or otherwise, for years. Why not give the same attention to the position of conductors, their casings, and the arrangement and shape of the lamps, or their grouping, as is given to the joinery or decoration of a room? The only answer is, Because the architect has not yet come to recognise an electric-light installation as a part of his architectural design. We cannot see why the electric lamp and its suspension or support should not be made as strong a decorative feature as the ceiling ornamentation itself, for the fittings are always visible both during the day as well as night-time, and during the latter they are the only conspicuous centres of interest. The position and laying of mains and branches ought to be shown on the plan, and every lamp indicated, to insure the desired effect. They should start at centres. The "wiring" of a building should, if possible, be arranged by the architect, whatever slight alterations may be made afterwards by the electrician. It should be thought of, especially the casings, before the decoration; these may then be made to form members of the mouldings of the skirting or dado, or even cornice, in every case easily accessible. Thus the casing cover may form a part of the moulded dado or picture rail or cornice, special designs of which in wood are on the market. We have heard of many cases where, owing to bad joints, a considerable leakage has resulted, and where houses have had to be pulled to pieces and the decorations damaged to find out joints at which leakages occurred. The joints, as everyone ought to know, should be well made in dry places, be perfectly insulated, and covered with some waterproof or indiarubber compound. Then the lamps themselves. Many very artistic designs are in the market, but they are not always suitable to the particular style of decoration. No one but the architect himself can properly design these fittings, or select them. Of more importance is their position in a room: and first of all they should be aligned with certain features, if possible, and ought to be so distributed as not to cause objectionable shadows. We often see an electrolier hanging from the flat ceiling surface; it is better, architecturally, to see it suspended from proper centres or ornaments, or at the intersection of the ribs of an ornamental plaster ceiling, which ought, of course, to be designed to suit the positions of the lamps. The concentration of all the main features of an installation is a matter of importance; thus all the joints should be grouped as those of one room, and be inclosed in a box which is easily accessible in case of anything happening to the conductors. This method of collecting, as far as possible, the chief apparatus—as connectors, switches, fuses—is part of the design of a properly considered installation.

Is there not something to learn, also, as to the most effective manner of warming and ventilating a building—where coils and radiators should be placed, how inlets and outlets arranged? All these matters are now left entirely to the mercy of the engineer or apparatus fitter, because architects will not take the trouble to show where they ought to be placed. The position and form of stoves, coils, and radiators, or those of ventilators, ought to receive as much attention as the arrangement of doors and windows, and they would do so if once the architect began to realise that warming and ventilation were as much a part of his design as that of a general plan.

A large hotel or block of residences is, so to speak, a great factory for the generation and distribution of heat, of light, of water. Its heating, ventilating, and lighting plants form a very considerable proportion of the expenditure, and on pecuniary grounds the architect can hardly be justified in handing over these plants to the outsider, as he often does. The engineering equipment of a large building is often placed in the hands of the consulting engineer, who prepares the design and superintends the erection of the apparatus. The architect, if he has not been engaged in the inception, can scarcely interfere with the arrangements or designs of the contractor while the work is in progress. Specifications tell a tale in this respect. The phrase "provide and fix" seems to be the only one which aptly expresses the architect's intention. What and how to fix are left to the imagination of the contractor or sub-contractor, and much to his satisfaction. The definite specification is the enemy of the scamping tradesman, for he cannot by any effort wriggle out of clear and precise instructions; but the exact specification is only the result of being able to master the requirements. It is an easy matter to order, to describe what is wanted in a perfunctory manner, to specify goods or patterns numbered in a catalogue; but not by any means easy to give definite instructions as to design and arrangement. Developments in architecture, whether in the direction of new materials or in the art of applying scientific knowledge to buildings, must be the result of making ourselves masters of subjects which at present are considered distinct trades with which the profession are thought to have little or no concern.

HAMPSTEAD PUBLIC LIBRARY COMPETITION.

THE Public Library Commissioners for Hampstead have received four designs for their proposed library, to be built on a site at the corner of Finchley-road and Arkwright-road, Hampstead; these are now on view at the vestry-hall, Haverstock Hill. Owing to the circumstance that the competing architects have sent in under their own names, two of them being men of standing in the profession, there appears to be naturally a strong desire on the part of some of the members to award the prize to one of these gentlemen. We understand also that Mr. Christian has advised the commissioners, but as to what course they will pursue, or whether they will agree to the recommendations of the assessor, remains a question of some moment. In such a case there is a natural desire, though by no means obligatory on a committee, to accept a design by a well-known architect. The magic of a name is a powerful incentive sometimes to act contrary to the better judgment of the committee, and we, therefore, hope the commissioners will consider the question of selection with unbiased minds, and select that design which is appropriately adapted to the site and its considerable fall to Finchley-road, and is at the same time handled with sufficient picturesqueness to harmonise with the character of the locality. The site is rectangular; but the narrow frontage facing Finchley-road runs askew at a wide angle.

The design submitted by Mr. Basil Champneys, M.A., is simple and picturesque, characterised by features which may be met with in old buildings of the 17th century—a blending of Late Gothic and Classic—and this design has been treated with some regard to balance in the main, or Arkwright-road, front, though the elevation, especially that facing Finchley-road, which is the narrowest frontage, may be rather mistaken for an old residence. Mr. Champneys is a master of this particular phase of our old vernacular architecture, and his very success as an artist may be rather prejudicial to that sense of official dignity or appropriateness which many wish to see imparted to buildings of this kind. The plan is well conceived and compact, and the author has provided good control over the departments. The main entrance, through a semicircular porch, with a half-cupola supported on two disengaged Ionic columns on a platform of semicircular steps, occupies the centre of the Arkwright-road side, and is sufficiently high to give a good basement towards Finchley-road, used for bookbinding and repairing, and large stores below hall and lending library. The slope of ground is thus utilised, while it raises the ground-floor level to a commanding height. Through the porch we enter the front vestibule, having an assistant's room to the right and a staircase, with porter's box, on the left side, the latter so contrived as to overlook the hall and entrance. The entrance-hall, 32ft. by 21ft., is lighted by a lantern, straight with and beyond which is the lending-room, divided from the hall by a glass screen. Another lantern is placed over the counter, and several windows on the north side. The newspaper-room, 73ft. by 25ft., occupies the left side, lighted by two segmental bay-windows from Finchley-road, and has a magazine-room at the further end, divided by a screen. On the right-hand side of hall, and corresponding in size, is the reference library, 62·3ft. by 25ft., with connecting doorway between it and lending library, so that the same attendant can serve the visitor in either department. A counter is here also introduced, with librarian's room in the rear. The reference-room is top-lighted, and also has three windows at the end facing Arkwright-road. Adjoining and close to the library, separated by a straight wall, is the lecture-hall, 55ft. by 37ft., having a direct and separate entrance from this road, and a top-lighted corridor along the outer boundary. A rectangular-shaped stage and retiring rooms are at the north end. A gallery at end of lecture-room is shown. The caretaker's rooms occupy the first-floor story to Arkwright-road, and are partly in roof, and have hipped dormers. Over the centre an octagonal open wooden turret rises. Further accommodation is indicated by raising the caretaker's rooms one story, and by adding library and board-room along both fronts on the first floor. We notice that the rooms are well lighted, and the librarian or his assistant has, by observation windows and doors, supervision over the department. The block of building is set back square from both fronts, and leaves a rather waste space or triangular area opposite Finchley-road. The passage and ramped wall to the main entrance is useful. We notice the roofs of departments are of timber and plaster ceiled, treated very plainly.

We next come to a very able design by Mr. Arnold S. Taylor, which, although in a more expensive style, is distinguished by many good points. The author has treated his buildings in a Late Perpendicular or Tudor style, which at least has some pretensions as one harmonising with the surroundings, and allowing the plan to be broken towards Finchley-road, thus making the most of the oblique angle of boundary. The steep inclination of the ground has been met by a bold stepping of the buildings, the lecture-room being the highest and slightly projecting, with its lobby entrance in Arkwright-road. The plan is well arranged for light. The main entrance in the latter road gives access to a central hall, top lighted by lantern, and open area. On the left is the newspaper and magazine room, in two parts —one 38ft. by 29ft., and the other 46ft. 6in. by 29ft.—lighted by windows and bays in both fronts. The lending library, opposite entrance on the north side, is 55ft. 6in. by 30ft., with lobby space and counter; and the reference library, 54ft. by 30ft., is in a line with the lending library, its gabled end abutting on Finchley-road and projecting. There is a side entrance from the north side, with passage between these two rooms. The librarian has a room on the east side of entrance. The lecture room, on the east side, with front entrance from Arkwright-road and side corridor, is 79ft. by 30ft., with platform and retiring rooms, &c., approached also from the passage on the north and from the library buildings. The supervision is, perhaps, the weakest part of plan; but the plan and drawings show evidence of careful thought. A waiting-room is provided at the side of hall, which is a good feature, and the plan is architecturally arranged. The bay windows in newspaper and magazine room are also features of merit. A caretaker's entrance is placed between library and lecture-room, and his rooms are near the lecture-room end of library on first floor. A skylight is shown over the reference library. One point worth notice is that the author has provided a good book-store, &c., in the basement at the Finchley-road end, that could be turned into a lending library for the present, and save cost. The perspective and elevations are well drawn in ink, and the design is dignified, and the parts well broken to the main roads. Open-timber roofs to library and lecture-room, and plaster ceilings to magazine and reference reading-rooms, are shown. The windows are mullioned, and parapets are shown over the principal bays.

The design of T. G. Jackson, A.R.A., is also a picturesquely-treated group of buildings with Queen Anne or Georgian features, as in the long brick pilasters and elongated window openings facing Finchley-road. This front is terminated by octagonal angle turrets, forming bay windows internally, roofed with cupolas of ogee shape. An India-ink perspective sketch accompanies. The long front to Arkwright-road is broken in outline by a low roof over newspaper-room and by the gable end of lecture-room and projecting staircase of gallery. Mr. Jackson separates his library block from the lecture-room, though connected by a passage. The library block is not square, the Finchley-road front being slightly turned in the direction of the boundary. This awkward turn is concealed by the large octagon tower at the corner, and to disguise the lines of internal plan at their junction an elliptical-shaped central hall or waiting-room is shown, and this hall gives access to each department. The lending-library at the corner is well lighted by windows on both fronts and the large octagon bay, the reading-room adjoins it on the Finchley-road front, and the two departments are connected by doors or a lobby at the foot of staff staircase. On the north side of hall is the librarian and board-room, and the magazine and news-rooms are on the east side, both well lighted. The lobby or space for borrowers from centre hall is convenient, and well lighted. The lecture-room, which is detached except by a corridor from central hall which passes through news-room, has an apsidal platform end, with gallery over, and entrance, with conveniences, for both sexes from Arkwright-road. There is also a side corridor and retiring rooms next east boundary. The main entrance and central hall have an awkward appearance on plan, on account of the twist in the two main axes of building. Towards Finchley-road the ground floor is utilised for stores and binding, coal and boiler-house. The staff entrance between the lending and reading-rooms is convenient. The drawings are rather rough, but the perspective ink sketch shows some picturesque grouping towards the long frontage, the high and low roofs, broken gables, and turret cupolas giving a pleasing outline to the mass, but hardly, perhaps, regular enough.

The design submitted by Mr. Horace Field has a good central hall, lobby, and lending-room arrangement, with a long newspaper and magazine room, lighted from Finchley-road with circular bays; this room is about 76ft. long and 30ft. wide, broken by columns and divided by glazed partition. The reference library is on the east side, the front end of which can be utilised as a corridor to the lobby of lecture-room, which latter is 64ft. by 30ft. on the east side, adjoining, and has a circular recessed platform, with cloak-rooms, and two entrances from Arkwright-road, the eastern one running along as a corridor. The plan has very much that resembles Mr. Champneys' in arrangement. Further extension is provided for by an addition of a first floor. The external design is Italian in feature, the lines level throughout, and not well suited to the fall of ground, and there is certainly a resemblance to a large stable range in the long front. From what we have said, it may be inferred that there are two designs which appear to meet the requirements in plan, both are picturesquely treated—one in a pure and more dignified style, and a little more costly than the other—and it is for the commissioners to make a choice, guided, of course, by any professional opinion they may have heard.

THE ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of the Association was held on Friday evening, the President, Mr. E. W. Mountford, F.R.I.B.A., in the chair. The following 39 new members were elected:—Messrs. L. D. Philpot, F. J. O. Smith, H. A. Chapman, C. Bree, G. B. Carvill, G. W. Cleave, J. S. Dunn, F. R. Ireson, C. Martin, A. Smithers, E. W. Allfrey, G. Bailey, N. C. Bathurst, T. Bee, A. R. Carey, E. F. Cobb, C. F. Dawson, R. E. Eddison, H. C. R. Hide, E. T. Marriott, C. H. Fowler, H. Mennie, R. J. A. Shield, R. S. Balfour, P. R. Bradford, H. R.

Creighton, V. Esch, F. V. Forrest, G. T. Forrest, S. J. Hulse, E. C. Haskins, E. W. Hobkirk, A. G. Pile, E. W. Pugh, F. C. Thompson, and S. Towse.

THE SANITATION OF HOSPITALS AND INFIRMARIES.

Mr. Keith D. Young, F.R.I.B.A., read the following paper on this subject:—What is there, he asked, in the sanitary conditions of a hospital which so differentiates it from an ordinary dwelling-house as to render it necessary or desirable to treat it as a subject in itself? The essentials of sanitation, a clean and dry site, substantial and dry walls, a roof that is weather-tight, and drainage and plumbing arrangements of sound construction and properly devised—surely these are as necessary to the smallest cottage as to the largest hospital. This is all perfectly true; but there are conditions affecting the health of the inmates of a hospital which are to be found in no other kind of building, and which lie at the root of all questions of hospital sanitation. And it is upon these special conditions peculiar to hospitals that I propose to speak to you this evening. In the first place, then, it is essential that we should have a clear understanding of what a hospital is: that is the very root of the whole matter, and the want of a true knowledge of it has been, and still is, the cause of much disaster. For our purpose to-night it will suffice if we divide hospitals into two classes:—1st, those which exist for the benefit of the patients; and 2nd, those which exist for the protection of the community. In the first class are comprised all those hospitals known broadly as general hospitals, including also the majority of special hospitals; and, in the second, hospitals for the treatment of infectious fevers. In the first class, then, we have a group of buildings which are devoted to the treatment of sick and injured poor. In these hospitals a large number of patients are gathered together, very often literally under one roof. But it is not to the advantage of the patients that they should be congregated together in large buildings or in large wards; but, on the contrary, this very fact is an element of grave danger to the patients themselves. The ideal hospital is one in which each patient should be treated in a ward by himself, entirely cut off from all possibility of aërial connection with any other ward. This is, of course, an economic impossibility. The air of a hospital ward is liable to contamination from the following causes:—1. The evacuations or effluvia from the bodies and excreta of patients. 2. The presence of suppurating wounds, with their necessary dressings, poultices, &c. 3. Foul linen, bedclothes, &c. And these necessary and unavoidable conditions common to all hospitals may be aggravated, and their danger intensified by:—(*a*) Insufficient air-space, (*b*) insufficient ventilation, (*c*) inadequate or improper arrangements for the removal of refuse of all sorts, (*d*) faulty arrangement of buildings. To illustrate the truth of these propositions, I will take two examples of hospitals which may serve as object-lessons in hospital hygiene. My first example is the famous old Hotel Dieu at Paris, as it existed at the latterend of the eighteenth century. The plan was that of one vast ward running the whole length of the building, and containing 168 beds, of which 118 were for four patients each, giving a grand total of 552 patients. On the south side there were no windows at all, whilst on the north the windows must nearly all have had their sills above the ceilings of the adjacent rooms. This sort of thing was repeated on three upper floors with slight variations, and in addition to this building there were other wards on the opposite bank of the Seine, and on one of the bridges connecting the two sides. The latrines were in close proximity to the wards, and were insufficient in number. Within the walls of this vast pest-house were gathered not only ordinary sick, but patients suffering from infectious and contagious diseases of all sorts, lying-in women and lunatics. And the immediate result of this state of things was that one patient out of every four died. My second example is the old Lincoln County Hospital, which may be contrasted with the building which replaced it, and which is still one of the best examples, twenty years old though it be, of a good county hospital. In 1863, when this hospital was inspected by Mr. Timothy Holmes, it was a building of irregular structure, a great part of it being nearly a century old. Like most hospitals of that period, it was "composed of small wards not so much ill-provided with window space as having their windows improvidently placed for hospital purposes, the windows being wide and low, and at one or at two contiguous ends of the wards, so that it became necessary to crowd the beds together away from the windows." In the older part of the hospital the floors were of plaster, than which a worse material for the purpose can scarcely be imagined. Contrast this with the plan of the present hospital, the work of my friend, Mr. Alexander Graham. Note the long and narrow wards, each bed with its proper complement of light and air, the offices properly disconnected from the wards, the latter from the administrative offices, and the laundry and mortuary duly isolated from every other part. Insufficiency of air-space and insufficient ventilation are closely allied, and must be considered together. Air-space, indeed, is of little value by itself unless it is accompanied by ample means of ventilation. And by air-space I mean not only cubic space, but floor-space—a most important point to note. It is useless to supply your patients with a generous amount of cubic space unless you first see that they have sufficient floor area. The question of ventilation cannot be considered apart from that of warming. The two are interdependent, and cannot be separated. Ventilation, then, means the supply of fresh air, warmed to the requisite temperature, and in sufficient volume to preserve a given standard of purity without producing draughts. The rule generally adopted in practice is that each patient should have a supply of 3,000c.ft. of air per hour. This amount is requisite in order that the total impurity of the air may not exceed ·66 per 1,000. To accomplish this without draught, the air of the ward should be changed not oftener than three times per hour, which gives a minimum allowance of cubic space of 1,000ft. per head. It it very difficult to lay down any fixed rules for determining the necessary allowance of cubic space. The nature of the disease treated, and the situation of the hospital, must be taken into consideration. In a country hospital, where the cases are for the most part of a mild or chronic nature and the site is open, 1,000ft. may often suffice. Where the average of acute cases is greater, and a hospital is in the centre of a big town, more cubic space is required; and in hospitals in manufacturing towns, where severe surgical cases are frequent, 2,000ft. is not excessive. Ventilation is commonly divided into two classes—natural ventilation and mechanical or artificial ventilation. In natural ventilation the agency of windows and other openings, aided by the upcast power of the smoke-flues from open grates, is relied upon. In artificial ventilation the air is either pumped in by mechanical appliances and allowed to escape through openings or shafts constructed for the purpose, or it is sucked out either by fans or by the aspirating power of heated shafts. In either case the air must be warmed before it enters the ward. It would be impossible for me to describe the many systems which have been devised for the ventilation of wards by mechanical means in the time we have at our disposal this evening. The object, however, of each is practically the same—namely, to insure a regular and automatic change of air in the ward by mechanical means, altogether independent of windows. The question which concerns us is this: Is there any evidence to prove that wards cannot be kept sufficiently sweet and healthy without recourse to expensive automatic appliances? So far as the experience of hospitals in this country goes, I think that not only is there no such evidence, but that there is some very definite evidence in support of the exact converse. There is a case cited by Dr. Bristowe and Mr. Holmes in the report to which I have before alluded, which goes to prove that mechanical ventilation can become a positive evil. I allude to the York County Hospital, which, when it was erected, was furnished with an apparatus for warming and ventilating by a mechanical process by which the air was warmed in the basement and driven into the wards by the aid of a steam-engine, the vitiated air being carried off by shafts warmed by hot pipes. The wards were not provided with fireplaces, and the windows were mere apertures for light, and were not made to open. This system remained in work for nine years. During that time it was said that the wards were always close, sickly, and even offensive; and erysipelas increased to such an extent, and proved so often fatal, that the surgeons gave up operating altogether, preferring to abandon their patients to disease rather than risk operations with almost certainly fatal results. The system was abandoned, fireplaces constructed, and windows made to open. When this was done erysipelas disappeared, and the health of the hospital became what it ought to be. No doubt in this case the apparatus itself was deficient. I give the case for what it is worth; but it is not without its value if only to show how mischievous such a system can be if improperly devised. To return to our question: Is artificial ventilation necessary? To prove that it is necessary we must assume that the ordinary means of ventilating by open windows is inadequate. Now, I venture to affirm that there is no evidence whatever in support of such an assumption. A distinguished Paris surgeon, Dr. Le Fort, in 1862 published a report on Hospital Hygiene. He there compares the mortality in London hospitals with that of the Paris hospitals, very much to the disadvantage of the latter, and professes himself decidedly in favour of the natural means of ventilation adopted in London to the artificial systems in vogue in some Paris hospitals. But he says one need not go to England to search for means of comparison between the two systems; for the two hospitals in Paris where the mortality is greatest are precisely those in which artificial ventilation is employed. And this, remember, was at a time when antiseptic treatment was unknown, and the paramount importance of cleanliness was not recognised as it is to-day. The matter appears to me to be very fairly stated by Sir Douglas Galton in his book on "Hospital Construction":—"The system of propulsion for hospital ventilation (he writes) has not found general favour with hospital architects or managers in this country. There is one very patent and valid reason, which is that in this climate windows can be kept open; and when windows are open the volume of fresh air which passes through a ward will be at least twenty times greater than either the theoretical 300c.ft. per hour, or even the 5,000c.ft. or 6,000c.ft., which some of these systems profess to furnish, without entailing the large expenditure of fuel necessary for moving a large volume of air." So, also, Dr. Bristowe and Mr. Holmes, in the report to which I have already alluded:—"No amount of cubic feet of space, no plan of building, no artificial system, no combination of these adjuncts to a good ventilation has ever been found to replace open doors, windows, and fireplaces; while provided with the latter, which are the essentials of good ventilation, many old crowded defective hospitals have maintained for a long series of years an amount of success which the most eminent examples of scientific construction have never found practicable." Everyone who has any experience of hospitals in this country knows that there are very few days in the year during which ward windows cannot be kept open—and I cannot think it justifiable for the sake of those few days to establish a complicated system, involving a certain amount of skilled labour in working and considerable cost for maintenance; a system, moreover, which must involve the construction of a number of shafts, all of which, unless kept scrupulously clean, must become harbours for filth and a constant menace to the health of the patients. If I were to presume to lay down rules for the proper method of warming and ventilating a ward, I should say, apply your warmth, or the greater part of it, around the outside walls of the ward, where the greatest leakage takes place; whether the method be by steam or hot water, take care that every pipe or coil is so placed that it can be cleaned easily and all round; if any arrangement is made for the admission of fresh air at the back of a coil, see that the shaft can be readily got at and cleaned; and let no shaft for the passage of air be longer than the thickness of the outside wall. Before I leave this subject of ventilation, there is one special point it is necessary to notice. This is the sterilisation of air from fever wards. There is one kind of fever, and one only, of which it can be said that the sterilisation of air expelled from the wards is necessary in the interests of public health, and that is small-pox, a disease of which we have convincing proof that it can and does spread beyond the walls of the hospital; that the specific infection of it is in fact air-borne. And for this reason it is distinctly desirable that some means should be devised for rendering innocuous the air from the wards. The nearest approach to the accomplishment of this task has been made at the Bradford Corporation Hospital, where, under the direction of the architects, Messrs. Morley and Woodhouse, an apparatus has been constructed, and since patented by Mr. Edward Oldroyd. The system, to describe it very briefly, is this: Fresh air, capable of being warmed when necessary by passing over hot-water pipes, is admitted to the wards in the floor at the foot of each bed, and also at certain points in the opposite wall. The whole of the vitiated air is drawn from the ward through openings at the ceiling-level into a trench, at one end of which is a powerful furnace; part of this air is used to promote the combustion of the fire, the remainder being passed through the furnace and exposed to a temperature estimated to be 800deg. Fahr. All the windows in the ward are hermetically sealed. For sufficient reasons I am not able to put before you any statistics as to the success of this system. The proof of success in an appliance of this kind is a matter for the bacteriologists and the microscope; and we have yet to see whether a ward constructed after this fashion fulfils every requirement, not only of the sterilisation of the air, but also as a suitable place for the treatment of smallpox. But there is no justification whatever for applying such a system as this to wards for scarlatina, or any other infectious fever which does not spread beyond the walls of the hospital. Our next point is that insanitary conditions may be produced by inadequate or ill-conceived arrangements for the removal of refuse. The methods of sound drainage are the same in a hospital as in any other building, and the neglect of them leads in both cases to similar disaster. There are, however, some points special to hospital work which require to be noted; and there is other refuse besides what is carried away by the drains which equally requires to be disposed of with care. In every ward for acute disease there must always be a certain number of patients who are unable to get up, and who must perform every office of nature in bed. For the proper emptying and cleansing of the vessels necessary for these purposes there must be provided a sink, which is commonly called the slop-sink. The sink should be so constructed that the risk of splashing is, if not abolished, reduced to a minimum, while at the same time a copious flush of water should be provided. The only slop-sink that I know in which the difficulties of the situation are intelligently met is the one devised by Professor McHardy, and called after him by the patentees, Messrs. Dent and Hellyer. The bed-pan is placed face downwards, with its nozzle inclining towards the outlet of the sink; a jet of water is then projected upwards from the rose underneath the sink, and flushes out the whole pan, the pan itself being held in position by the indiarubber strips at the sides of the sink. To flush out the sink there is a flushing-rim, the water to which is turned on by a separate handle. There is a separate jet for flushing out urinals, and a metal cradle was devised for holding these vessels; but the latter is an encumbrance, and is not at all necessary. The room in which this sink is fixed should be of sufficient size to hold not only the slop-sink itself, but an ordinary porcelain sink for washing other vessels, such as spittoons, porringers, &c., and sufficient shelving to hold the ward crockery. As a rule, these rooms are made far too small for the work that has to be done in them. In all sanitary fittings, including water-closets, sinks, lavatories, and baths, simplicity of form and cleanly appearance are desirable. They should also be, as far as possible, self-cleansing, and all casings of every kind should be dispensed with. In operation theatres, where, above all things, minute and excessive cleanliness is of the last importance, it is well to make all shelves of glass, not only that the state of the underside, as well as of the upper, can be readily seen, but also because glass is perhaps the only material not liable to injury from the acids used in the theatre. I have referred to kinds of refuse not liquid. I mean by that not only the household refuse, dust, ashes, kitchen-stuff, and so forth, but ward refuse, such as bandages, dressings, poultices, and the like. In a general hospital the ordinary household refuse may be consigned to the care of the parish dustman; but it should be collected and stored in iron bins, for which a suitable shelter not near any ward should be provided, and it should be removed daily. Kitchen-stuff in a general hospital may also be separately stored and disposed of. But in a general hospital all the ward refuse, and in a fever hospital all refuse of every kind, should be burnt in a properly-constructed furnace. This furnace must be so constructed that the gases resulting from combustion are destroyed or decomposed before reaching the smoke-flue. Such an apparatus has been devised by Mr. Brophy, of the firm of Slater and Co., and is in use at the Middlesex and the London Fever Hospitals. With regard to drainage generally, I will only add a word to impress upon you the extreme value of flushing. You can hardly have too much flushing power in hospital drains—or, for the matter of that, in any drains. If there is a laundry, the waste water can very well be taken to a flushing-tank, and utilised for flushing the drains by means of one of Mr. Rogers Field's siphons. Of course, care must be taken to intercept the large quantity of shreds that invariably get detached from the clothes in the process of washing. I now come to my last point, which was faulty arrangement of buildings. I have already indicated, when comparing the old and the new Lincoln Hospitals, the main features of malconstruction. What is called by Dr. Erichsen the "big house system" is the sort of plan upon which so many of the larger provincial hospitals and some of the London hospitals were built, notably University College Hospital, where Dr. Erichsen's well-known lectures on Hospitalism were delivered. In extreme contrast to this we have such a building as the Eppendorf Hospital at Hamburg, where every ward is an absolutely isolated building, and not even a covered way exists on the site. The enormous cost, both for land, buildings, and administration, of such a system could only be justified on grounds of absolute necessity. For myself, I fail to see the necessity; nor do I know of any sufficient reason for limiting the wards to one story in height, as is done at many other recent foreign hospitals besides the Hamburg one. Provided you so construct your wards that each ward is cut off from direct air communication with the other wards and with the other parts of the hospital, provided that there is ample open space for all purposes of light and ventilation, it seems to me to be quite immaterial whether they are two or three stories high. As an example of how wards should be isolated one from the other, I may name the new hospital now in course of erection at Derby. The wards are cut off from the corridor and from the staircase by short lobbies, which are, in fact, but covered bridges, with only just sufficient height for head room, and with free air space between the roof of one and the floor of that above. The corridor must, of course, be kept warmed at or about the same temperature as the wards; if this is done, and ample inlets for air are provided in the latter, there will be no suction of air from corridor to ward. The ward itself must be as simple in construction, and as cleanable in all its parts, as it is possible to make it, and should contain nothing but the most necessary furniture. Suitable store-rooms must, therefore, be provided outside the ward for food, for linen, and for patients' clothes, and an orderly closet for brooms, pails, and other things necessary for daily use in the ward cleaning. Mouldings must find no place in a ward or in any of its offices; angles, whether vertical or horizontal, must, wherever possible, be hollowed; in vertical angles to promote circulation of air and avoid stagnant corners, and in horizontal angles for facility of cleaning. In the construction of ward floors, solid or so-called fireproof construction is essential—and after much consideration and comparison of different kinds of floor surfaces I am inclined to think that carefully-laid terrazzo is the best thing to be had. Hard-wood floors, laid in block fashion, are apt to tilt up with the weight of a bed, plus a heavy patient, and the joints, however well made, will open in places. Terrazzo, when well laid, and when care is taken to have a sufficient thickness of concrete over the iron joists, gives a solid, homogeneous surface that is hard to beat. I know I shall be told that it is cold to the feet; but any slight inconvenience that may be felt from this cause can very easily be remedied. A point of importance in regard to windows is that a window should always be put between the end bed and the end wall. This window may be as narrow as you like, but it must not be omitted. The necessity for this arises from the fact that these corner beds have been found to be less favourable to the well-being of patients than the other beds, owing, no doubt, to defective circulation of air round about the patient. The water-closets and sink-rooms must, of course, be properly cut off by cross-ventilated lobbies from the wards. This point is pretty generally recognised to-day. But what appears to be too often lost sight of is, that if it is necessary to take this precaution with regard to one closet, or set of closets, it is equally necessary to do it with every other. In a late competition for a large hospital, I remarked several instances of the neglect of this obvious principle. In one case a two-bed ward had its closet opening practically into the ward, and in another otherwise excellent plan the water-closet for the use of the nurses opened directly out of the ward corridor. I fear I cannot give you any counsel of perfection for the finishing of wall-surfaces in wards. The perfect wall-surface has yet to be invented; meantime, I doubt if we can do better than a good Keene's cement surface, painted and varnished. If it is necessary to isolate wards from one another, it is of vastly more importance to separate the out-patient department, the operation room, the laundry, and the mortuary. The out-patient department must be a separate building, and the only reason for any covered communication existing between it and the wards is, that the dispensary must be in touch with both. Or, to put it in another way, the dispensary must be part of the out-patient department, and to avoid having a second dispensary in the hospital proper, it must be also accessible to the nurses. Equally necessary is it that the operation-room should be carefully isolated from all possible chance of air-borne contamination from any other part of the hospital. So far has this principle been carried abroad, that in one hospital in France the operation-room is a detached building in the garden, and patients are conveyed to it through the open air in a specially-constructed litter. This is carrying asepticism to an extreme that probably would not be upheld by any surgeon in this country. But it will be agreed that where possible the operation-room should be a one-story building, and cut off by a lobby from direct communication with the main corridor. Inside the operation-theatre, everything that makes for perfect cleanliness and consequent asepticism must remain supreme. A floor of the best terrazzo, walls either of marble or enamelled tiles, and well-painted and varnished cement ceiling, metal window-frames flush with the walls, and hard-wood doors, every part must be so made that the whole room can be if necessary swilled down with a hose. The fittings need careful consideration. For shelves the best material is glass. Neither pipes or anything else must be fixed up against the wall so that they cannot be readily cleaned all round. The laundry, again, must be an isolated building; it may be connected with the administration block by a covered way open at the sides, but even this is not an absolute necessity. The mortuary building should be as far away from the rest of the hospital as possible. An essential part of the mortuary building is the post-mortem room, and here the aseptic precautions, which in the operation-room are necessary for the sake of the patient are, to a lesser extent, perhaps, necessary for the sake of the medical officer. A post-mortem room should be as cleanable in all its parts as an operation-room; and the materials used in its construction, while less costly, should be of a hard, non-absorbent nature. For the walls glazed bricks, and for the floors cement or asphalte are most suitable, while the table itself should be of a hard marble, polished, and supported on a framework of iron. The floor should be drained by an open channel provided with an efficient flushing-tank and covered with a movable iron grating. In conclusion, let me summarise the essentials of hospital hygiene so far as the building is concerned. Perfect cleanliness in every part is the keynote, the beginning and the end of hospital construction, and to this every part must lend its aid. There must be no lurking places for dust, no hidden recesses where foul things may be stored out of sight, no avoidable projections, or ledges, or mouldings to catch the dust, or cased-in pipes or shafts for foul linen or lifts. The patients must be safeguarded from infection from each other, from the out-patient department, the laundry, and the mortuary; from the evil effects of ground-air, foul drains, or dust-bins. And in a word, every part of the establishment must be contrived with a view to facilitate that "exquisite perfection of cleanliness" which is the true secret of a healthy hospital.

Mr. Alexander Graham, F.S.A., in proposing a vote of thanks to Mr. Young, remarked that the late Sir John Pringle, an early sanitarian, used to say that patients made better and quicker recoveries in old buildings than in the best appointed hospitals of his day. There was little improvement in hospital arrangements until after the close of the Crimean War, and then some attention was given to the principles laid down by a little band of reformers, of which Sir

Douglas Galton and Miss Florence Nightingale were among the few survivors—principles which would hold good to all time. When the late Sir Gilbert Scott designed the Leeds Infirmary, one of the first hospitals constructed on the pavilion principle, many errors were made, which had afterwards to be corrected at a great outlay. Hospitals might usefully be divided into those for towns and country places, for the conditions of those classes were very different. It was a good rule not to place more than 50 patients upon an acre of ground; but in crowded districts, where hospitals were most needed, so large an area could not be provided. In ventilating hospitals the problem was to avoid draught in changing the air. In ordinary cases the air of a ward should be changed at least three times an hour; but it was difficult to lay down hard and fast rules. It was much more important, as Mr. Young had said, to regard floor space than cubical area in calculating the areas of wards. Cubic space would indeed regulate itself if sufficient room were provided between the beds. In competitive designs he had noticed as an assessor that competitors were too apt to provide the required cubical space per patient in height. The late Professor De Chaumont regarded any height above 12ft. as unnecessary in a ward, but his own rule was to allow 14ft.; where a ward was very wide, say 28ft., even 14ft. would look low. He was very glad to hear Mr. Young advocate natural means of ventilation. If an architect trusted to his windows and fireplaces to provide change of air, he could always secure a fresh current in the ward, summer or winter. He had never heard of an application of a mechanical system of ventilation that acted perfectly at all times and seasons of the year, and he was quite certain that such systems were very expensive. As to the sterilisation of effluent air, this could only be necessary in the case of small-pox wards. The drainage of a hospital should be carried out on the same principles as that of a house; he recommended MacHardy's slop-sink as a good kind. Simplicity of form was desirable in every sanitary appliance, and there must be not only cleanliness, but, more than that, an obvious appearance of cleanliness. In American hospitals, he had observed that copper and brass were used for all pipes, and these were kept burnished, while glazed tiles were employed for wall surfaces. These looked very nice, but entailed much labour and were extremely expensive. He would point out that the flushing siphon and tank should be so planned as to be close to the head of drain. For flooring wards terrazzo was a bold experiment—the material was certainly cold to the feet. He had himself always advocated teak floors, treated by paraffin and then dry polished, the joints being, of course, carefully filled in. In New York he observed tiles used for flooring; but they, like terrazzo, seemed a cold surface to walk upon. For wall surfaces, he concurred with the lecturer that Keene's cement, painted and varnished, was the best. The use of glass for fittings had much extended, and all shelves should be made of this material. It had been stated that glass had been introduced for the walls of operating theatres, but he knew of no example either in this country or abroad. In conclusion, he would point out that the contemplation of cheerful surroundings was a great help towards effecting a cure, both in physical and mental disease, and if the outlook of the windows of a ward was depressing and ugly, the glass should be obscured.

Mr. P. Gordon Smith, architect to the Local Government Board, seconded the vote of thanks. It was a delicate matter to touch upon the merits of ventilating systems, for an architect's opinions were liable to be taken up, repeated, and sometimes slightly distorted by competing firms. In the main, however, he could endorse all that Mr. Young had said; the best system of hospital ventilation was one that depended almost entirely on the doors, windows, and fireplaces of the ward. With double-hung sash-windows and fanlights above, there should be no difficulty in securing efficient ventilation in a ward without having recourse to special appliances. He held that in every hospital there should be an official specially appointed as an officer of hygiene, whose duties should be to see that every place was clean, that the ventilation was efficient, and that all hygienic details were carried out. Careful instructions should be laid down by the architect as to the use of all appliances, and how often, and with what quantity of water every w.c., sink, and drain should be flushed. He did not believe there was any occasion to sterilise the air from wards, except, perhaps, that from small-pox hospitals, and wherever it had been attempted, it had been with but partial success. He supported the views of Mr. Graham as to floor space and the relative distance apart of the beds being the main factors in planning wards; these two points were far more essential than the mere calculation of cubic space. The Local Government Board rules originally laid it down that wards ought to be 24ft. in width and 14ft. in height, but on further consideration the Board considered that a better proportion was 26ft. for width, and not less than 13ft. for height, and the instructions were altered to that extent. As to the cleanliness of hospitals, where possible it was an excellent plan always to allow one ward to remain vacant, and, as it were, fallow; but he admitted the costliness of the system, although it had been adopted in several Continental hospitals.

Dr. Pasteur, lecturer on public health at Middlesex Hospital, thought architects would not go far wrong if they recognised the paramount necessity for surgical cleanliness, the purity of the air, and the non-absorbent character of materials in hospital wards. Every hospital surgeon knew that certain beds in certain wards had a shady reputation; these ought to be traced, for they were due to faulty arrangement or construction. As to terrazzo for flooring, he saw it employed in a country hospital, and thought not only that it had a cold appearance, but it was so hard that it would be dangerous should a delirious patient fall out of bed upon it.

Mr. William Henman, of Birmingham (the architect of the new General Hospital in course of erection in that city), agreed with almost all that Mr. Young had said. The subject of the aspect of wards had been rather overlooked. The axis should run where possible north and south, so that throughout the day one side should have sunshine when it existed. He did not think terrazzo a good material for flooring. It was not only hard should patients fall on it, but trying to nurses, who were constantly on their feet and wore very thin slippers. After a change from cold to warmer weather, such a surface would be dewed over from condensation—obviously an undesirable state of things. He had given much attention to the question of wall surfaces, and had come to the conclusion that it was a grave mistake to employ glazed materials in wards, although they might perhaps be suitable for w.c.'s and operating rooms. Glazed wall surfaces were not only damp but dirty, for to the moisture condensed upon them any dust or amorphous matters in the air would adhere. Concerning the question of ventilation, there had been some controversy since he had read a paper before the Leeds Society of Architects, and some present might have seen a certain pamphlet having a black paper cover enlivened with a red cross on a white shield, brought out by a firm of ventilating engineers. Notwithstanding that little book, he still adhered to the views he had previously expressed as to the efficacy of mechanical ventilation for certain buildings. Birmingham had a dirtier and more fume-laden atmosphere than London, and for a hospital erected in that city something more than mere natural ventilation was, he believed, necessary. Unless the air which came into a building was perfectly pure, it would do patients more harm than good. The methods of mechanical ventilation were being improved. To change the atmosphere of a ward three times an hour, as Mr. Keith Young and also Mr. Graham had advocated, was insufficient, and such changing, if natural means were relied on, was only partially accomplished. In ventilation by mechanical means the air could be renewed ten, twelve, and even fifteen times per hour, without draught. He was now conducting experiments in two specially-built wooden rooms at Birmingham. Each was 14ft. by 20ft. and 10ft. in height. The one was ventilated by natural means, and it was impossible to sit in it for half an hour without discomfort; the other was used as the clerk of works' office, and although the air was changed from eight to ten times per hour, no draught was felt. At the Birmingham hospital he was endeavouring to dispense with unnecessary labour; there would be no fireplaces, no coal or dust-bins, no hot-water pipes, and no crevices for dirt and dust. He expected no difficulties in keeping the air-ducts clean; they varied from 8ft. high by 11ft. wide to 4ft. 6in. high by 4ft. or 5ft. in width. Eight large fans would be employed, capable of actuating a current of 20,000,000 cubic feet of air through the buildings per hour. As this current would be impelled on the Plenum system, no bad smells could arise from w.c.'s or sinks. The air was to be received, filtered through screens, and would pass out through similar screens, and in that way he hoped to eliminate bacteria from the effluent air. There was only negative evidence that the air from fever-wards was not infectious.

Mr. E. A. Fardon, resident medical officer at the Middlesex Hospital, held that, unless it were absolutely impossible to secure a natural system of ventilation, owing to the unfortunate situation of a building, there was no excuse for adopting an artificial method. He had inspected many mechanical systems of ventilation, including those at the Houses of Parliament and the Law Courts, and had never seen one that was approved by those who used it. He thought the importance attaching to uneven temperatures in wards was overrated; the generality of patients were protected by bedclothes, and except for patients suffering from respiratory complaints, no great dangers resulted from variations in temperature. As sites for hospitals were costly where such institutions were most needed, an unnecessary space ought not to be allotted to each patient. With good management and attention to cleanliness, excellent results were secured with only 1,000c.ft. of space per bed. With regard to flooring, terrazzo might be useful in corridors, but was not suitable for ward floors. He had never seen a large area of this material laid down for any length of time that was not fissured owing to expansion and contraction, and this could hardly be obviated with so inflexible a material. The best floor surface was teak, tongued together and beeswaxed. Glazed walls would, as previous speakers had shown, be damp, and would then collect dust and organic matters. Keene's cement, painted and varnished, provided an admirable surface, but it was difficult to keep it polished, and if this were neglected it would deteriorate. A still better plan would be to have a Keene's cement wall painted and varnished up to dado level, and above that to simply distemper the surface.

Mr. Coles was in favour of mechanical ventilation, and urged that with the present facilities for electrically-driven fans, a plenum system was easily carried out.

The Chairman remarked that Mr. Graham had suggested that every architect should design a hospital before undertaking a house. Such an arrangement would be good for the architect, good for his clients who desired houses, and as for the hospital patients, the doctors would look after them, and have many little defects remedied. He then put the vote of thanks, which was heartily accorded.

Mr. Young, in reply, said there were several foreign examples of wards with terrazzo floors, and if these were the best for the patients, nurses must accommodate themselves to the material, and wear thicker slippers, if necessary. At Derby, it was complained that floors of this material were less springy than those of wood. The utmost credit was due to Mr. Henman for the immense pains he was taking to arrive at definite conclusions as to what mechanical ventilation could do for them. He should follow Mr. Henman's experiments with the greatest interest. He approached the subject with a perfectly open mind, and wished to know which method would be best for patients. If it should be proved that present methods were wrong, architects must revise their systems, for they only wished to arrive at the truth. Mr. Henman had spoken of the evidence of the non-spread of fever beyond hospital walls as only negative; but he must have overlooked the positive experience derived from the case of the London Fever Hospital. This building had stood for nearly half a century, and yet the incidence of scarlet fever in the streets around was less than that of Islington parish as a whole, and no case had ever been directly traced to positive infection from the hospital.

COUNTY LUNATIC ASYLUMS.—VII.

By George H. Bibby, F.R.I.B.A.

FEVER WARDS, ETC.

In connection with all large asylums it is necessary to provide for the isolation of those patients who may be suffering with fevers or smallpox, &c. (acquired after or before admission to the institution). In some instances acute febrile diseases of different kinds give rise to an

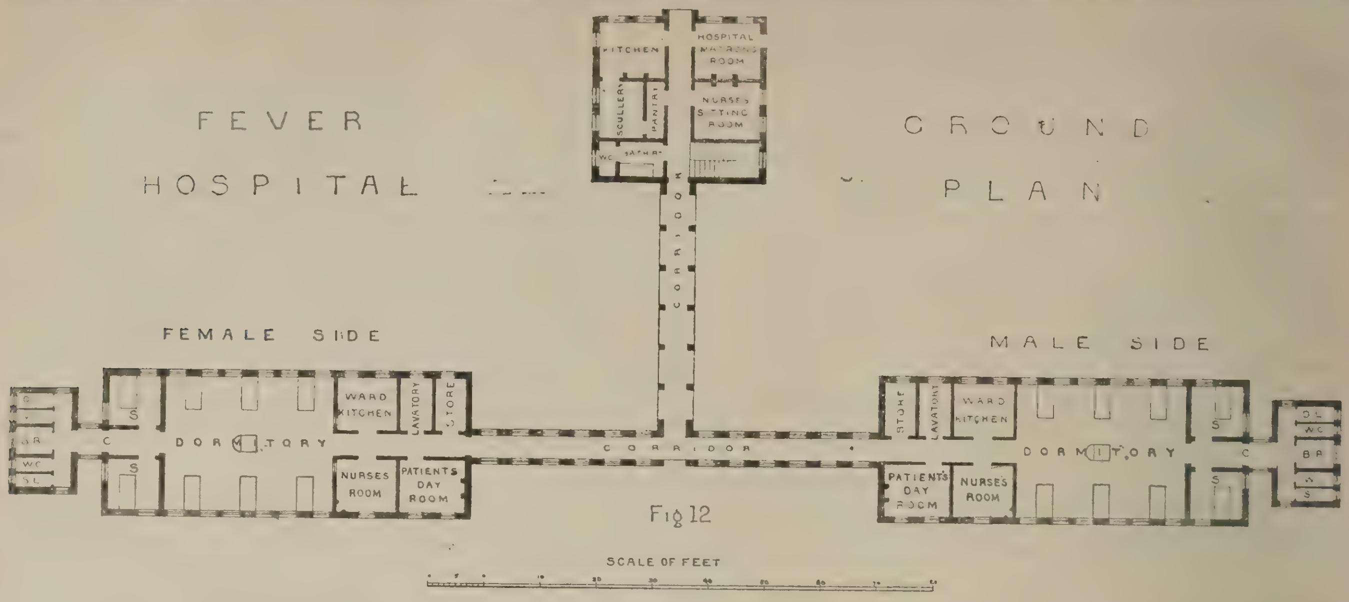
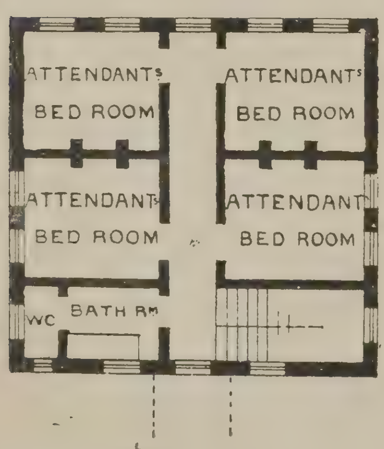


Fig 12

outbreak of insanity. The disorders which they occasion within the organism seem to be the only causes of the insanity, and after a patient is quite free from the fever, or even become convalescent, he often exhibits all kinds of perversities, erroneous ideas on various subjects, and hallucinations, but recovers frequently with improved nutrition and increased strength. But there are also severe cases of insanity which commence during convalescence from fever. There may be two classes of insane fever patients, the one being of those chronic or other lunatics who have the misfortune to be attacked with infectious diseases after admission to an asylum, and the other those persons who may become insane as one result of an outbreak of cholera, smallpox, or fever, &c. Some of these patients become very actively suicidal, and in providing for their accommodation and care, the asylum architect will have to combine, in one building, the requirements of an isolated fever hospital and a miniature asylum, with special opportunities for observation of the patients.

Fig 13



FIRST FLOOR PLAN

For the safety of all concerned, the hospital for insane fever patients must be at a considerable distance from the chief buildings of the asylum, and so placed that the main approaches may be at a safe distance, the building itself being placed in a retired position. The nurses in charge should be housed in a building adjoining the hospital, and should not be under the necessity of intermingling with the officials or patients of the main asylum, and would therefore require to have a small separate administrative arrangement containing all that is requisite for cooking, laundry, and other work, and a disinfecting chamber and fever mortuary are also necessary as adjuncts.

There would be required in connection with an asylum for 1,000 patients a fever hospital for six or eight patients of each sex, in separate wings of the detached building, and there should be at least one or two single rooms on each side, and day or convalescent-rooms for males and females. The area per patient in the dormitories and single bedrooms should never be less than 100ft., or much more if means permit, and the cubical contents should allow from 1,500ft. to 2,000ft. to each inmate. The patients' buildings should not exceed one story in height, and the aspect should be to the southwards.

In Fig. 12 is shown a plan for a fever hospital for 16 patients, eight males and eight females. These are provided for in two wards to contain six patients each. Four single rooms are arranged for those patients requiring special attention, or who, from their mental or bodily condition, may advantageously be separated from others. The male and female wings of the building are each provided with the usual hospital annexe for water-closets, slop-sinks, baths, &c., and each side has also a nurses' room, ward-kitchen, patients' day-rooms, store, and lavatory, the whole arrangement showing a complete separation not only of the wings for each set, but a distinct isolation of the residence for the fever nurses. This residence would be in two floors; but the patients' wards would be only one story in height.

In connection with the fever hospital, there should certainly be a special laundry, containing a receiving-room and a washhouse of moderate size, a closet of drying-horses, and an ironing and finishing-room, together with a disinfecting-chamber, which should be placed near to the receiving-room. The whole of these rooms should be arranged at a fair distance from the fever hospital and residence for the fever nurses, so as neither to create any nuisance to the occupants, or interfere with the free circulation of pure air round the establishment.

Near to the fever laundry should also be provided a mortuary for fever cases, with a juryman's inspecting-window, arranged so that the coroner's officials and the jury may not be brought to any danger during the performance of their duties.

In very large county asylums, perhaps rather more accommodation might be given than that shown upon Fig. 12—two or three additional single rooms, a receiving-room for patients, where they would receive a preliminary examination. Patients are occasionally brought direct to an asylum in a filthy condition—dirt on the skin, matted hair, and with evidences of vermin. And a considerable number of cases of dangerous fever with extreme delirium have been introduced into asylums as cases of insanity; therefore it is most necessary that the medical officers should have every facility for conveniently examining all such patients at the earliest moment after their admission to an asylum.

As a rule, patients should be photographed, weighed, and measured when they arrive, stripped and examined, before being bathed, by the medical officers, their identifying marks, state as to cleanliness, freedom or otherwise from disease or injuries being all then duly noted and entered. They will then be assigned to a suitable ward according to their classification of insanity, unless consigned to the care of the fever nurses, or (as seldom occurs) found to be quite sane.

The desirability of providing accommodation for insane fever patients will be recognised if it be remembered that the friends and relations of the pauper patients visit the asylums in large numbers, bringing occasionally with them, possibly from poor and unclean districts, many opportunities of introducing infectious disease.

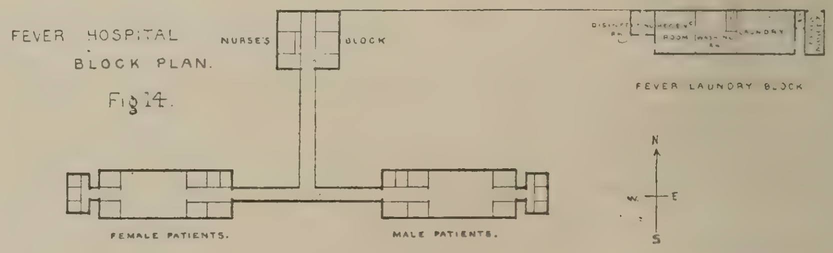


Fig 14.

The condition of most or all county asylums in Great Britain and Ireland has been more or less favourably reported upon by inspecting officials; but some of the lunatic wards in workhouses in Ireland, according to recent reports, appear to be kept in a filthy state and to be badly looked after. In various parts of Ireland architects have been recently called in in various places to deal with the existing want of lavatory, bathing, and other requirements, the absence of which tends so frequently to fill up the wards of fever hospitals.

With regard to the lunatic wards of an Irish workhouse (inspected on the 30th March, 1892), the Government inspector wrote:—"I regret I cannot report favourably of the cleanliness of the patients *or their rooms*, and I found at least one or two beds infested with disgusting vermin. I have no wish to throw any exaggerated blame on the infirmary nurse. It is simply impossible that she can supervise the nursing of a large workhouse hospital, and give at the same time close attention to the infirm and degraded among the lunatics." In another place the same inspector writes:—"All such patients should get a warm

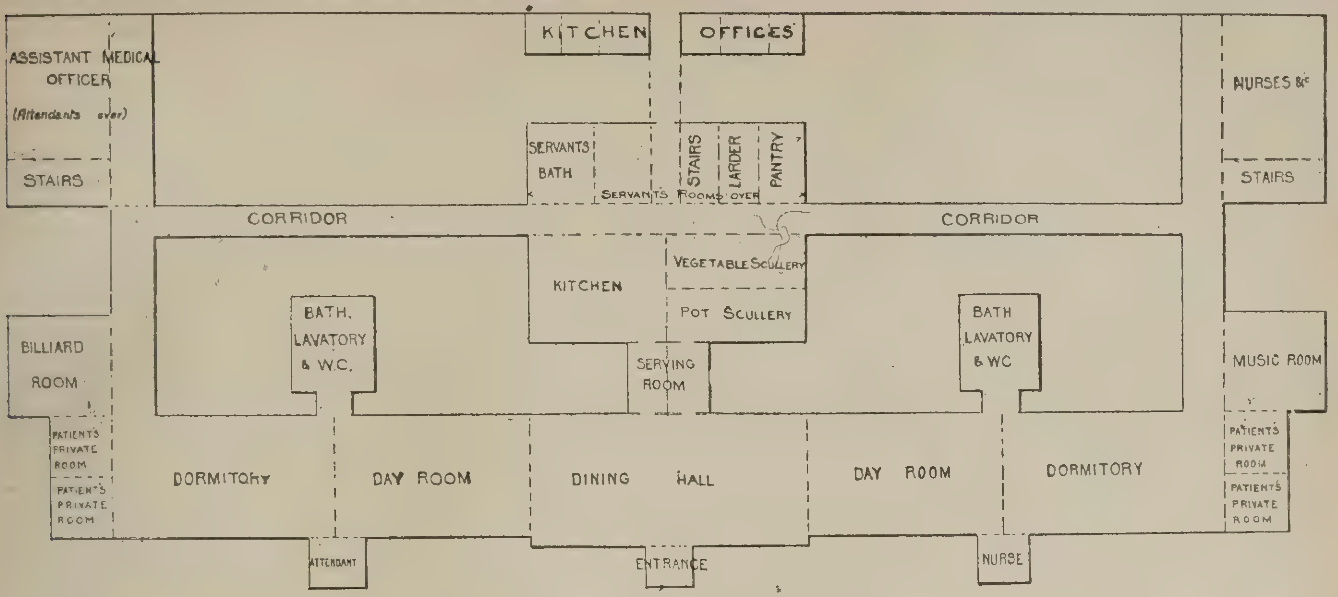


Fig. 15: MALES FEMALES

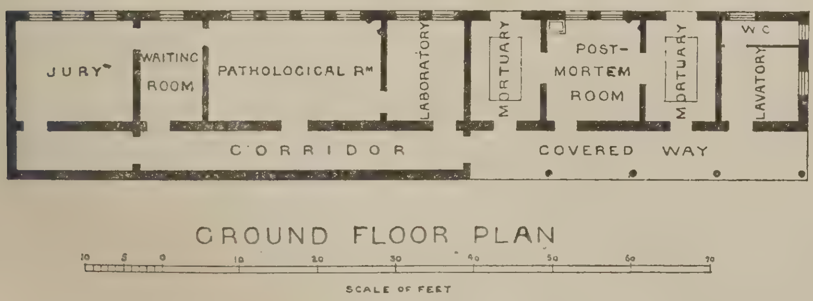
bath at least once a week; but one of the men told me that he had not had a bath during the five years he had been in the house!" I have before me a list of about eight workhouses, the lunatic wards of which have recently been reported upon, being infested with vermin, &c.; but many, or all, of the Irish asylums and workhouses are much overcrowded, and plans for their improvement and enlargement, and for the erection of new asylums, are in active progress, as, indeed, is the case generally in England and Scotland.

Returning to the subject of fever wards for the insane; the materials of which these are to be erected, the precautions to be observed in their construction, and the arrangements for heating and ventilation, would correspond usually with those generally adopted now in cottage or other hospitals of moderate size, and it is obviously due to the nurses of the fever wards that every precaution and care should be taken by the architect to provide all those conveniences and advantages for their well-being that can possibly be contrived, having in view the dangerous duties they may have to perform in the case of insane patients, who not only may be violent and suicidal, but also be suffering from very infectious and loathsome diseases, and requiring the closest and most careful attention both as to their bodily and mental condition.

The apartments requisite for the fever nurses are indicated upon Figs. 12 and 13 (an isolated block of two stories being therein shown). These provide arrangements for a hospital matron, nurses' sitting-room, kitchen, and offices on the ground floor, and bedrooms, &c., on the upper floor. It would be well to provide a small airing-court or inclosed garden for convalescent patients, which might be so arranged as to prevent the escape of patients on the one hand, and the too near approach to the fever hospital of those patients working upon the asylum estate on the other.

FEVER HOSPITAL, MORTUARY

Fig 16.



In many county asylums a certain number of private paying patients are received, and these are occasionally provided for in wards set apart for their use; but sometimes detached buildings (forming almost separate institutions) are provided within the precincts of the main asylum. These may be in the charge of a medical officer acting under the authority and direction of the medical superintendent of the main asylum, from which the stores and supplies would be derived. Occasionally these private patients have been lodged in the mansion purchased with the asylum estate. This has been the case at Claybury, in Essex, where one of the largest asylums in this country has been recently erected. The old hall left on the estate has been altered and arranged for the reception of a considerable number of private patients, and its proximity to so important an asylum will doubtless be of great advantage to the inmates. The apartments of the house are lofty, and the establishment very suitable for the purpose to which it has been converted. The estate is very beautifully situated, being well wooded, upon high ground, and in a very healthful locality.

At Denbigh, extensive additions to the North Wales Asylum are under consideration, and in this case it has been proposed to erect a detached building purposely for private paying patients (within a hundred yards or so of the main asylum). This institution is also placed in a magnificent situation, with charming views on every side of the distant mountains of Wales. It is badly planned in many respects, but the alterations and additions (which I believe are now in hand) will probably tend to bring it up to date.

In planning (in connection with a county lunatic asylum) the buildings to be occupied by paying patients, the accommodation may be upon a more liberal scale, as regards the areas of floor spaces, decorative and other matters, than the portions to be occupied by pauper patients. One or more dining-rooms for males and females, and under some circumstances possibly a few private sitting rooms may be provided; but every precaution must be observed to provide in all cases ample means of observation of the patients by the nurses and officers. Billiard and music-rooms, which should also be provided for in the main asylum, should certainly be provided here; but generally the amount of luxury and comfort supplied would correspond, to a certain extent, with the terms charged per patient, which may vary very considerably, according to the neighbourhood in which the asylum is situated, and whether the paying patients are from the town or country. In the former case the relatives of tradesmen patients may be only able to contribute a few shillings per week, and it is from this class I believe that the paying patients in county asylums are chiefly drawn.

The diagram plan, Fig. 15, exhibits the general arrangement of wards for the private paying patients. A large store-room and other adjuncts are not shown, it being understood that the supplies would be obtained from the general store-house of the main asylum, and that the whole would be under the supervision of its chief medical officer. The building would have the usual airing-courts for males and females, and residences for the servants, nurses, attendants, and medical officer (deputed by the superintending medical officer) having charge of this branch of the asylum work. And here it may be observed that the smaller the asylum the better it is for the patients (as a rule), and the greater their chances of recovery, for there is, of course, more individuality of treatment, and greater opportunities for the study of cases. On the other hand, there are some important advantages connected with large asylums, the equipment being more complete. Many things are here provided for periodical use only, and if small numbers of patients are brought together, many matters cannot be provided on account of their costliness; and in large asylums a greater variety of attendants, nurses, and officials can be afforded.

The mortuary and immediate approaches thereto should be in a building situated well out of the view of all the apartments occupied both by patients and attendants. It should contain two apartments for the bodies of male and female patients, placed on each side of a spacious and well-lighted post-mortem room, fitted with fire-stove, lavatory, and hot and cold water services. In some instances a pathological laboratory and museum are placed in the same building, where are preserved specimens, and where pathological and experimental studies are carried on. But some authorities prefer that the laboratory should not be near to the mortuary (which, if well placed, should be as far from the main asylum as practicable, and is therefore inconveniently situated for the medical officers). It would, upon the whole, be better placed if near to the residences of the assistant medical officers. There should be a skylight inclined to the north, giving ample light; there should be plenty of wall space for shelves, cupboards, and a sink with a hot and cold-water supply. (See Fig. 16).

In the mortuary building there may be added a waiting-room and jury-room, and it would be well to provide inspection-windows in the mortuaries, that the jurymen might be able to view bodies without the necessity of approaching those bodies that may have decomposed, and similar to those necessary in the case of the fever mortuary before mentioned.

Near to the pathological rooms may be an office for the use of the assistant medical officers, in which they would transact the case-book business, and where they would keep the various instruments, &c. (The dispensary is frequently used for these purposes, but is considered unsuitable.) In this office would be fitted, for surgical examinations, a weighing-machine, electric batteries, and various other appliances requisite for the investigation of the mental and bodily condition of patients. The photographic room, however, should be conveniently near to the receiving room, arranged for suitable lighting, and glazed with glass somewhat of a bluish tint.

(*To be continued.*)

THE SOCIETY OF ARCHITECTS.

A MEETING of this Society was held on Tuesday evening at St. James's Hall, Piccadilly, the President, Mr. E. J. Hamilton, occupying the chair. The following five architects were elected as members :—Messrs. J. A. Brand, Craigmillar, Avenue-road, Crouch End, N.; H. E. Clifford, 28, High-street, Watford, Herts; W. A. S. Ely, Bryntirion, Godfrey-road, Newport, Mon.; R. A. Lewcock, 88, Bishopsgate-street Within, E.C.; and R. S. Thomas, Menai Bridge.

The first portion of the meeting was a special one, the object being to confirm (or reject) the following resolution passed at the Annual General Meeting, on October 30th :—

> "That the following Article be added as Article 11A to the Articles of Association, to become operative on October 31st, 1896: 'Subject to confirmation by General Meeting, the Council shall select from time to time certain Examinations, which shall be deemed Qualifying Examinations for Membership of the Society; and Election to Membership shall be only open to Candidates, approved by the Council, who have passed any one of such Examinations, or an Examination held by the Society, with the following exceptions:—(*a*) Candidates who are not less than 35 years of age, and have been directly engaged professionally in architectural pursuits, as Principals, for at least seven years. (*b*) Candidates who are not less than 35 years of age, and have been directly engaged professionally in architectural pursuits, as Assistants, or as Assistants and Principals, for at least ten years."
>
> "That the first list of Qualifying Examinations selected by the Council be submitted to a General Meeting, to be called not later than March 31st, 1895."

The President formally moved the confirmation of this resolution. This was seconded by Mr. Ellis Marsland, and having been supported by Mr. G. A. T. Middleton, was unanimously adopted.

THE LONDON BUILDING ACT, 1894.

Mr. Ellis Marsland, hon. secretary, then read a paper on this subject, which we publish *in extenso* further on. The lecture was illustrated by numerous diagrams, sections, and plans drawn to a bold scale.

Mr. W. R. Mallett, in proposing a vote of thanks to the lecturer for his exhaustive and lucid exposition of the new Act, remarked that on the whole it seemed to be a very fair measure, many objectionable features of the original Bill having been pruned away in Committee. An important feature was the changed view of the Legislature as to what materials were fire-resisting. Iron and stone had disappeared from the schedule, and "oak, teak, and other hard timbers" were now named for the first time in that category. A useful amendment of the law was the legal recognition of the right to put footings on the adjoining owner's land. There was a considerable concession to art manifested; thus the dormers and gables, and bargeboards were no longer prohibited, the 4½in. reveal to windows was not compulsory, and sashes might be brought out flush with the wall, while buildings of historic or antiquarian interest might be restored to their pristine condition even if they infringed the letter of modern laws. He regretted that the Act still refused to recognise hollow-wall construction; the requirement that one of the two hollow walls must be of the full statutory thickness was in effect prohibitory. He should like to know if there were any annotated edition of the Act, and if it was true that the County Council proposed to publish a copy at a cheap rate?

Mr. Henry Lovegrove, district surveyor for South Islington and Shoreditch, in seconding the vote of thanks, pointed out that a change of some importance was that, whereas under the existing Building Acts any question affecting the laying out and width of streets and footways was left in the hands of the County Council; it was under the new Act delegated to the district surveyors, who would therefore need to study the clauses carefully. There seemed to be no power provided to prevent new and wide roads being opened into an old and narrow street. The provisions as to open spaces at the rear of houses were needlessly complicated and difficult, and would probably only be interpreted as cases arose. Of the tribunal of appeal, so far as it had been in operation, he could not speak too highly, and he was glad that its scope was enlarged. It was probable that the member to be appointed by the Home Secretary would be a barrister, and he regretted to hear that both the representative architect and the surveyor on the board—Mr. Arthur Cates and Mr. Driver—were at present in indifferent health. Among the desirable new features of the measure were those relating to artisans' dwellings in blocks set back from streets, and the separation, by thick floors and party-walls, of dwelling rooms from stables; and that underpinning, and thickening of walls in cement were now legally recognised. The new rules as to furnace shafts were also sensible additions to the Building Act. The exemptions of railway structures were not so clear as they should be, nor was the clause as to open sheds sufficiently explicit. As a whole, the Act was a step in the right direction, for it consolidated the law, it provided for the increased stability of buildings, and gave a larger allowance of air space to dwellings.

Mr. W. Allport supported the vote of thanks to Mr. Marsland, and observed that the definition of adjoining owner in the new Act should have been more clear. An omission was that no power was given to the adjoining owner to enter on the building owner's land to ascertain that the footings and underpinning of party-walls were being satisfactorily carried out.

Mr. G. A. T. Middleton thought some reference ought to be made to the work Mr. Marsland did as chairman of a special committee of the Society which sat two years ago to consider a Building Acts Amendment Bill then introduced by the late Government. The Bill was eventually withdrawn, but many of the recommendations suggested by the Society's committee, and to a great extent by their chairman, were closely followed in the present measure, and further amendments had been made in the present Act at the instance of the Council of the Society.

Mr. William Woodward thought the present Act was a great advance on the Bill as draughted. The Tribunal of Appeal was now able to deal with a greater number of disputes. He thought this tribunal would have been strengthened had a representative of the Institute of Builders been added to it. Again, whereas under the Bill the council proposed to acquire land at the expense of the unfortunate owner, it was in the Act agreed to give him compensation. Thirdly, the angle at the rear of the premises was improved, and the ground-floor buildings could now be carried to the rear of the site. They were all greatly indebted to Mr. Marsland for having given them so intelligible and comprehensive an explanation of this complicated Act.

The vote of thanks having been carried by acclamation, Mr. Marsland briefly replied. He believed that several handbooks to the new Act were about to be published, but none had as yet been issued. The County Council had decided to print a copy of the Act with their own by-laws for half-a-crown, whereas the official copy of the Act costs 7s.

THE SURVEYORS' INSTITUTION.

AT the ordinary general meeting of the above Society, held on Monday last at 12, Great George-street, a paper was read by Mr. A. Dudley Clarke (Fellow) on the subject of "The Incidence of Taxation on Land." The discussion on Mr. Clarke's paper, and on a paper somewhat identical in character, to be read at the meeting on December 10th, will be taken at that meeting.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION ELECTION.

A SPECIAL general meeting for the election of one pensioner and one orphan took place at the office of the institution, 21, New Bridge-street, E.C., on Wednesday, Nov. 28th, the President, Mr. Wm. Shepherd, occupying the chair. There were two candidates for the pension —viz., Mrs. S. A. Bennett and Mrs. S. Lovett; and two for the orphan vacancy—viz., Kate C. Hill, aged 9, and Helena M. Smith, aged 3. The poll commenced at 7 p.m., and soon after 8 o'clock, when the poll closed, the result was made known as follows :—For the pension, Mrs. S. A. Bennett 1,108 votes, and Mrs. S. Lovett 537 votes; for the orphan vacancy, Kate C. Hill 880 votes, and Helena M. Smith 494 votes.

The Chairman then announced that the successful candidates were Mrs. S. A. Bennett, who would receive the widows' pension of £20 per annum, and Kate C. Hill, who would be admitted in January next to the Orphan Working School, Maitland Park, per presentation of the Institution.

The scrutineers, Messrs. Ernest S. Rider, Thos. Stirling, jun., and H. W. Parker, were then thanked for their services, followed by a vote of thanks to the President for his kind attendance and occupancy of the chair.

THE LONDON BUILDING ACT, 1894.*

SINCE I last had the honour of addressing you upon London Building Law, the Bill promoted by the London County Council, which was then the subject of my paper, has passed into an Act, and comes into operation on the 1st of January, 1895. This has been done at a vast expenditure of time and money, and the opposition which it encountered in its progress through both Houses of Parliament has shorn it of a great number of its progressive—or, as some would have it, objectionable—features. One hears on all sides a considerable amount of gratification on the part of the various bodies who actively opposed the Bill at the success of their opposition in securing that their particular views were either added to the Act or some objectionable clause struck out; but it appears to me that if all these opposing forces are viewing their endeavours with such mutual satisfaction, we have now either a very perfect measure or a case of too many cooks. This, of course, remains to be seen. We, as a Society, although we did not actively oppose the Bill, have every reason to be satisfied with the result of the suggestions for amendment made to the London County Council, there being scarcely one which has not been incorporated. If we look at the Act simply as one of consolidation, it will be of immense advantage. There is, however, a good deal of fresh matter, and considerable changes will be caused in the carrying out of building operations, both to the builder and architect. The object of my paper this evening is to point out the more important variations from the old law. It will, of course, be impossible, in the limited time at my disposal this evening, to go through the whole of the new Act, so that I must necessarily presume that most of those present have an acquaintance with the present Act, so much of which is incorporated with the new, and it is my intention to point out only the new sections and subsections which will affect us as architects.

The Act is divided into sixteen parts :—Part I., introductory; Part II., formation and widening of streets; Part III., lines of building frontage; Part IV., naming and numbering of streets; Part V., open spaces about buildings, and height of buildings; Part VI., construction of buildings; Part VII., special and temporary buildings and wooden structures; Part VIII., rights of building and adjoining owners; Part IX., dangerous and neglected structures; Part X., dangerous and noxious businesses; Part XI., dwelling-houses on low-lying land; Part XII., sky-signs; Part XIII., superintending architect and district surveyors; Part XIV., by-laws; Part XV., legal proceedings; Part XVI., miscellaneous.

There are four schedules—the 1st dealing with the construction and thickness of walls, the 2nd detailing what are deemed to be fire-resisting materials, the 3rd being a list of fees payable to district surveyors and the council, the 4th containing a list of the repealed Acts.

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* By Ellis Marsland, Hon. Sec. Society of Architects, and District Surveyor of Camberwell. A paper read before the Society of Architects on Tuesday, Nov. 27, 1894.

In Part I. I would like to draw attention to some of the definitions in Section 5. The number is considerably increased. The expression "new building" means and includes—I., any building erected after the commencement of the Act; II., any building which has been taken down for more than one-half of its cubical extent and re-erected or commenced to be re-erected, wholly or partially, on the same site after the announcement of this Act; III., any space between walls and buildings which is roofed, or commenced to be roofed, after the commencement of this Act. It is important to bear this in mind, as should you desire to cover a space bounded on three sides by old buildings, you will have to ascertain that these walls meet the requirements of the Act and By-laws as to their thickness, foundation, and damp course. An alteration or addition to a building is brought within the operations of the Act by Section 209. The definition of a public building has been amplified, and includes an hotel, lodging-house, home, refuge, or shelter. If the building is of greater capacity than 250,000c.ft., or has sleeping accommodation for more than 100 persons, this latter clause will be somewhat difficult to interpret, as with only 100 beds the corridors, passages and landings, and flights of stairs need be only of wood; but with an additional bed, or with a double bed in place of a single one, the whole character of the building is changed, and what, with 100 beds could be constructed of wood, would with 101 beds have to be constructed of fire-resisting material under Section 68. The district surveyor would have to make a periodical visit to enumerate the sleeping accommodation, which possibly might be a somewhat difficult, not to say delicate task, as under Section 206: "Any building, structure, or work in any respect exempt from the operation of the Act, or in any manner privileged in respect of any provisions of this Act, shall remain so exempt or privileged so long only as it is used for the purpose or retains the character by reason whereof it is so exempt or privileged."

Part II. of the Act, which deals with the formation and widening of streets, and the position of new buildings with reference to streets, is mostly new matter. New roads or streets cannot now be formed, or ways adapted either for carriage traffic or foot traffic, without first applying to the Council, the application to be accompanied by plans and sections, and such other particulars as the Council may require. The Council may refuse to sanction the plans in the case of a new road or street upon the following grounds:—1, where it is not 40ft. wide, if for carriage traffic; 2, where it is not 20ft. wide, if for foot traffic; 3, where it is not open at both ends; 4, where it does not form direct communication between two streets; 5, where it appears that a street proposed for foot traffic only, should be used for carriage traffic as well; 6, where a street has an unsuitable gradient; 7, where a street is not in conformity with the by-laws; and in the case of an adapted road for carriage or foot traffic, upon the following grounds:—1, where houses or forecourts come within 20ft. of the centre, if the way is to be used for carriage traffic; 2, where a road for foot traffic only is not widened to the full width of 20ft.; 3, where such widening would result in the formation of a street not being open at both ends; 4, where such widening would result in the formation of a street not affording direct communication between two streets; 5, where it is proposed to widen a street for foot traffic only, and it appears to the Council that it would be better to widen it for carriage traffic as well; 6, where the widening would result in an unsuitable gradient; 7, where any of the Council's by-laws would be controverted. The Council are bound, however, to answer your application within two months, and if they refuse, must state fully all their reasons for such refusal. The Council also, if they deem it expedient in the public interest, and after notice of their intention to the local authority, may direct that a street, if not within two miles of St. Paul's Cathedral, shall be of a greater width than 40ft. up to 60ft., or a street may be widened more than the prescribed distance from the centre up to 30ft., provided that they pay to the owner compensation for the loss or injury sustained by him by such requirement. The position of new buildings, or the forecourts of new buildings, in old streets being highways, is limited to the prescribed distance from the centre of the roadway except by sanction of the Council; but the prescribed distance may also be increased up to 30ft., provided that the owner is paid compensation for any land given up above 20ft. If, however, an old building abuts upon a street, and the frontage comes within the prescribed distance, and it is desired to rebuild it, correct plans of the old building must be drawn and certified as correct by the district surveyor, and thereupon the site of the old building may be occupied by the new to the same extent, but no more. If, however, this is not done, the new building must be set back. There is one exception, and that is, that no dwelling-house to be inhabited by persons of the working class shall, without the consent of the Council, be erected or re-erected within the prescribed distance to a height exceeding the width of the street, and that no building or structure shall be converted into such dwelling-house within the prescribed distance, so as to exceed such height. This section, however, does not affect the frontage of buildings erected on any private road or way (not being a highway); but it must be borne in mind that if at any time it is desired to convert such a road into a highway, it cannot be done, except all projections within the prescribed distance, and erected after 1878, are set back. It should be noted that some of these restrictions do not apply to the City.

In Part III., dealing with lines of building frontage, the old rule is maintained, that no building or structure is to be erected beyond the general line of buildings in any street without the consent of the Council, such general line of buildings to be deferred by the superintending architect, who is to issue his certificate within one month of the application, and whose decision may be brought before the Tribunal of Appeal. You are not, however, prevented from advancing your frontage line without consent to within 50ft. of the highway if your forecourt in front exceeds this distance; but if by so doing you interfere with your neighbour's light and air, he has his ordinary common-law remedy. The Council, in giving their consent to any projection beyond the line of frontage, have power to attach certain conditions as to giving up land to be left open for the public use, or the particular use to which the projection is to be put, and generally any other condition which they may deem it expedient to impose in the public interest. The superintending architect is also to determine in any doubtful cases in what street any particular building or structure is situate, and which is the front and rear of buildings, but any person feeling aggrieved at his decision may appeal to the Tribunal of Appeal. It is also necessary to bear in mind that the whole of this Part III. of the Act does not apply within the City.

Part IV. of the Act, dealing with the naming and numbering of streets, is not of much interest to architects, and may be passed over.

Parts V. and VI. I propose to group together under three heads, viz.:—Additional open space, light, air, and ventilation about buildings, and other considerations of health. Additional means of safety from fire and panic. Additional structural requirements. The clauses relating to the open spaces about domestic buildings are the most complicated and important of any in the new Act. But if we bear in mind that there are three classes of conditions under which the open space is to be provided, it will help us considerably to a correct understanding of these Sections. Firstly, there is the open space to be provided to a domestic building erected *after the commencement of the Act*, and abutting upon a street formed *after the commencement of the Act—i.e.*, a new site and a new road. Secondly, there is the open space to be provided to domestic buildings erected *after the commencement of the Act*, on sites not hitherto built upon, but abutting upon a street laid out *before the commencement of the Act—i.e.*, a new site and an old road. Thirdly, there is the open space required upon the *sites of old buildings* abutting upon *old streets—i.e*, an old site and an old road. Under each of these three heads we have a preliminary requirement of 100sq.ft. for light and air to any habitable basement, which is to exclusively belong thereto, and be free from any erection thereon above the level of the adjoining pavement, which open space need not necessarily adjoin the rear boundary of the premises. Under the first of these conditions—i.e., a new site and a new road—the following additional open space in rear is required (provided the site is not a corner one or has a road in rear)—viz., 150sq.ft., which is to be provided at the adjoining pavement level and free from any erection, except a w.c. and receptacle for ashes. If, however, the ground story is not constructed or adapted to be inhabited, the open space may be at the level of the ceiling of the ground story, or a level of 16ft. above the level of the adjoining pavement. This is to allow a shop to extend over the whole of the ground story. This open space is to extend throughout the entire width, and to a depth in every part of at least 10ft., so that you see in a 20ft. frontage the minimum space would be 200sq.ft. The height also of the building in rear in relation to the space is to be determined as follows:—A horizontal line is to be drawn at right-angles to the roadway at the pavement level to the rear boundary of the site. At this point a diagonal line is to be drawn at an angle of 63½°, and no part of the building is to extend above the diagonal line, except chimneys, dormers, gables, turrets, or other architectural ornaments, aggregating in all to not more than one-third of the rear elevation of such building. There are other sub-sections dealing with cases where the front line of the site is not level, or where the site inclines towards the roadway, or where the building site is so irregular in shape that a doubt arises as to how the measurement is to be taken. In this latter case application is to be made to the Council, and if the applicant is dissatisfied, he may appeal to the tribunal. Where the land in rear of any such building abuts upon a street or public space, no open space in rear need be provided, and the diagonal line may start from the centre of the roadway, or at the further boundary of the public space. In the case of a building on a corner site abutting upon two streets, or upon a street on one side and a public space 40ft. wide on the other, the Council may permit upon application to them the erection of buildings not exceeding 30ft. high upon such part of the space in the rear as they may think fit, provided that the Council is satisfied that such buildings shall be so placed as not to interfere unduly with the access of light and air to neighbouring buildings. The applicant, however, if dissatisfied with the decision of the Council may appeal to the Tribunal. The return front of a corner site is allowed to be the full height of the front elevation for a distance of 40ft. Any exceptional case, owing to the irregular shape of the land, preventing the provisions of this Section being applied, are to be dealt with by the Council, and if the applicant is dissatisfied he may appeal to the Tribunal. In the case of a domestic building, and a stable in the rear, the front of the domestic building being upon a street, and the front of the stable upon a mews, and the depth of the site not more than 150ft., the stable may be 50ft. deep and 25ft. high, and the open space may be provided between the stable and the house, the diagonal line may start from the centre of the mews. Houses abutting upon the river Thames, or a public park, or on a public space of not less than 80ft. do not come under this Section. Under the second of these conditions, *i.e.*, a new site and an old road, the open space is determined in the same manner as previously explained; but the diagonal line is to start 16ft. above the level of the adjoining pavement, instead of at the level of the same (except in the case of dwelling-houses to be inhabited by persons of the working class). There is, however, an important modification of the rule with reference to buildings not being allowed to extend above the diagonal line. It is this: Any part of any domestic building may extend above the diagonal line, provided the Council shall be satisfied that an open cubic space of air will be provided at the rear equivalent to the open cubic space which section 41 provides; but it is open to this objection, that you cannot adopt it without the sanction of the Council, and if you are dissatisfied with their decision you have to go to the Tribunal. Under the third class of conditions—viz., old site on old roads—it is important to note, before commencing to erect a new domestic building you have to prepare plans showing the extent of the previously-existing domestic building in its several parts, and to submit them to the district surveyor, who is to certify the same under his hand. You may then erect the intended domestic building, but so that no more land shall be occupied by the new building than was occupied by the previously-existing building. If you do not submit plans as I have described, you are to be bound by the provisions herein before mentioned.

If, however, you wish to deviate from such old plans, you must apply to the Council, and if dissatisfied with their decision, go to the Tribunal. I should also like to draw your attention to Section 42, which deals with the open space to be provided to dwelling-houses to be inhabited, or adapted to be inhabited, by persons of the working class, not abutting upon a street. Before you can commence the erection of such buildings you must deposit at the County Hall complete plans of the same; then you have to wait one month. If in the mean time the Council offer no objection to them, you may proceed. If, however, the Council refuse to sanction them, or sanction them subject to certain modifications, you must submit or go to the Tribunal of Appeal. The Council, however, cannot refuse their sanction if the plans show as much open space as would be provided if the buildings abutted upon an old street. Under Section 44, should you desire to rearrange a cleared area previously occupied in whole or in part by buildings, and to form, lay out, or widen streets thereon, you have to apply to the Council and submit your plans, and the Council may, if they, under all the circumstances of the case, think it desirable, modify or relax any of the before-mentioned provisions as to open space. If they disapprove of the plans they must say so within two months, and if they do not you can proceed. If they disapprove, and you are dissatisfied, you can appeal to the Tribunal.

(*To be continued.*)

BISHOPSGATE INSTITUTE.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

WE illustrate to-day the Bishopsgate façade and plans, together with a view of the buildings and hall from Brushfield-street, of the new Bishopsgate Institute, which the Earl of Rosebery opened last Saturday, the 24th inst. This is one of the three educational and recreative institutes (the others being those of the St. Bride's* and Cripplegate† foundations), which the City of London Parochial Charities Act of 1883 has brought into existence. The charities of the parish of St. Botolph, Bishopsgate (which date from 1481), were, previous to the Act, administered generally for parochial purposes of the usual character. A scheme was, however, prepared by the Charity Commissioners early in 1891, which reorganised the endowments, and from the surplus provided for the establishment and maintenance of an institute "for the purpose of a free library and other purposes" specified in the scheme. The parish trustees, prior to the approval of the scheme, but in anticipation of its establishment, acquired at a cost of £29,000, a site with frontages to Bishopsgate Without, Brushfield-street, and Duke-street, for the erection of the proposed Institute. On the scheme coming into effect the governors of the new foundation invited designs for the building. In the selection of the competing designs the governors were guided by the advice of Mr. J. MacVicar Anderson, then President of the Royal Institute of British Architects; and, finally, those submitted by Mr. C. Harrison Townsend, F.R.I.B.A., of 29, Great George-street, Westminster, were accepted. The treatment of the site was found extremely difficult, owing to the fact that it was surrounded (with the exception of three narrow frontages to streets) by properties claiming rights of light and air. This has prevented the carrying up of the building to any considerable height. The main elevation in Bishopsgate is constructed of buff terracotta, the modelled work being by Mr. W. Aumonier; the fronts to Brushfield and Duke-streets are of red brick with terracotta facings. Over the main entrance are the board-room and clerks' room. The vestibule and a wide corridor give access from Bishopsgate to the large hall, 80ft. by 40ft. wide, and 42ft. high, which, in addition to providing for public lectures and entertainments, is intended on occasion to serve as a picture-gallery. With this latter purpose in view, the lighting has been kept as high as possible, and is mainly by means of a ceiling-light. The hall, which has no gallery, is estimated to seat 528 persons. It has large platform accommodation, at the rear of which are the necessary retiring-rooms, &c. When finished, it will contain a large organ (blown by hydraulic power). The arrangements for exit in case of fire or panic are of a very complete character. The three swing-doors of the hall (each 10ft. wide) open either on to the vestibule (12ft. wide) leading to Bishopsgate, or on to the straight corridor (10ft. wide, and without piers or other projection), by which direct and immediate access is obtained to Brushfield-street. The external doors in all cases open outwards, and are fitted with automatic bolts. Behind the hall is the library block. For convenience of administration, this and the hall block form one building, being connected by means of a wide corridor. When the hall is in use for the purpose of a meeting, the library block will be separated from it by double fireproof iron doors. The library consists of basement, ground and first floors. The bookbinding, repairing, and labelling shops, and a store for surplus volumes, are in the basement, and are all lofty and well-lighted rooms. The ground-floor is occupied by the reference-library and the lending-library. It is believed that all possible quiet has been secured for the reference-library, which has, with this object, been placed in the centre of the building, and farthest from the noise of the traffic in the adjoining thoroughfares. On the first floor (which is reached by a wide staircase of solid teak) is the newspaper and magazine reading-room. The fittings of the reference and lending-libraries are in English oak throughout, and have been supplied (as were all the library fittings) from the architect's designs by Messrs. W. H. Lascelles and Co. Shelving is arranged for 20,000 volumes, but provision for a much larger number can be made from time to time, as the extension of the library requires. The fittings of the reading-room on the first floor are in walnut. Here accommodation has been arranged for about 220 readers. It has not been thought desirable to provide special rooms for either boys or women; but a separate table has been set apart for the exclusive use of the latter. The room of the librarian-director is on the ground floor between the reference and lending-libraries, and by means of the staff stairs immediately adjoining his room he is placed in ready communication with book-stores, lending-library, and reading-room. The issue of books in the reference library will be conducted on the usual lines, but in connection with the lending-library the fittings have been arranged with a view to an experiment on a large and complete scale of a system which has been tried in a partial and tentative manner in some of the public libraries in London and elsewhere. According to this, borrowers are allowed to choose their own books directly for themselves from the shelves, without reference to a catalogue or the intervention of an attendant, except for the purposes of registration. The librarian director, Mr. R. W. Heaton, on whose recommendation the system has been adopted, believes that it will, with the co-operation of the public, be an undoubted success. It is obviously one which will be of great convenience and help to readers, and Mr. Heaton looks to it, more than to anything else, to help in reducing that undue borrowing of works of fiction in preference to other literature, of which librarians in general complain. The two main staircases are of solid teak, and the floors of the hall and library are laid with Goddard's patent oak-block flooring. The walls of the corridors and staircases are lined with enamelled tiles, and the floors of the vestibule, corridors, and landings are of marble mosaic. The floors throughout are fire-proof, and were constructed on Messrs. Homan and Rodgers's system. The building is heated by radiators on the system of Messrs. Ashwell and Nesbit, by which the fresh air is adequately warmed before it enters the rooms. The foul air is carried away by exhaust flues fitted with gas-jets. We hope at an early date to publish an interior view of the great hall which forms the main feature in the entire range of buildings, and makes in every way a worthy addition to the many admirable halls in the city of London. The erection of the building was begun in May, 1893, and since the failure of the original contractor the work has been continued by Messrs. John Mowlem and Co., of Grosvenor Wharf, Millbank, Mr. Thomas Lee acting as clerk of works.

DANGER OF MECHANICAL VENTILATION.

THE second part of "A Danger to Public Health," reprinted from the *Local Government Journal*, resumes the subject of mechanical ventilation, particularly on the down-draught principle by impulsion. A letter on the subject, which appeared in our pages lately, appears on the front page, in which the author pointed out the manner in which this system of ventilation had been "boomed" in America, and had been promoted by syndicates; and why? Because it is an expensive system, and implies a larger commercial profit. Whenever the mechanical system fails, it is easy to say that it is owing to defective apparatus, or that it has been unscientifically applied. We know, of course, the value of such assertions when they proceed from interested parties. The failure of the mechanical ventilation of the Houses of Parliament and the inadequacy of the warming and ventilating arrangement of the New Law Courts are matters which receive attention, both of these being based on the mechanical method by impulsion. Several quotations from sanitary authorities appear, notably the recent report on the failure of the ventilation of the Houses of Parliament, to which we lately referred. An enormous volume of air, equal to ten times the cubic contents of the House of Commons, is passed through it every hour, and notwithstanding this, and the boasted air analysis, the ventilation is very bad. These data cannot be accepted as evidences of good ventilation. Air screens are useful when the air is drawn through by extraction, but when it is forced in under pressure the screens cannot act as they otherwise would. The natural system allows the air to become diffused, whereas the propulsive method blows the air through. A very graphic representation is shown of the manner in which buildings with galleries ventilated with the mechanical downward system, suffer from the contamination of the descending current of fresh air by the products of respiration and combustion from the galleries. Those seated in the area are compelled to inhale the respired air from those in the galleries, as the foul-air exits in the walls at floor level cause the poisoned air to traverse across the faces of the people to those openings. Thus the system stands self-convicted of mischief. This is shown in U.S.A. Government Report to Congress, in which it is condemned *in toto*.

Readers interested in this matter will do well to note Mr. Keith D. Young's remarks in his paper read last Friday before the Architectural Association, together with the remarks of Messrs. Graham, Gordon Smith, Fardon, and others in the subsequent discussion, and reported on another page.

CHIPS.

The Madron local board and urban sanitary authority have appointed Mr. J. Wm. Trounson, F.S I, of Penzance, their surveyor, and given him instructions to forthwith prepare the necessary and required plans for the proposed water supply and sewerage scheme for Heamoor district.

The council of the Society of Engineers have unanimously elected Mr. S. Herbert Cox as one of the vice-presidents, in the place of Mr. Henry Faija, deceased, and Messrs. Henry O'Connor and William Bradford as members of council.

The Oldham Masters and Operative Painters' Association recently waited upon the school board of that borough asking them as far as practicable to let the contracts for painting during the winter months. It had been complained that in other towns where this course was adopted, so as to provide indoor work for the men during the slack season, the cost had been greatly increased; but the Oldham board have decided, as an experiment, to have two schools painted and whitewashed during the Christmas holidays.

Dr. Tsoundas has just finished his excavations in the prehistoric necropolis of the Island of Amorgos. About twenty *tholos* tombs were discovered containing grave goods, consisting of terracotta vases, lance-heads, fictile *figurini*, and one *figurino* in marble of very ancient and pre-Hellenic character.

An examination of master and operative plumbers was held on Saturday at the Borough-road Polytechnic. Candidates were present from London and the district and many provincial towns. Twenty per cent. of the masters and 25 per cent. of the operatives passed the full examination, which included sundry practical tests.

It had been arranged that the inauguration of the new water supply to Colwyn Bay, which is drawn from Cowlyd Lake, above Llanrwst, should be made the object of a public demonstration on Friday, the local committee having asked Mr. Gladstone to perform the ceremony. He, however, declined to do so, and the ceremony stands adjourned. The works have been carried out at an outlay of about £35,000, Mr. Farrington, C.E., borough surveyor of Conway, being the engineer in charge of the scheme, and Mr. Bugbird, Carnarvon, the contractor.

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* Illustrated in the BUILDING NEWS, Nov. 17, 1893.

† Illustrated in the BUILDING NEWS, July 6, 1894.

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ILLUSTRATIONS.

THE BISHOPSGATE INSTITUTE.—HOLBEIN DRAWINGS FROM WINDSOR CASTLE.—NEW BOARDING SCHOOL, WEST FOLKESTONE.—HOUSE AT HOOK HEATH, SURREY.—THE MALLYON SPOUT HOTEL, GOATLAND, YORKS.—TOUR DE L'HORLOGE' DINAN.—THE JOHN KNOX CHURCH, NEWCASTLE-ON-TYNE.

Our Illustrations.

BISHOPSGATE INSTITUTE.

(See descriptive article on page 748.)

HOLBEIN DRAWINGS FROM THE WINDSOR COLLECTION.

Hans Holbein's magnificent iconic drawings in the superb series at Windsor Castle almost alone establish his pre-eminence as a delineator of physiognomy and character, and there can be no doubt that his highest claims to fame really rest upon his unrivalled achievements as a portrait painter. He was, however, of course, employed as a wood engraver and as a glass painter, besides painting large decorative works, and he also designed jewelry and goldsmiths' work, more particularly before he came to England in 1526. It was under the patronage of Sir Thomas More that he was introduced to many distinguished persons, and painted, amongst others, a portrait of Archbishop Warham, besides his patron, Sir Thomas More, the great Chancellor. Subsequently he became engaged permanently in the service of Henry VIII., and by painting the likeness of Anne of Cleves is said to have largely assisted the decision of the king when that worthy ventured upon a fourth inauspicious marriage. The big picture of King Henry and the Court of the Barber Surgeons' Company receiving the Charter of its reconstitution was commenced about 1541, and still hangs in the Court-room of that Livery in Monkwell-street, E.C. "The Ambassadors," now in the National Gallery, is another of Holbein's chief works; it was painted in the year 1533. His exquisite drawings at Windsor, and those collected at Basle, with a few similar studies scattered elsewhere, afford the best idea of Holbein's masterly insight and ease of draughtsmanship, marked as it is by force united with delicacy, at once free from all trace of mannerism or crudity of conception. We are enabled to reproduce to-day two of these transcendent drawings from the beautiful series of photographs, which Mr. Fredk. Hollyer, of Pembroke-square, has taken direct from the originals, by permission of the Queen. The first of these is the portrait of John More, son of the Chancellor, and the other is a portrait of Archbishop Warham of Canterbury.

PRIVATE BOARDING SCHOOL, WEST FOLKESTONE.

Built for Mr. Edmund Stow Thompson's first-class boys' school, these new buildings occupy one of the best sites in Folkestone, the sand cliff behind sheltering them from the north and north-east winds, while their height above the sea gives a very fine range of view over Sandgate Bay. They include a school-house for about forty-five boarders, with lofty school and class-rooms, assistant masters' and matron's quarters, the boys' dormitories being partly fitted with cubicles and partly for open beds. The principal's private house occupies the west block, which has direct communication with the schoolhouse on three floors. With the exception of the matron's sitting-room, every dwelling-room in both blocks has a sunny aspect. Severely plain as the building is, it is substantial. Great care has been devoted to the ventilation and sanitary system in all its branches. The half-timbering is in deal left from the saw, and treated with carbolineum prepared by Messrs. Peters, Bartch, and Co. The cost has been at the rate of 6¼d. per foot cube, including all permanent fittings, and has been carried out by Messrs. Hayward and Paramor, of Folkestone, under the direction of Mr. W. Howard Seth-Smith, F.R.I.B.A., of London, Mr. Walter Mitchell acting as clerk of works.

HOUSE AT HOOK HEATH.

This house, near Woking, Surrey, stands on high ground overlooking the valley behind Guildford. It is finished externally with rough-cast and tile hanging, the builder being Mr. Kimberley, of Banbury. The architect is Mr. Horace Field, of 246, Regent-street, W. The drawing was in this year's Royal Academy.

THE MALLYON SPOUT HOTEL.

This is a quiet and homely little house, and is built near the picturesque moorland village of Southland, for the accommodation of tourists and sportsmen. The walls are of local stone, with metal casements, leaded glazing, and red-tile roofs. Mr. Barnes, of Malton, did the mason's work, and Mr. Yearsley, of Pickering, the joiner's work. Messrs. Demaine and Brierley are the architects.

TOUR DE L'HORLOGE, DINAN.

The Tour de l'Horloge, one of the most picturesque bits in an exceedingly interesting old town, stands nearly in the centre of Dinan, not very far from the church of St. Sauveur. It dates from the 15th century, and was at one time the place of meeting of the municipality. The view from the gallery is very fine and extensive. The clock, which for nearly four hundred years has told the march of time from this tower, was a present from the Queen-Duchess, Anne of Brittany, to the town of Dinan in 1507. Engraved on the bell is the following inscription:—

> "Anne, pour vray je fus noumée
> En l'an mil cinq cent sept,
> Des nobles de la ville noumée
> Tierce de ce pays en effet.
> Je fus en celui au fondue
> Au mois d'aoust par Phlipes Bufet.
> Et de bon mestal bien randue
> Du poys de six mille et sept."

F. H. Cheetham.

JOHN KNOX PRESBYTERIAN CHURCH, NEWCASTLE-ON-TYNE.

The new Presbyterian Church for the accommodation of the congregation lately worshipping in the old church in Clayton-street is being erected on a fine site on the Beech Grove Estate, at the corner of Elswick-road and Beech Grove-road. The church is arranged on a novel principle never previously introduced in this district, the plan being of a horseshoe shape, the congregation entering through a covered porch, then through a large inclosed vestibule into a corridor leading right and left round the curved end and the sides of the church. From this corridor there are six doors leading to the aisles communicating direct with the seating. Above the surrounding corridor, and projecting a very little way over the ground-floor seating, is placed the gallery, thus producing a galleried church with none of its defects, and concentrating the congregation around and near the pulpit. This also obviates the necessity of anyone sitting in a twisted position, as each person directly faces the minister, the floors also sloping gently towards the pulpit. The staircases to the gallery go right and left from the main entrance vestibule, and ladies' and gentlemen's cloak-rooms are also provided at each side of the vestibule. Behind the pulpit is a large recess for the organ, with a similar recess at the opposite end, thus breaking the monotony of the square of the church, which is roofed in one span of 58ft. In convenient proximity are arranged the minister's vestry, sessions vestry, large assembly hall, 58ft. by 39ft., with gallery at one end, and six class-rooms, divided by movable partitions. On the upper floor there is a second hall, 38ft. by 17ft., and on the ground floor a third one, 28ft. by 17ft., a library, ladies' sewing-room, tea-kitchen; and underneath the large hall, owing to the steep fall of the ground, there is planned a large gymnasium. A caretaker's house is also provided. A separate entrance is arranged to all these rooms from Elswick-road and Beech-grove, with interior communication throughout. In a plan of this nature it is almost impossible to adopt the Gothic style, and the building has, therefore, been designed in Classic, somewhat of the Doric order. A square tower rises at the main corner next Elswick-road to a height of 70ft. The entrance portico is treated with columns and balustrade over, and the side next Elswick-road is spaced out with pilasters, architraved and pedimented windows, heavy cornice and balustrade over. The building is constructed of stone from the Prudham quarries, the filling-in being with self-faced blockers, and the facing polished ashlar. The interior will be finished in plaster, with pilasters, cornices, and coved ceiling; the woodwork will be yellow pine stained to a brown oak colour, and wax-polished. The heating and ventilation are receiving special attention. Fresh air is admitted underneath the church through a hemp screen, to clear it of impurities, with a jet of water playing on the screen to keep it damp and cool. It is then passed over hot-water pipes underneath the building, and admitted to the church through each seat-end on the ground floor; the vestibule and surrounding corridor being also warmed by hot-water pipes, so that any inlet of air from this to the church will be warmed, and free from draught. The several cloak-rooms, vestibules, and hall are similarly warmed by the circulation of hot water on the low-pressure system, from boilers in heating-chamber in basement. The air is extracted from the higher part of church by means of an extract-fan, placed in the upper part of tower. It is intended to illuminate the church by the electric light. The amount of the contract for the several buildings is about £8,000. The portion of the work already executed, comprising the halls, class-rooms, vestries, &c., has been carried out by Mr. G. H. Mauchlen, contractor, Newcastle, and the church, cloak-rooms, and tower are now being built by Mr. Alex. Pringle, contractor, Gateshead. The duties of clerk of works have been undertaken by Mr. Nicholson, and the whole building has been designed by Mr. W. Lister Newcombe, F.R.I.B.A., of Newcastle-on-Tyne.

CHIPS.

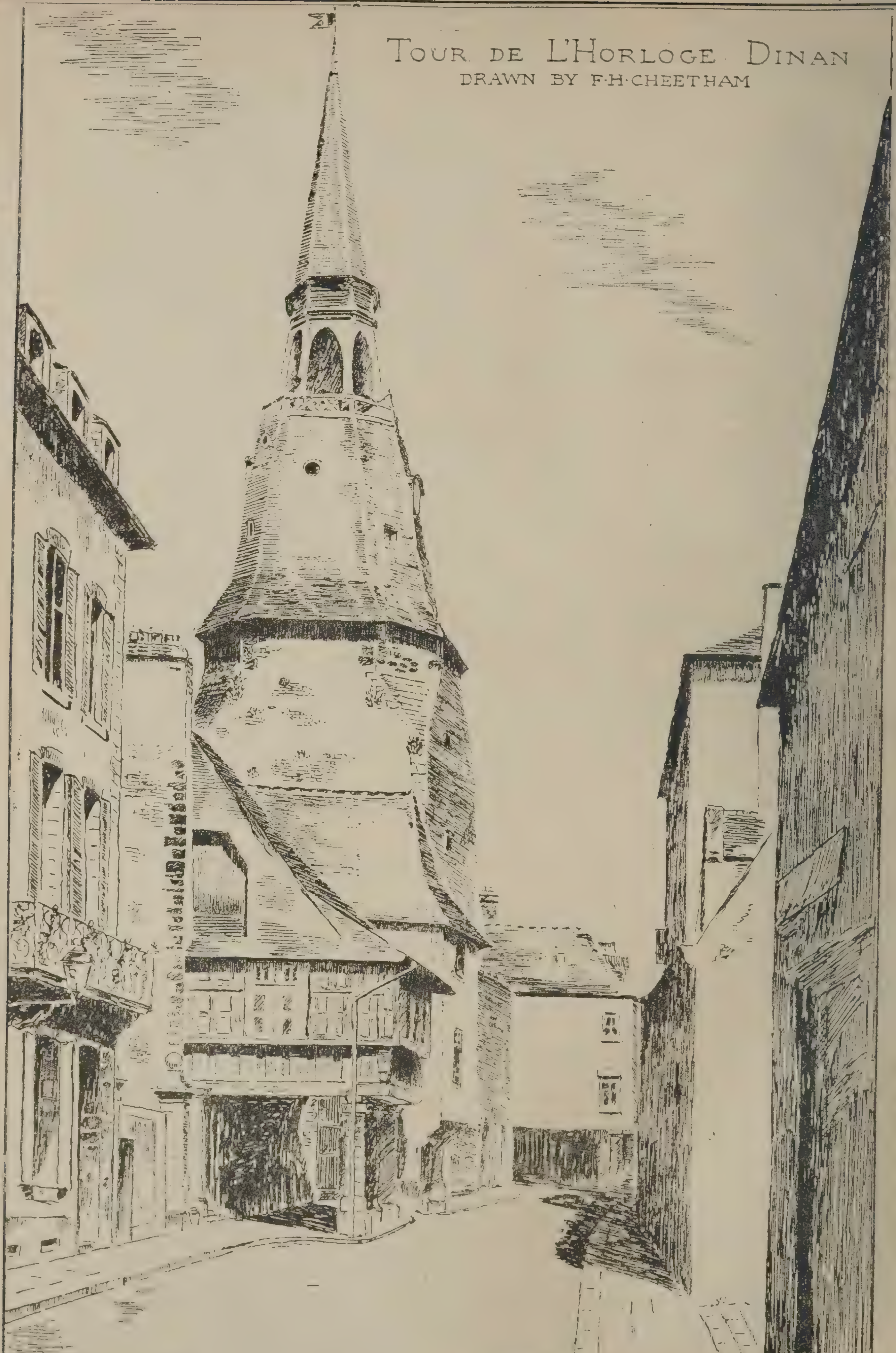
The new schools at Nantymoel are being warmed and ventilated by means of Shorland's patent Manchester grates, stoves, and patent exhaust roof ventilators, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

At a meeting of the Easington Union Rural Sanitary Authority, held on Monday, Mr. D. Balfour, M.Inst.C.E., F.G.S., Newcastle-on-Tyne, was instructed to prepare plans for schemes of water supply for villages of Castle Eden and Wingate.

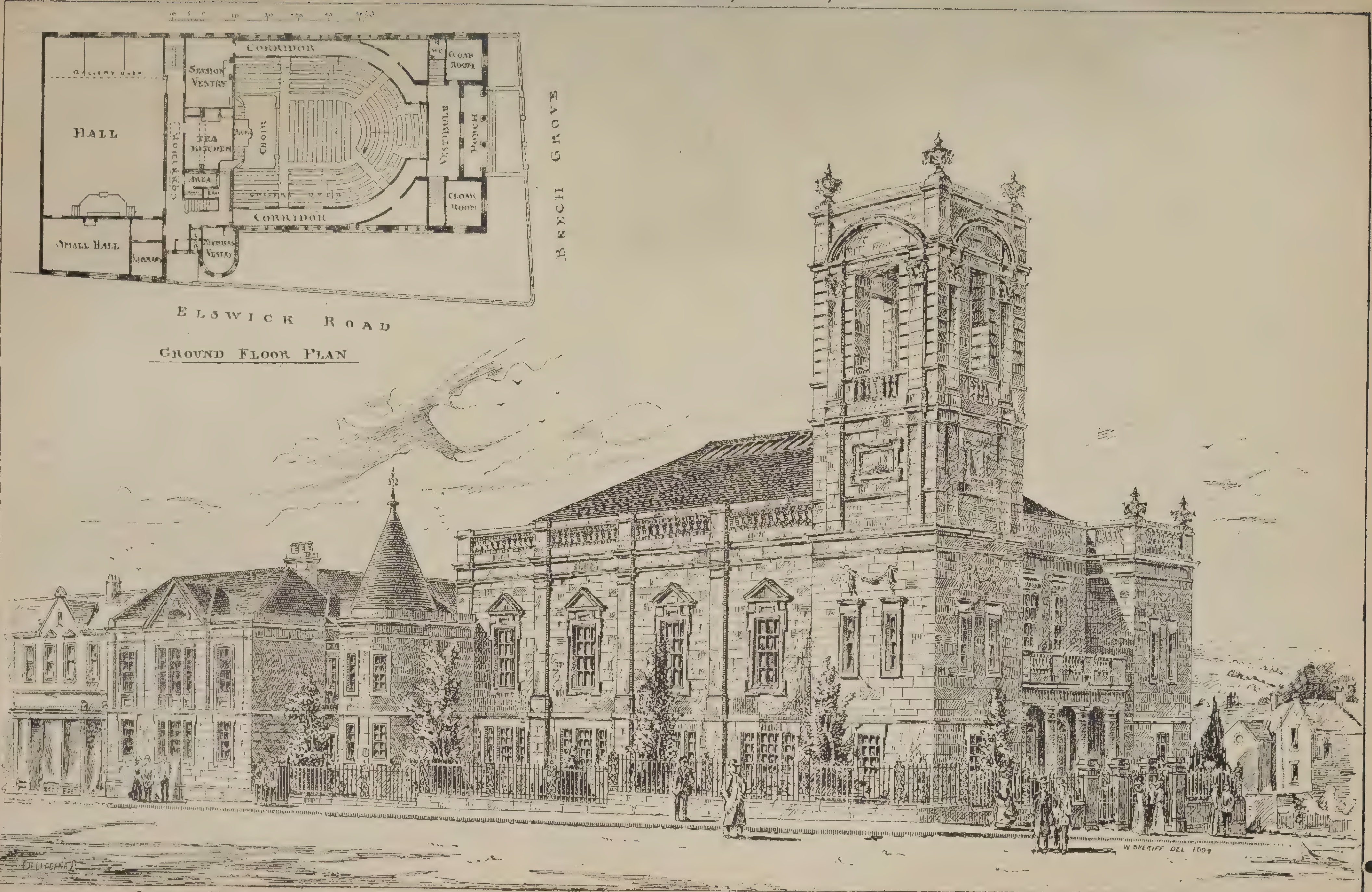
St. Anne's Church, Aigburth, which has been closed for a considerable period for the purpose of extensive restoration, was reopened on Saturday. The church was built in 1836 at a cost of £4,328. The galleries and pews have been removed, the church refloored, a new baptistery erected, a central entrance constructed, the organ removed from the end gallery to the south transept, a large choir vestry erected, stained-glass windows provided, &c. These improvements have been effected at a cost of over £2,000. Mr. Charles E. Deacon, of Liverpool, was the architect.

New casual wards are now being erected at Poplar Workhouse, and special consideration has been given to the ventilation, which will be carried out on the Boyle system, the latest patented improved form of the self-acting air-pump ventilators being adopted for the extraction of the vitiated air.

The sanction of the High Court has been obtained to the promotion of a Bill, next session, with reference to the Liberator Building Society's buildings, now in course of completion, between the Strand and the Thames Embankment. Under the powers to be inserted in the Bill, Parliament will be asked to authorise a widening of that portion of the Strand facing the Embankment-buildings between Ivy Bridge-lane and Carting-lane. The scheme will include the widening of Carting-lane from the Strand to the rear of the Savoy Theatre, and also the entire discontinuance for public use of Salisbury-street and Cecil-street. The cost of these improvements, and the cost of passing this Bill through Parliament will be borne by the liquidator to the Liberator Building Society and J. W. Hobbs and Co., Limited.



TOUR DE L'HORLOGE DINAN
DRAWN BY F·H·CHEETHAM



JOHN KNOX PRESBYTERIAN CHURCH NEWCASTLE-UPON-TYNE - W. LISTER NEWCOMBE FRIBA ARCHITECT

WAYSIDE NOTES.

Several structural alterations are just now in progress at the House of Commons. A few are for the accommodation and convenience of pressmen, whose writing and smoking rooms have long been defective. But the majority of the changes are below stairs in places set apart for the use of legislators. One part of the scheme is to provide an additional dining-room, as well as to enlarge the kitchens; but, in addition to these extensions, there has to be a new smoking lounge for members, a series of hot and cold baths for variable weather, and a couple of apartments in which ordinary attire may give place to evening dress. The effect of the renovations will be to increase the claim of Westminster to be called "the best club in London." With that object in view, it can hardly be said that £14,000 is a high price to may for such a distinction. But what a struggle there will be for the right of entry when members are paid for going there, and when no preliminary expense need deter the humblest amongst us from seeking admission!

The public works of New Zealand are now conducted on the co-operative principle. When a railway or highway of any kind is to be constructed, a Government engineer makes a survey and an estimate of the cost. Upon the basis of this estimate the work is given in small sections to gangs of men, who each receive an equal proportion of the money earned. There is no calling for public tenders, thus dispensing with the contractor altogether, whose profits, if any, are distributed among the men. The Government supplies tools and necessary material, if the men are unable to do so, charging first cost only for whatever is supplied in this way. The work is conducted under the nominal direction of the Government engineer, whose duty is to give measurements and levels, and generally to see that the work is properly done. The men, I hear, work very hard, and earn good wages. They pocket the profits that go to the contractor under the old system, and the Government, it is alleged, gets the work done at no greater cost than formerly. I should like to hear from some New Zealand reader whether it is true that the co-operative system has given great satisfaction, and has to a large extent solved the problem of the unemployed in New Zealand.

With reference to the question of Sunday opening of museums, the action of the Trustees of the Soane Museum in Lincoln's Inn, in deciding to open that institution next Sunday afternoon is not without significance, and it may be looked upon in the light of a tentative measure. I hear that Sir B. W. Richardson, who is one of the trustees, undertook to be on duty at the museum for the occasion; and it remains to be seen to what extent the public will take advantage of the opportunity to view the house and collections of Sir John Soane. Among the contents are the celebrated series of Hogarth's pictures of "The Rake's Progress," while the library contains the first three folio editions of Shakespeare and an original MS. of Tasso's "Gerusalemme Liberata." The majority of the exhibits are too well-known to most readers of this journal to need recapitulation; but there are probably some who have never been inside the doors, and may care to pay the museum a visit on Sunday.

Small holdings are making slow but satisfactory progress in the county of London. Frequent applications now come in, and a new site has just been selected, 10½ acres in extent, at Perry Rise, Catford, which will shortly be laid out in plots. It is anticipated that the rents received from the tenants will cover the whole of the outlay to which the London County Council will be put in securing the lands under the Small Holdings Act of 1892, and in rendering it suitable for the purpose for which it is to be used. The progress of the experiment will be watched with interest, for the Metropolis is scarcely the place which might have been thought best suited for its trial, owing to the abnormal value of land within the London area. The Council appears satisfied, however, after the full investigation demanded by the Act of 1892, that small holdings are both desired and desirable in the capital; and time will show how far this estimate is correct.

The City Commissioners of Sewers, in their capacity of the Burial Board for the City, came to a resolution some time ago to erect a crematorium at their cemetery at Ilford. They have rescinded that resolution, as they have discovered that it cannot be carried into effect without a private Act of Parliament, which would entail an expenditure of £400 or £500 if the Bill were unopposed, but otherwise might cost as many thousands. It does not appear that there is any change in the ideas of the commissioners as to the sanitary importance of cremation. But it is an illustration of the extent to which a reform of Parliamentary procedure is necessary when a public body cannot erect a crematorium without being compelled to squander money freely on the elaborate machinery of highly-paid Parliamentary barristers. Why, in the midst of all our legislation about local government, and our cry about the necessity of devolution, should not the City Corporation be able to erect a City crematorium? The City is much more advanced in many matters than many of its loud-mouthed detractors.

Lieutenant-Colonel Ford has give notice of motion, "That it be referred to the General Purposes Committee of the L. C. C. to consider and report on the feasibility and desirableness of securing a supply of sea-water for London." In point of fact, a measure embodying a similar scheme was brought before Parliament and actually passed in the House of Commons some fourteen years ago; but, on account of the cost involved, the project came to nothing. The contention now is that of the existing water supply vast quantities are thrown away for cleansing sewers, keeping the streets in good condition, and other such purposes, only an infinitesimal amount, in proportion, being utilised for consumption, and there is a growing feeling that the time will come when the supply will altogether fall short of the demand. The details of the scheme have not yet transpired; but it has been suggested that salt-water could be pumped into a reservoir some twenty miles distant from London, where land is cheap, and thence brought to the City. The supply thus procured, could be furnished to the various district authorities at very cheap rates and used for many purposes.

A considerable clearance of ground has been taking place around Guildhall. On the Basinghall-street side the old "Chamber of London" is removed to make room for the better accommodation of the Commissioners of Sewers and their staff; and, in Aldermanbury several old houses that have been occupied successively by the Guildhall School of Music and by the Town Clerk's and City Architect's Departments are nearly cleared away, leaving open a large site the particular utilisation of which has not yet been decided on. Perhaps the City authorities mean to leave it vacant for the benefit of the coming new Corporation? I should prefer to see it dealt with by the old one. Whatever else may be said against it, the City of London is far and away ahead of the London County Council in the business-like character of all its architectural and sanitary undertakings.

There are few things pleasanter than a good band of music in a pretty park, and the members of the London County Council are well employed when they give attention to the subject. But the London correspondent of the *Newcastle Daily Chronicle* sensibly enough remarks, that the members of that august body should not make themselves ridiculous. They want £8,500 for bands next year, and they propose that the men should play in diminutive gardens as well as in spacious parks. To a certain extent this is also a commendable move, especially when the selected site is big enough for the purpose. They should be careful, however, not to waste public funds over absurdities. For nearly a year one of the gardens on the Thames Embankment has been partially closed to visitors, owing to the fact that a very ornate music platform was in course of erection. At a moderate computation, the structure now occupies one-sixth of the whole inclosure—the other remaining to be trampled down when the performances begin. Yet for this injury to a "Metropolitan oasis" the ratepayers have had to spend several hundreds of pounds—presumably for the delectation of the members of the London School Board, for no one else will ever be able to listen to the music with any comfort.

OBITUARY.

Mr. Septimus Oswald, architect, of Newcastle-on-Tyne, died at his residence, Brightside, Granville-road, Jesmond, on Monday, aged 71 years. He was widely known and highly esteemed in the district. He was a native of Gateshead, served his time with Mr. Andrew Oliver, architect, Collingwood-street, and afterwards he was in the employment of Mr. Henry Welsh, surveyor for the county. Mr. Oswald subsequently commenced business for himself, having his offices first in Mosley-street, then in St. Nicholas Buildings, and afterwards again in Mosley-street. His only son, the president of the Northern Architectural Association, and a member of the Council of the Royal Institute of British Architects, became a partner, and of late has in a great measure carried on the business himself. For the last twelve months the deceased had been unwell, and for some time had been unable to leave his house.

Mr. Henry Roe, formerly the head of a well-known firm of Dublin distillers, died in London on Wednesday in last week, aged 68 years. Impressed by the example of the late Sir Benjamin Lee Guinness, the father of Lords Ardilaun and Iveagh, who restored St. Patrick's Cathedral, Dublin, at a cost of £150,000, he conceived the idea of rescuing the sister cathedral of Christ Church from the decay into which it was falling, and placed the work in the hands of the late G. E. Street, who had a free hand to execute it in accordance with his own views. The cathedral was reopened in 1878. Mr. Roe also commissioned Mr. Street to design a synod house for the clergy in architectural harmony with the cathedral. These undertakings involved an outlay estimated at £200,000, and, a turn in the tide of prosperity having taken place, they were a source of considerable embarrassment to the donor.

CHIPS.

A new Presbyterian church is about to be erected in Ballard's-lane, Finchley. Messrs. Holloway Brothers are the builders.

In the case of George Sear, of Watford, builder, the discharge from bankruptcy has been suspended for six months, ending April 22, 1895.

The local board of Middlewick have adopted a scheme of water supply prepared by Mr. Worth, their surveyor, having received a favourable report upon it from Mr. Alfred M. Fowler, M.Inst.C.E., of Manchester.

Mr. Alfred Templeton Hawkins again appeared at the Guildhall on Tuesday, to answer the charge of stealing sums belonging to the National Dwellings Society (Limited), of which he was a director. A good deal of further evidence was taken, and another remand granted, the prisoner's bail being reduced.

A colossal marble statue of the late Oliver Heywood, to be erected in Albert-square, Manchester, has just been completed by Mr. A. Bruce Joy, and will shortly be unveiled. Mr. Bruce has also in hand and nearly finished a memorial of Sir Robert Montgomery for St. Paul's Cathedral, and a statue in marble of the late Edward Whitley, M.P., to be erected in St. George's Hall, Liverpool.

A receiving order has been granted in the case of William Stubbs, of Phœnix Wharf, Commercial-road, S.E., contractor.

Mr. R. Walton, C.E., one of the Local Government Board inspectors, held an inquiry in the Town-hall, Rhyl, on Tuesday, respecting an application by the Rhyl improvement commissioners to borrow an additional loan of £9,286 for completing the sewerage works now being carried on at Rhyl under the direction of Mr. Balwin Latham, C.E.

The Methodists of Hucknall Torkard, Notts, are about to erect a large chapel and set of Sunday schools at the junction of Beardall-street and Watnall-road. Mr. Henry Harper, Market-place, Nottingham, has been appointed architect.

A new hall and Sunday schools, which have been added to Wycliffe Chapel, Langsett-road, Sheffield, were opened on Monday. The buildings have cost £4,000, and have been erected from designs by Mr. C. J. Innocent, of George-street, Sheffield. Mr. Joel Midwood, of Harold-street, Walkley, was the sole contractor.

The Corporation of Newcastle-under-Lyme acquired the local gasworks fourteen years ago, and have carried out extensive works of reconstruction at a cost of £12,000, from plans prepared by Mr. W. Winstanley, the manager and secretary, and under his supervision. Mr. J. Gallimore has built a new meter-house and boiler-house block, and converted the No. 1 gas-holder into a tar and liquor store; Mr. S. Wilton, jun., being the contractor for the new retort-house and coal-store.

NOTES ON BUILDING PRICES.

By John Leaning.

(*Continued from p. 535. Vol. LXV.*)

JOINER.

THE broad distinction between carpentry and joinery is that the former is generally framed and prepared at the building, while joinery is prepared at the contractor's workshops and brought to the building ready for fitting and fixing. Its cost would, therefore, properly involve a larger percentage for establishment charges than other portions of the building; but this, save in exceptional circumstances, it is not the custom to consider, one uniform rate being applied to all the items of an estimate, as recommended in an early paper of this series.

The material for carpentry, as before remarked, is often of very common quality, possibly because it is nearly all concealed; but the wood used for joinery must be fairly good, as it receives a higher finish, is constantly in view, and its defects more easily judged. Moreover, the warping and cracking of material of poor quality and without seasoning would be at once apparent. It need hardly be said that the architect who defers his examination of the joinery of a building until its delivery on the work puts himself at a disadvantage. The artistic stopping and priming sometimes done before it leaves the workshops make it very difficult to discover defects.

In the production of joinery the builder derives more help from machinery than in any other branch of his trade. Sawing, planing, mortising, tenoning, when there is sufficient work to justify the use of machinery, are all done by its means. The mouldings are "stuck" by the moulding-machine, while the profiles of shaped pieces of wood are cut by the band-saw with great speed and accuracy.

When the builder has not a sufficient business to justify the extensive use of machinery, he contents himself with a circular saw and a general joiner, or some such machine, and obtains long lengths of mouldings, door-frames, beads, grounds, parts of sashes and sash-frames, &c., from a moulding mill, which would, on directions given, supply both labour and material for items of this kind.

There are several firms in London and its vicinity who make sub-contracts with the original contractor for the whole of the joinery of a building, most of whom produce work of very good quality, and often at a less price than it could be done in the contractor's own shop.

The preliminaries to the valuation of joinery must be a list of constants of labour and a table of cost of deal in thicknesses, similar to that given in the trade of carpenter.

Much of the wood used for joinery is brought into the market machine-planed, and only requires smoothing; while for the commoner parts of joinery work, prepared floorings can often be conveniently used at a saving of cost.

Properly seasoned wood is often difficult to get, and always commands a high price, consequently those building firms who have the reputation for good joinery keep a large stock of deals and battens in stock, so as to insure well-seasoned wood for their work; and when wood is well-seasoned, it is worth more by the interest on the outlay for the time it has been kept.

The preamble of a bill of good work will stipulate that the deals for joinery shall be the best St. Petersburg or Onega yellow. The panels the best bright St. John's or Quebec pine. The St. Petersburg best would be marked with a crown over the word "Gromoff," the name of the shipper; or "C. and Co.," for Clarke and Co.; or a crown between the letters "P. and B.," the mark of the shippers, A. P. Belaieff; or "P. B. S. and Co.," the mark of the shippers, Peter Balaieff's Successors and Co. The best St. Petersburg deals generally cost, at the dock sales, about £13 per St. Petersburg standard.

The pine would be yellow. The best is known as 1st bright pine deals. Gilmour or Booth are shippers of the best; they commonly cost, at the dock sales, about £20 per St. Petersburg standard. The use of pine for panels is almost universal, as its width enables the tradesman to dispense with a glued joint, which, if deals were used, would generally be necessary. Its fine grain and facile working render it most convenient for mouldings, for which it is much used by the moulding makers. For panels of work circular on plan, "Basswood" (American lime) is most useful, and produces good work. It need hardly be said that a great quantity of deal and pine is sold at the dock sales at much below the above prices, and that it is all converted into joinery for some destination. Nothing but mature experience and naturally good judgment will enable the estimator to assess the price of the material.

The above price will, however, be adopted for the following calculations, and the total price for deal will consequently be as follows:—

	£	s.	d.
Joiners' deals at docks per St. Petersburg standard	13	0	0
Landing rates		3	9
Unloading		1	6
Cartage by sawmill proprietors as before.			
Two years' compound interest at five per cent. per annum on the total of the first three items, £13 5s. 3d., two years being assumed as the time required for thorough seasoning	1	7	3
Waste in sawing and conversion, ten per cent. on £14 12s. 6d.	1	9	3
Cost per standard	16	1	9

In ordinary framed work, as doors and partitions, the cost of the pine used would but slightly exceed that of good joiner's deals, and the difference has been disregarded.

Analysis of cost of a St. Peterburg standard of rough deal sawn to various thicknesses:—

Assumed to contain 74 times 12ft. × 9in. × 3in., = 666super.ft. of 3in., equal 166ft. 6in. cube, a little in excess of the actual quantity (165ft. 0in. cube).

	£	s.	d.	
¼in. = 11 cuts in 3in. × 9in. (producing 12 thicknesses of ¼in.) = 814 cuts = 67⅚ doz. at 2s. 3d.	16	1	9	deal
	7	12	7½	sawing
7,992ft.)	23	14	4½	
			¾d. per ft.	
½in. = 5 cuts in 3in. × 9in. (producing 6 thicknesses of ½in.) = 370 cuts = 30⅚ doz. at 2s. 3d.	16	1	9	deal
	3	9	4½	sawing
3,996ft.)	19	11	1½	
			1¼d. per ft.	
¾in. = 3 cuts in 3in. × 9in. (producing 4 thicknesses of ¾in.) = 222 cuts = 18½ doz. at 2s. 3d.	16	1	9	deal
	2	1	7½	sawing
2,664ft.)	18	3	4½	
			1⅝d. per ft.	
1in. = 2 cuts in 3in. × 9in. (producing 3 thicknesses of 1in.) = 148 cuts = 12⅓ doz. at 2s. 3d.	16	1	9	deal
	1	7	9	sawing
1,998ft.)	17	9	6	
			2⅛d. per ft.	
1¼in. = 2 cuts in 3in. × 9in. (producing 2 thicknesses of 1¼in. and 1 of ½in.) = 12⅓ doz. at 2s. 3d.	13	8	1½	deal
	1	0	9¾	sawing
1,332ft.)	14	8	11¼	
			2⅝d. per ft.	

Note.—One quarter of the total of the sawing last mentioned is allotted to the ½in., leaving three-quarters (the remainder) for the calculation. The deal is reduced by one-sixth.

	£	s.	d.	
1½in. = 1 cut in 3in. × 9in. (producing 2 thicknesses of 1½in.) = 74 cuts = 6⅙ doz. at 3s. 9d.	16	1	9	deal
	1	3	1½	sawing
1,332ft.)	17	4	10½	
			3⅛d. per ft.	
1¾in. = 1 cut in 3in. × 9in. (producing 1 thickness of 1¾in. and 1 thickness of 1¼in.) 74 cuts = 6⅙ doz. at 3s. 9d.	9	7	8¼	deal
	0	11	6¾	sawing
666ft.)	9	19	3	
			3⅝d. per ft.	

Note.—One half of the total of the sawing last mentioned is allotted to the 1¼in., and the deal reduced by $\frac{5}{12}$ths.

	£	s.	d.	
2in. = 1 cut in 3in. × 9in. (producing 1 thickness of 2in. and 1 of 1in.) 74 cuts = 6⅙ doz. at 3s. 9d.	10	14	6	deal
	0	11	6¾	sawing
666ft.)	11	6	0¾	
			4⅛d. per ft.	

Note.—One half of the total of the sawing last mentioned is allotted to the 1in., and the deal reduced by ⅓rd.

	£	s.	d.	
2¼in. = 1 cut in 3in. × 9in. (producing 1 thickness of 2¼in. and 1 of ¾in.) 74 cuts = 6⅙ doz. at 3s. 9d.	12	1	3¾	deal
	0	11	6¾	sawing
666ft.)	12	12	10½	
			4⅝d. per ft.	

Note.—One-half of the sawing last mentioned is allotted to the ¾in., and the deal reduced by ¼th.

	£	s.	d.	
2½in. = 1 cut in 3in. × 9in. (producing 1 thickness of 2½in. and 1 of ½in.) 74 cuts = 6⅙ doz. at 3s. 9d.	13	8	1½	deal
	0	11	6¾	sawing
666ft.)	13	19	8¼	
			5d. per ft.	

Note.—One-half of the sawing last mentioned is allotted to the ½in., and the deal reduced by ⅙th.

	£	s.	d.	
2¾in. = 1 cut in 3in. × 9in. (producing 1 thickness of 2¾in. and 1 of ¼in.) 74 cuts = 6⅙ doz. at 3s. 9d.	14	14	11¼	deal
	0	11	6¾	sawing
666ft.)	15	6	6	
			5½d. per ft.	

Note.—One-half of the sawing last mentioned is allotted to the ¼in., and the deal reduced by $\frac{1}{12}$th.

	£	s.	d.	
3in. No sawing..........666ft.)	16	1	9	deal
			5¾d. per ft.	

Some estimators, in addition to the table of value of rough deal, prepare a table of the various thicknesses with ordinary labours upon them like the following, adopting the prices of deal in the last table given. Such a table is found in the majority of good schedules of prices, and is not only easily applied, but is a good means of comparison with prices otherwise calculated.

COST OF DEAL IN THICKNESSES, BASED ON THE PRICES BEFORE CALCULATED.

	s.	d.
½in. rough deal, exclusive of fixing	0	1¼
Do. do. including rails and fixing	0	2
Do. do. edges shot	0	2½
Do. do. wrought one side and one edge	0	3¼
Do. do. wrought two sides and two edges	0	4
Do. do. wrought one side, and framed, clamped, and dovetailed	0	6
Do. do. wrought both sides	0	6¾
Add to either if ploughed and tongued	0	0¾
Do. do. if cross-tongued	0	1

Complete the table by using the various thicknesses, as ¾in., 1in., 1¼in., &c.

A table of fillets at the same rate for deal (£16 1s. 9d. per standard) will also be necessary. The principle of its construction will be the same as before described in the section Carpenter, and the result as follows:—

FILLETS.

	½in.	¾in.	1in.	1¼in.	1½in.	2in.
2in. wide and under per foot run, rough	¼d.	¼d.	¼d.	⅜d.	⅜d.	½d.
Ditto, wrought	½	½	½	¾	¾	1
2¼in. to 3in. wide	⅜	½	½	⅝	¾	1
Ditto wrought	¾	1	1	1	1½	1½
Add if fixed with screws	¼	¼	¼	½	½	½

The smallness of difference in value between rough and wrought makes any nicety of distinction in their valuation impossible and unnecessary.

The following difference between straight and circular fillets is adopted in ordinary schedules:—

Add to fillets, "if bent circular, one-fourth the foregoing rates"; "if cut circular on both edges, once the foregoing rates"; "if cut circular on one edge, half the foregoing rates."

A SPECIFICATION ANNOTATED.—III.

16. *Detail Drawings.*—The architect shall at all times, as he may himself think fit, or on the builder's requisition, furnish such additional plans, details, and descriptions as may be necessary for the proper execution of the work. Provided always that the builder shall not be required to carry out such plans if they involve an expenditure on labour or material not provided for by this contract in the original estimate, or in any accepted supplementary estimate for additional or "extra" work.

The architect will find it necessary to furnish the builder with large-scale or full-sized details of various parts of the work from time to time as the work progresses: it is clearly right, and to the advantage of all parties, that he should do so. But as a matter of common honesty, it is absolutely necessary that such detailed drawings should show no more work than was clearly defined—as to cost—by the drawings and descriptions already furnished. It is, unfortunately, a common practice with some architects to prepare their detail drawings, utterly regardless of what is shown on, or may be implied by, their general drawings. This may arise from: (1) Incompetence: the architect may be quite incapable of preparing his details before the contract is signed. (2) Neglect: the architect may be well able to prepare his plans; but through pressure of work, or some other cause, he fails to do so. (3) Dishonesty: the architect may want good work or rich work for little money. He will, therefore, furnish vague general drawings only before the contract is signed, and then, under cover of the clause "The work is to be done to the architect's satisfaction," he will, after the contract is signed, proceed to furnish the builder with details involving an amount of work no one could have anticipated by the most careful examination of the general drawings. It should never be forgotten that when a contract is signed binding a builder to execute a certain amount of work for a fixed sum of money, any addition made to that work without a corresponding addition being made to the contract sum is at the builder's expense, and if enforced by any of the architect's self-protective claims, then the transaction is nothing less than sheer robbery. Again, architects will delay furnishing details when required by the builder, and this neglect may involve the latter in considerable loss. His masons, joiners, or other tradesmen may be actually standing still for want of information not given in the general drawings, and he finds himself powerless to proceed with the work, or to recoup himself for this enforced idleness. An amusing incident arising out of this neglect to furnish drawings occurred a few years ago in connection with a church restoration. A building committee contracted with a builder to restore a church some fifty miles from London. Soon after the works were well in hand, it became necessary to apply to the architect for details of door and window jambs, none of which could be worked from the small-scale drawings furnished to the builder when the contract was signed. The architect neglected to reply to the builder's application for the details. Week after week passed, but no drawings were forthcoming. During this time the builder, at considerable expense to himself, frequently visited the church; his foreman was, of course, retained, with some few workmen, in anticipation of the receipt of the drawings. Still none came. The building committee at last became impatient at the delay, and summoned the builder to meet them at the residence of the chairman of the committee, and explain why the works at the church were not being proceeded with. The builder attended, and informed them that he could not proceed with the works as the architect had not furnished him with the necessary drawings, and he was consequently powerless to complete the contract, through no neglect of his. The committee, however, declined to see the matter in this light. They pointed out that the builder had signed a contract to complete the works by a certain date, and it was "nothing to them" whether the architect furnished details or not! The builder said he could not force the architect to supply him with drawings. The committee replied "neither could they"; but they could enforce the penalty against the builder for non-completion of the work in the contracted time, and meant to do it." In this instance the drawings were at last furnished, but some time after the work should have been completed. The penalty for delay was not enforced, and the architect, feeling hurt that the builder should have informed his clients of the delay in furnishing drawings, made himself as disagreeable as possible in all the subsequent proceedings in connection with the contract. As a matter of business, the detail drawings should be prepared and submitted to the builder when he makes his estimate, or to the surveyor when he prepares his quantities. It passes the wit of man to discover how the modern first-class quantity surveyor can take off his microscopical quantities from small-scale drawings. That in some cases he fails to do so is perhaps clearly shown by the inclusion of such items in the quantities as "Provide so many rods of brickwork," "Provide so many cube feet of stone," "Provide so many cube feet of timber," all to be deducted if not required? To provide for "eighteen inches of bird's-mouth cutting to brickwork," and then wind up with a provision for "Ten rods of brickwork in cement, to be deducted if not required" is uncommonly like straining at a gnat and swallowing a *canal*, as a Dublin paper rendered camel some time ago! In connection with this question of drawings it may perhaps be well to suggest to the builder that when he is favoured by the architect with original drawings to prepare his estimate, he—the builder—will, if he is a wise man, have them photographed before he parts with them. This he can easily do, whether they are in ink or pencil. Several plans may be pinned up on a wall and photographed on one plate. This plate will always show unerringly what the plans were like when the estimate was prepared. The facility with which a clever draughtsman can alter a plan is shown by the following incident. It became necessary to apply to a public body for a grant towards the erection of a certain building. The grant was made, and the customary approval written on the corner of the drawing, the seal of the public officer being also attached. On looking over the drawings some time after, various improvements were suggested; but how were the alterations to be effected, as the plans were all endorsed and sealed? Nothing was easier! The paper used was Whatman's "Double Elephant," and gentle rubbing with a piece of number "0" sandpaper left a clean sheet, with nothing but the title, scale, border, approval, and seal on the surface. Every trace of the original drawing had disappeared, the amended building was now put on, the work carried out, and the grant paid over to the promoters, none of the parties to the matter knowing anything of the change but the architect and his assistant. In this case no loss was inflicted on any one. True, if a similar method were adopted by an unprincipled man, a very grievous injustice might be done by altering a signed drawing where no infallible record had been kept of such drawing at the time of signing it.

CHIPS.

At a general meeting of the Institute of Painters in Oil Colours, Piccadilly, held on Wednesday evening, Messrs. W. A. Breakespeare, J. S. Hill, and Lance Calkin were elected members.

The Meyrick Park and Golf Links, which have been laid out by the Bournemouth Town Council, were opened on Wednesday. The land, which comprises 126 acres, and is valued at £100,000, was handed over to the town council, Sir George Meyrick waiving his rights in the property. The total outlay has been £12,000, and of this amount £9,000 was received for land sold, leaving only £3,000 to be provided by the ratepayers. Sixty acres have been devoted to golf links. The length of the course, comprising 18 holes, is 2¼ miles. The ladies' course of nine holes is 700 yards in length, and covers an area of four acres. Ten acres have been laid out for cricket, football, bowling, &c.

Mr. Charles Burton Barber, the well-known painter of dogs and *genre* pictures, died on Tuesday, aged 49 years.

Plans have been prepared by Mr. Peter Whyte, superintendent to the Leith Dock Commission, for a casual dock labourers' shelter, to be built at Constitution-place, Leith, and for the erection of offices for the use of the company porters and stevedores in connection therewith. The work will be proceeded with shortly. The estimated cost is £1,500.

At a special meeting of the West Ham Town Council, held on Tuesday, Alderman J. H. Bethell moved that the honorary freedom of the borough be given to Mr. J. Passmore Edwards, in recognition of the great interest he has taken in its welfare, and in appreciation of his munificent gifts for the benefit of local institutions. Mr. Alderman G. Hay seconded the resolution, which was supported by a number of members of the corporation, the gift of 1,000 books to the free library, the erection of a wing to West Ham Hospital, and the donation of £1,000 to the funds of the hospital being mentioned as acts indicative of Mr. Edwards's interest in the borough. The resolution was carried with one dissentient.

The example of the New York Municipal Art League, which has already led to the formation of a similar body in Boston, has not been lost on Philadelphia; and, a few days ago, committees, representing the Pennsylvania Museum, the Drexel Institute, the School of Design for Women, the Philadelphia Art Club, the Spring Garden Institute, and the Department of Architecture of the University of Pennsylvania, met for the purpose of appointing a general committee, to confer with the Public Building Commission on the subject of the mural decorations of the council chambers in the new Philadelphia City-hall.

Building Intelligence.

Ackworth.—To meet modern requirements in the way of technical instruction, new workshops have recently been added to the fine block of buildings known as the Society of Friends School at Ackworth. The new extension, which was opened on Thursday, the 22nd ult., by Mr. Thomas Pumphrey, of Newcastle, the chairman of the School Building Committee, has been erected by Mr. John Simpson, of Ackworth, from the designs and under the superintendence of Mr. William H. Thorp, F.R.I.B.A., of 61, Albion-street, Leeds.

Altrincham.—The new cemetery was opened on the 21st inst. The undertaking has been carried out at a cost of £9,000. The chapel is a characteristic example of Gothic architecture of the 14th century. It is faced entirely of Halifax stone, and provides sitting accommodation for 70 people, and, in addition, comprises large mortuary, vestry, &c. The works have been carried out from the designs and under the superintendence of Mr. Wm. Owen, A.R.I.B.A., 134, Deansgate, Manchester. Mr. John Matthews, of Nantwich, was the principal contractor.

Bath.—At the meeting of the Baths Committee at Bath on Friday, Mr. J. M. Brydon, F.R.I.B.A., of London, the architect of the Pump Room extension, was in attendance with reference to suggested alterations in the plans adopted by the Council. It was decided not to cover the water of the large Roman bath, and also that the new promenade room should be reserved entirely for music, while the present pump room should be enlarged. The Mayor also thought that the idea of a museum for antiquities, taking the whole basement, should be dropped, and that a portion in the best-lighted position only should be utilised for the purpose. Mr. Brydon undertook to produce amended plans to the committee to-day (Friday). A suggestion by a Mr. Lewis that while Mr. Brydon should be architect of the new building, Major Davis should have direction of the work at the Roman bath (!) was not favourably received.

Birmingham.—A new chancel was added last autumn to the Roman Catholic Church of St. Catherine, in the Horse Fair, Birmingham, and the work of embellishment is being carried out by Mr. G. O. Owen, from the designs of Mr. W. J. Wainwright, a Birmingham artist. The altar is now enriched with a series of paintings of canonised saints, which were unveiled on Monday. The altar is built of Caen stone, and is now adorned with twenty-three lancet-shaped panels 2ft. 6in. in height, each panel containing the figure of a saint painted on a gold ground, in spirit fresco. The centre panel is occupied by the figure of the Virgin Mary, in robes of blue. St. Catherine is painted on the panel on the one side, and St. Clare on the other. Others of the paintings represent St. Edward the Confessor, St. William of York, St. Thomas Aquinas, and St. John Chrysostom. The work of embellishing the chancel will be carried out. The ceiling will be decorated in spirit fresco with figures of the Prophets of the Old Law, whilst the spandrels will be filled with figures of the Saints of the New Law. The figures will be treated in the traditional colours on a gold ground.

Hexham.—New premises have just been erected in Beaumont-street for the proprietors of the *Hexham Courant*. The buildings have a frontage of 33ft. to the street, and cover an area of 3,300sq.ft. On the ground-floor are the public office, manager's office, strong room, and postal despatch room. The printing department is at the rear, and has an open roof with top light. On the first floor to the rear are the compositors' room and paper stores, and on the floor above are the editorial rooms. The whole establishment is warmed by hot water on the low-pressure circulating system. The front elevation is simple Renaissance in treatment. The works have been carried out from the designs and under the personal supervision of Messrs. Marshall and Dick, of 4, Northumberland-street, Newcastle. Mr. Edward Snowball, of Hexham, is the sole contractor.

Morningside, Edinburgh.—The Free Church at Morningside was formally opened on Saturday. The building is designed in a phase of the Renaissance period, with a campanile tower at the south-west corner, the building of the upper stages of which it is intended to leave for the present in abeyance. The building being surrounded on back and sides by adjoining properties, the distinctive architectural features are confined to the tower and street front. The plan of the church is an elongated rectangle, and it comprises the church area, with recessed pulpit platform and organ chamber at one end, with spacious vestibule and staircases at the others. The material used for mason work is red Corsehill stone, for the constructive woodwork red pine, and for the finishings yellow pine. The cost has been about £9,600. Mr. Hippolyte J. Blanc, A.R.S.A., of George-street, Edinburgh, is the architect.

Rawtenstall.—The new Liberal Club at Rawtenstall was opened last week by Mr. J. H. Maden, M.P. The building is in Lord-street, opposite the municipal buildings, and so far has cost about £800. The complete plan, which has been designed by Mr. Heys, of Rawtenstall, shows a frontage of 90ft. to Lord-street and Annie-street. The building-line is 60ft. deep. Only a portion of the plan has been carried out so far, and the block opened on Saturday comprises a cellar 47ft. by 27ft. and 8ft. high, and on the ground floor an assembly-room, 31ft. by 27ft., with a newsroom 21ft. by 12ft. and 14ft. high. The contract was let to Councillor Hanson.

Sheffield.—The cottage homes, built by the Sheffield board of guardians at a cost of £30,000, were opened by Sir Walter Foster, M.P., on Saturday. The buildings are situated on the Goddard Hall estate, in Smilter-lane, Crabtree. The administrative block contains a waiting-room, medical officer's and examination-rooms, with bath, sitting-rooms for the foster parents, kitchen, separate day-rooms for boys and girls, lavatories, baths, and store-rooms. In the same building the residence for the superintendent is placed, so as to command the entrance from the road and the various buildings. The three detached homes which at present complete the headquarters, each have a piece of garden, a playground, a shed, and a washhouse. The children's hospital is on the same estate. Mr. C. J. Innocent, George-street, Sheffield, has been the architect; Messrs. George Longden and Son, Neepsend, were the contractors; and Mr. George Malpas, the clerk of works.

Wolverhampton.—A post-office is about to be erected in New Lichfield-street, a leading thoroughfare formed under an improvement scheme. The building will be erected on a vacant piece of land between the Grand Theatre and the Criterion Hotel, and it will also occupy the whole corner of Princess-street, and run back to Berry-street. The architect is Mr. H. Tanner, of London, from whose designs new post-offices are now in course of erection at Liverpool, Leeds, and Nottingham; and the quantities have been taken out by Messrs. Harris and Harris, of London and Bennett's Hill, Birmingham. The latest date for the receipt of tenders for the building of the office is to-day (Friday), and the chief Birmingham and Wolverhampton builders have sent in tenders. The post-office will have a main frontage of 128ft. 3in., and it will be in the Renaissance style. It will be built of red brick, with buff terracotta dressings, and the roof will be covered with green slates. Of two stories, the facade will be completed by a pair of gables, whilst the centre will be accentuated by a flèche. In the basement there will be storerooms and workshops, and the ground floor will be occupied principally by the public office. The hall, which will be 51ft. by 30ft., will be lighted by four large windows. The sorting-room next Princess-street will be 85ft. by 36ft. On the second story of the main building will be the telegraph-instrument room, 52ft. by 31ft., and above will be other storerooms. Rooms have been set apart as cooking and dining apartments, lavatories, and cloakrooms, and retiring-rooms for the female portion of the staff. The entire building will be fireproof, the staircases and corridors being paved with stone, and the floors constructed of concrete upon iron joists. The cost of the building is expected to be about £12,000. The red bricks for the facing will come from Kingswinford, the firebricks from Stourbridge, the terracotta from Ruabon, and the green roofing slates from the Tilberthwaite Quarries, Lancashire.

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The Royal Humane Society has conferred its silver medal upon Mr. W. Mugford, foreman of works, Torquay town council, for saving the two labourers, Milton and Potter, in the main outfall sewer when it collapsed on the 20th ult.

COMPETITIONS.

Coventry.—The City Council of Coventry are about to invite designs for complete municipal buildings which are to embrace the historical St. Mary's Hall and some other ancient buildings which have for many years been used for municipal purposes. They invited, by advertisement, architects who had had some experience in similar work, and who were willing to compete, to send in their names, with drawings or photographs of their executed works, and 25 names were sent in. The city council have selected eight of the applicants, who, together with any Coventry architects who may desire to compete, will be supplied with the instructions and plan of the site available. The city council have been advised in the preparations of these instructions by Mr. Charles Barry, F.S.A., and have appointed him as their assessor in the selection of the best designs. A premium of £150 is offered for the best design, and £50 each to the authors of the design adjudged worthy of the second and third place. Designs are to be sent in on the 2nd March, 1895. As the new building will be carried out in sections from time to time as means become available, a special provision is made for a payment of 1¼ per cent. to the architect appointed, or to his representatives, on the estimated cost of the unexecuted portions of his design if no orders for their execution be given within seven years from the award.

Exeter.—The committee of management of the West of England Eye Infirmary at Exeter are proposing to erect a new building on the site of the present premises in Magdalen-street, and in August last they invited architects to send in designs in competition on instructions issued. The designs are to be delivered to-day (Friday). The committee have appointed Mr. Charles Barry, F.S.A., late President of the Royal Institute of British Architects, as their assessor to advise them in the selection of the most suitable design. This competition is to be a dual one. From the designs sent in at first (which are to be to a scale of 16ft. to an inch) not fewer than three or more than six will be selected by the assessor for the final competition (drawings to be 8ft. to the inch), and to each of the architects so selected an honorarium of 25 guineas will be paid. The successful architect in the final competition is to be employed as architect to the building on the usual professional terms. The work is intended to be commenced at once; but if its commencement should be delayed for two years after the award, the architect is to be paid 100 guineas (in addition to the honorarium), and his design will then become the property of the committee.

Merthyr Tydfil.—The guardians for the Union of Merthyr Tydfil have recently selected, from twenty-five other candidates, Mr. E. A. Johnson, M.S.A., of Abergavenny, for the appointment of architect for their new infirmary which is to be built at Merthyr, at an estimated cost of over £10,000.

Youlgreave.—In a limited competition for a new Primitive Methodist church and schools at Youlgreave, Derbyshire, the plans of Mr. Hy. Harper, Market-place, Nottingham, architect, have been accepted.

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The Local Government Board have consented, with certain stipulations as to the purification of the sewage, to the erection near Banstead Downs of a hospital for the isolation of patients suffering from infectious diseases, and the Epsom Joint Hospital Board, by whom the hospital is projected, have unanimously agreed to accept the conditions.

A chapel, which has been added to the British Home for Incurables at Streatham, was dedicated on Wednesday. The style is a modern treatment of the Late Early English. The interior is of red brick, the roof being supported by clustered stone shafts. On the south side there is a narrow aisle, and on the north a wider aisle, supported by a double arcade. At the western end there is a gallery on the level of the first floor of the building. The cost has been £1,800.

An inquiry was held at the Town-hall, Weston-super-Mare, on Friday, by Mr. J. W. Bird Clerke, an inspector from the Local Government Board, respecting an application of the local board for a loan of £2,149, for widening Locking-road. This road forms the main entrance to the town for all vehicular traffic arriving from Bristol, and it is proposed to widen the road throughout to 36ft., and to remove several objectionable curves and corners. Mr. Nettleton produced plans of the proposed improvement, and gave details in connection therewith.

Correspondence.

HALF-TIMBERED HOUSES AND CARVED OAK FURNITURE OF THE XVI. AND XVII. CENTURIES.

To the Editor of the Building News.

Sir,—I am very much obliged to you for your kind notice of my work on the above subject in your issue of the 23rd inst. In your reviewer's description of the "Court cupboard surmounted by a livery cupboard," now standing in an hotel at Tunbridge Wells, he has fallen into a slight misapprehension, which I shall be glad if you will kindly allow me to correct. In writing of these cupboards, he says, "The two have been *fastened* together, as shown by the sketch." This is not the case. The livery cupboard appears to have always stood in the same position; but there is no appearance, as far as I could ascertain, of their ever having been fastened together, though the accurate way in which they fit each other might lead the casual observer to suppose that this had been the case. It was, indeed, in the first place my own supposition. Since the publication of "Half-Timbered Houses, &c.," I have received a photograph of a very primitive livery cupboard, which is supported on one of the walls of a room by brackets. The sides and ends of this cupboard are formed of plain turned balusters, as in the case of those at St. Alban's Cathedral. If any of your readers have any of these quaint old cupboards in their possession, or are able to give any information about them, or can kindly lend me any sketch or photograph of one, I shall be very pleased to hear from them. I have heard that there existed some time ago in Yorkshire several cupboards, one or more of the divisions of which contained cupboards with open balusters. These, no doubt, in the houses of the middle classes, answered the purpose of the once separate court and livery cupboards, and some of them probably are still in existence. I have in my own possession a sketch of a cupboard of this description, which had at one time been handsomely painted and decorated. It is not, however, of English manufacture.—I am, &c.,

William Islip Sander.

2, Cathcart-road, South Kensington, S.W.

FIREPROOF CONSTRUCTION.

Sir,—Mr. Potter's letter of the 16th inst. is a valuable testimony to the truth of the principles embodied in my patents. The first principle is *severance*—that is, the steel joists are separated from every substance that comes in contact with the flames; and the second is *conductivity* as distinct from *non*-conductivity, a *taking away* of the heat rather than retarding its progress to the metal by incasing it with some so-called non-conducting material.

Mr. Potter proposes to further protect the lower flange of the steel joist than is provided by a suspended ceiling by encasing it with earthenware. This either increases the thickness of the floor, or by reducing the air-space between the steel joist and ceiling, defeats the object of the suspended ceiling.

I fully endorse all Mr. Potter writes concerning ordinary hair and lime plaster as a fire-resisting material. But there are three qualities essential in a "fireproof" plaster: First, that it should stand fire; second, that it should not corrode iron; and, third, that it should not absorb water and become soft after it has once set. Ordinary plaster supplies the first and second requisite, but not the third. Most of the advertised "fireproof" plasters fail in both the second and third.

An ordinary plaster ceiling constructed with metal lathing withstood the flames perfectly; but when the engine hose was played on it with considerable force it not only softened the plaster, but washed it out of the lathing altogether.

This result induced me to seek for some new and inexpensive material which would fulfil the three conditions above named. The materials experimented upon have perfectly met the requirements. After being subjected to white heat for 65 minutes, and water at 80lb. pressure poured upon it, the plaster was perfectly uninjured.

I observe that Mr. Potter, referring to his own experiments, says:—"The only effect was that the metal lathing assumed a corrugated form from expansion." This is sure to be the case with all lathings formed out of sheets of iron or steel, especially so with those which have only a thin coating of plaster on the lower face and none at all on the upper. A fireproof metal lathing should be *entirely embedded* in the plaster to preserve it from rust and crumpling under heat.

Helical lathing, in addition to its other merits, offers one advantage over all others. It cannot expand or contract. The expansion expends itself in the twist, so that the ceilings remain perfectly flat at all temperatures.—I am, &c.,

J. LEWIS BANKS.

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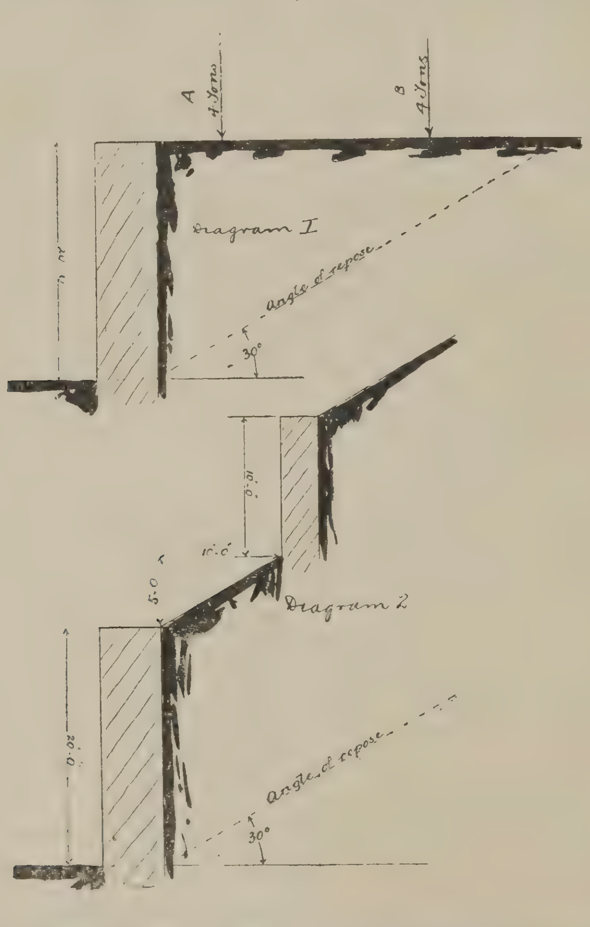
Intercommunication.

QUESTIONS.

[11252.]—**Surveying.**—Will one of your surveyor readers kindly inform me which is the best and most practical work on surveying and levelling (with instructions for the use of instruments), from which a novice can best learn the methods?—PUPIL IN DOUBT.

[11253.]—**Ball-room Floors.**—Would any of your numerous readers kindly tell me where I could get any information about the construction of ball-room floors, the object being to get the greatest amount of springiness consistent with strength? I believe they are sometimes hung on chains.—A.R.I.B.A.

[11254.]—**Thickness of Walls.**—Will some of your readers kindly let me have the necessary diagrams and working to obtain the thicknesses of the above walls? Firstly, with a load of 4 tons per lineal foot at A, neglecting B. Secondly, with the load at B, neglecting A. Also the working for diagram 2.—RAILWAY.



[11255.]—**Cockroaches.**—Can anyone give me a cure for cockroaches? In a hotel service room, in the pipe-boxes, pantry, and other places they swarm in thousands, and get on the dining-tables, and are a perfect plague. Can anyone assist me to get rid of them?—COCKROACH.

[11256.]—**Building on Made Ground.**—Will some reader kindly say whether it is practical to build on filled-up ground without carrying the footings of walls down to the level of virgin soil? Having heard of some small villa residences being built with the ordinary brick footings on 3ft. or 4ft. of filled-in clay, I should like to know whether this is customary with this class of building. Would a footing of cement concrete 2ft. 6in. wide be sufficient to prevent unequal settlement?—ENQUIRER.

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Benjamin Creswick, R.B.A., formerly of Liverpool, and now professor of modelling at the Birmingham School of Art, has presented to the permanent collection at the Walker Art Gallery in the first-named city a group in clay representing "Rugby Football." The great difficulty in sculpture is the group, which the artist has essayed to solve by representing in pyramidal form three life-sized figures engaged in a scrimmage at a critical moment of the game.

Legal.

A RESTRICTIVE COVENANT.

IT is a very common thing for freeholders to insist upon having a covenant in their conveyances, that the premises sold shall not be used as a public-house or beer-shop. In the ordinary way, such a covenant is easily construed and inferred by the Court. But under certain states of fact, there may be a difficulty in defining whether this covenant has really been broken. An interesting and important point of this kind arose in the recent case of "Duke of Devonshire v. Simmons and Another" (*Times*, November 17). There the plaintiff applied for an injunction to restrain the owner of the land, who held under such a covenant, and the lessee of certain premises, known as the Alexandra Hotel, Eastbourne, from using them as a public-house or beer-shop. It appeared that the place had until recently been used as a boarding-house without a license. The premises had, however, now been converted and enlarged, and opened as a first-class private hotel. Then the lessee obtained from the justices a full license to sell wines, beer, and spirits, but subject to the undertaking that no beer on draught would be kept, and that no bar trade whatever would be done. In other words, the license would be used solely for the purpose of supplying the wants of visitors to the hotel.

It was now argued that this private hotel could not be distinguished in law from a "public-house," and also that a place where beer could be sold was a beer-shop, within the meaning of the covenant. But Mr. Justice Stirling thought otherwise, and refused to grant the injunction. He admitted the importance of the case, especially in localities like Eastbourne, where such restrictive covenants were common, and were inserted to keep up the residential character of the neighbourhood. He considered that there was a substantial difference between a private hotel like this one and a public-house, especially after the undertaking given by the defendant—that only visitors to the hotel should be supplied with wines and spirits, and that no beer at all should be sold upon the premises. It is probable that there will be an appeal from this judgment, and this ultimate decision will be looked for with interest by many who hold land under similar restrictive covenants, by which they are hampered. But it is by no means certain that this ruling will be supported, or that so easy a mode of evading the covenant will be of general application.

FRED. WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

NOSYD.—BUILDING.—CONTRACT.—MATERIALS.—I don't consider that the architect could do as is suggested; but it appears to me that he might give seven days' notice in writing to remove bad materials and put in good, and that if contractor still refuses, the owners might terminate contract on the ground of a breach within the meaning of Clause 14. One doubt is, how did these materials get passed?

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LEGAL INTELLIGENCE.

DRAIN OR SEWER?—JONES v. BANTER.—In the Queen's Bench Division on Saturday, before Mr. Justice Collins, an application was made by Mrs. Jones, owner of Nos. 2 and 4, Winbolt-street, Bethnal-green, for an injunction restraining Mrs. Banter, the owner of Nos. 6 and 8, Winbolt-street, from allowing to continue obstructed the free passage of running water and soil from the plaintiff's houses along the drains and sewers under the defendant's premises. Both plaintiff and defendant held their respective premises on leases granted by the same ground landlord, and by the leases plaintiff was entitled to a free passage for the water and soil coming from her houses into and along the drains and sewers under the defendant's premises. A short time since the defendant was served by the Vestry of St. Matthew, Bethnal-green, with notices alleging that the system of drainage in connection with her houses was defective, and calling upon her to relay and make good the same. Believing that it was her duty to comply with the notices, she called in a builder, who relaid the drains to the satisfaction of the Inspector of the Vestry. The level of the drain of No. 6 was altered, with the result that the drainage from No. 4 could not flow into it. The Vestry subsequently threatened the plaintiff with proceedings for creating a nuisance, and she applied to Mr. Justice Day at Chambers for an injunction restraining the defendant from continuing to obstruct the flow of the drainage of No. 4 into the drain of No. 6, and the judge referred the application to the Court. The plaintiff now contended that the defendant ought not to have paid any attention to the notices of the Vestry, because the pipe through which the sewage passed was not a drain, but a sewer, and therefore repairable by the local authority. She further asserted that the defendant, by carrying out the work, had converted a sewer into a drain, and thereby rendered plaintiff liable to penalties for an alleged nuisance. Mr. Justice Collins, after hearing the evidence, said the pipe in question was admittedly a sewer, and not a drain, and therefore the local authority was liable to remove any nuisance, and not the defendant. Following the case of "The Attorney-General v. Colney Hatch Lunatic Asylum," he granted an injunction, and awarded plaintiff 40s. and costs.

CHARGE AGAINST A BUILDER.—At Southwark Police-court on Monday, Mr. Fenwick gave his decision in the summons brought against Mr. J. H. Winsford, builder and contractor, of Charlotte-street, Blackfriars-road, at the instance of Dr. Herron, medical officer of the St. Saviour's District Board of Works, for that he, being charged with the responsibility of laying new drainage to premises situate in Blackfriars-road, used as a common lodging-house, did so execute the work that it was dangerous to health by reason of there being a leakage in the pipes laid down. The case has been several times before the Court. Mr. Fenwick said he had come to the conclusion that the drains were so laid down that they might be objectionable and injurious to health, and he therefore must convict on the summons, and order the defendant to pay the mitigated penalty of £20 and 2s. costs.

LIGHT AND AIR.—MAYNARD v. LONDON SCHOOL BOARD.—This was an action for damages to a house and shop, No. 84, East-lane, Bermondsey. The interference was the erection of a high school building. The technical witnesses for the plaintiff were Professor Banister Fletcher and Mr. E. B. F. Fuller, of the firm of Messrs. Fuller and Fuller, for the defendant Board; Mr. H. H. Collins and Mr. J. F. Field, of the firm of Messrs. Field and Sons, for the plaintiffs. The amount of damages claimed was £200, and it was alleged on behalf of the defendant Board that there was no money injury whatever. Verdict, £100 and costs.

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At the meeting of St. Paul's Ecclesiological Society held on Wednesday evening at St. Paul's Chapter-house, E.C., Mr. J. Grimshire gave a lecture, illustrated by limelight views, on "The Basilican Churches of Rome and Ravenna."

Our Office Table.

THE London County Council discussed for some hours on Friday the cost of the work performed by the Works Committee of the Council, adjourned from October 30. A further report of the Works Committe stated that where the quality of the work did not enter into consideration, or when it could not vary much, such as the excavation and brickwork in a sewer, the cost of the works compared most favourably with the cost of those undertaken by a contractor. On the other hand, in architectural work, where the cost had exceeded the estimate, the committee claimed for their work a quality which was only comparable with that executed by builders of the highest class, who rarely, if ever, undertook work at competitive prices. The manager stated that in his estimates he assumed the work required would be of the ordinary quality, whereas the highest class had been demanded of him. Eventually an amendment moved by Mr. Westacott for the rejection of this paragraph was rejected, and the report of the Works Committee approved. A recommendation by the committee that it be referred to the General Purposes Committee to consider and report as to the advisability of framing standing orders which will provide for the approval of the Council being obtained to the ascertained cost of works executed by the Works Committee—was also agreed to, after several amendments had been discussed and rejected.

MR. C. H. READ, of the British Museum, who undertook for the London County Council, without remuneration, the task of opening up the tumulus on Parliament-hill, has furnished the Council with a report of his proceedings. The conclusions at which Mr. Read has arrived as to the character of the mound are:—(*a*) That it is without question an artificial mound, raised at a spot where there was originally a slight rise in the ground; (*b*) that a great quantity of additional material was added to it, chiefly on the northern and eastern sides, and probably within the last two centuries; (*c*) that the tumulus has not been opened before; (*d*) that it is very probably an ancient British burial mound of the Early Bronze period, and, therefore, centuries before the Christian era. The burial was probably by inhumation, and the bones have entirely disappeared—a circumstance by no means uncommon. In this interpretation of the evidence his opinion is supported by that of Canon Greenwell, whose lengthened experience of these burials enables him to speak with an authority beyond question upon this point. Mr. Read pays a tribute to Mr. George Payne, F.S.A., of Rochester (who was with him during the whole of the work), and whose geological knowledge and experience in this class of exploration was of great value.

AMONG the Parliamentary schemes to be brought forward next session, in addition to those mentioned by us last week, are proposals for the revival of powers and extension of time for the completion of the Acton Junction line of the Metropolitan District Railway; an extension of time for the completion of the underground railway of the City and South London Company; the construction of a railway from the L. C. and D. station at Bromley to Hayes and Farnborough; alterations and deviations of the London, Walthamstow, and Epping Forest Railway; a new line of railway from the Great Western line at Uxbridge to the Metropolitan Company's system at Rickmansworth; the abandonment of the Metropolitan Outer Circle Railway; and an extension of time for the carrying out of the Parliament-street, Westminster, improvement scheme.

THE council of the Glasgow Institute of Architects have presented a memorial to the corporation regarding the designing of public buildings in the city. In the memorial it is set forth that in the case of the Municipal Offices in George-square, and that of the Art Galleries in course of erection by the Association for the Promotion of Art and Music in Glasgow, a desire was shown, and some consideration given, to secure that the designs should be worthy of the important purpose that each of those buildings was to serve. With buildings of secondary, but still of great, importance, no corresponding effort is made. They submit that the design and arrangement of such buildings are, as much as those of the larger edifices, worthy of every attention and care that can be bestowed upon them. The Institute are of opinion that the designing of important public buildings cannot be satisfactorily done by the department of the master of works, or of the city engineer, and still less when the head of that department is an engineer than when he is an architect. The duties of the office include many other duties which, in a city of such magnitude as Glasgow, must be of a very onerous nature. To relegate the designing of important works of architecture to the assistants of a gentleman who is responsible for the efficient discharge of such duties as the foregoing, and who is himself not an architect, seems to the institute to indicate a want of appreciation of the position which architecture should occupy in an important city.

IT is reported from Athens that the commission of Greek and resident German architects which was recently appointed by the Greek Government to consider what measures are necessary for the preservation of the Parthenon, which was considerably shaken by the recent earthquakes, has been unable to agree. The Government has therefore requested the German Government to send its "most reliable State architect" to advise them in the matter.

AT the twenty-eighth annual convention of the American Institute of Architects, held in Chicago on Oct. 15, in the Fine Arts building, 105 members were present—a larger number than usual. The president, Mr. D. H. Burnham, of Chicago, delivered an address, in which he deprecated the practice of showing designs to customers without payment. The secretary, Mr. Stone, read the annual report of the board of directors, from which it appears there is a membership of 475 fellows. There are also 26 chapters, chartered by the Institute, having an aggregate of 600 members, of which about 500 are practising architects. The New York Chapter has the largest membership—namely, 86, of whom 60 are practising members, the remainder honorary and junior. Illinois has 82 members, of which 80 are practising. Philadelphia 55, of which 31 are practising. The other chapters range from 8 to 20 members. The next convention meets at St. Louis. Mr. Daniel H. Burnham, of Chicago, was re-elected president, and Mr. William S. Eames, St. Louis, secretary.

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On Wednesday in last week Colonel Marsh, R.E., inspector of the Local Government Board, held an inquiry at the town-hall, Selby, into an application of the Selby local board of health for sanction to borrow £775 for gasworks purposes, and £590 for works of water supply.

The head office of the Bank of Liverpool, standing at the corner of Water-street and Fenwick-street, Liverpool, is about to be rebuilt from the designs of Messrs. Grayson and Ould, of that city. No expense is to be spared in making this building one of the most perfect in Liverpool. The work will be executed in two separate contracts, so as not to interfere with the carrying on of business. The fireproof floors are to be on the "Fawcett" system, the contract for which, together with the whole of the constructional iron and steel work, has been given to Messrs. Mark Fawcett and Co., of Westminster.

Major Tulloch, M.I.C.E., held an inquiry at the town-hall, Wednesbury, on Wednesday week, on behalf of the Local Government Board, respecting an application made by the town council for sanction to contract a loan of £800 towards providing a metallurgical laboratory and £120 towards the cost of making up Oldbury-street, New Town. The Town Clerk stated that some time ago the Staffordshire County Council intimated their intention of making Wednesbury a centre for technical instruction in the South Staffordshire district, and the Wednesbury town council then expressed their willingness to share the expense of erecting the new school, finding furniture and equipment, and also providing a lecturer. The estimated cost of the building and site was £1,850. One-fourth of the sum would be paid by the County Council.

The foundation-stone of St. Edmund's Roman Catholic Church, Miles Platting, was laid on Saturday by Dr. Bilsborrow, Bishop of Salford. The architects are Messrs. Pugin and Pugin, of London, and the contractors Messrs. Robert Neill and Sons. The total cost is estimated at about £10,000. The church will provide accommodation for 1,100 persons. At the corner of Monsall-street and Mary-street a tower will ultimately be erected. The total length of the church internally will be 125ft., the width 65ft., and the apex of the roof will be 62ft. above the level of the ground. The materials will be local bricks, with Runcorn stone dressings.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Society of Engineers. "The Principles and Practice of Hydro-Extraction," by H. B. Ransom. 7.30 p.m.

Royal Institute of British Architects. Business Meeting. 8 p.m.

A.A. Camera Club. "Camera Studies of Architecture," by E. W. M. Wonnacott. 8 p.m.

Liverpool Architectural Society. "The Economic Value of Fine Architecture," by Alderman P. H. Rathbone. 6.30 p.m.

Glasgow Philosophical Society. "An Old Glasgow Architect on Some Older Ones," by T. Gildard.

TUESDAY.—Institution of Civil Engineers. Further Discussion on "The Machinery of War-Ships." "Colliery Surface Works," by E. B. Wain. 8 p.m.

Glasgow Architectural Association. "Planning of Farmhouses," by C. J. Davidson. 8 p.m.

WEDNESDAY.—Society of Arts. "The Electrical Treatment of Sewage," by E. Hermite. 8 p.m.

FRIDAY.—Architectural Association. "The Modern Theatre of the Continent," by E. O. Sachs. 7.30 p.m.

◆

CHIPS.

At the last meeting of the North Riding county council, it was agreed, on the proposition of the finance committee, that Mr. J. Vickers Edwards, of Wakefield, county surveyor for the West Riding, should act as assessor to assist in selecting the designs for new County Buildings, in respect of which the premiums are to be awarded, and that he be paid a fee of £73 10s. and his travelling expenses.

The death occurred at Sunderland on Friday of Mr. F. G. Rotherford, the founder of the United Property Owners' Association of Great Britain, at the age of 63. The cause of death was cancer.

The bells of Leominster Priory Church, which have been recast and added to, were rededicated by the Suffragan Bishop of Shrewsbury on Tuesday week. The peal now numbers ten, being the only one above eight in the county, with the exception of those in Hereford Cathedral tower. Eight have been recast, and two new trebles have been added, the founders being Messrs. Warner and Sons, of London.

A new infectious diseases hospital is in course of erection at Bournemouth from the designs and under the superintendence of the borough engineer, Mr. Lacey. It has been decided to make the floors fireproof, and the contract for this portion of the work has been placed with Messrs. Mark Fawcett and Co., of Westminster.

The Admiralty have decided to remove the Vanguard Shoal in Plymouth Sound, thus greatly improving the entrance to Devonport Dockyard. The work, which will occupy several years, will be commenced at once.

The Wednesfield School Board have accepted the tender of Mr. Thomas Tildesley, of Willenhall, for the erection of the new school at Wednesfield, to accommodate 314 children. The cost of the buildings will be £2,198.

St. John's Church, Truro, has just been renovated at a cost of about £1,000. Messrs. Clemens and Battershill were the general contractors, and Mr. Nichols executed the font and other carving.

A new Freemasons' Hall was dedicated at Yeovil by Viscount Dungarvan on Friday. The building is two floors in height, and contains on each floor a room 40ft. by 22ft. Brother Johnson is the architect.

In the case of Frederick Taylor, late Quick's-road, Wimbledon, S.W., builder, trading with James George Elliff Taylor, as Taylor and Son, the discharge from bankruptcy has been suspended for two years, ending Oct. 12, 1896. In that of William Biden Young, High-street, Wimbledon, S.W., late Weybridge, builder, the discharge has been suspended for three years, ending Oct. 12, 1897.

At Bournemouth sessions, on Friday, a license was granted for a new building known as the Pavilion, which is nearly completed, at Boscombe, Bournemouth. The building has cost £15,000, and will seat 4,000 people.

Lady Rawlinson laid on Monday the foundation-stone of a new Primitive Methodist chapel, which is to be erected in London-road, Brighton, at a cost of about £4,300, part of which sum has been raised by the sale of the old chapel in Viaduct-road.

A Methodist central hall, for evangelistic and philanthropic work, has been opened in Belfast. The large room will seat 2,500 persons. The cost is over £10,000.

The Caledonian Railway Company opened their new line from Hamilton Hill to the Glasgow Queen's Dock on Monday. The new line taps seven coal depots, and will enable coal to be sent direct to the quay side at Glasgow, and the Caledonian will save by the new railway £20,000 annual tollage to the North British Company.

Trade News.

WAGES MOVEMENTS.

HARROGATE.—The strike at the Harrogate baths still continues so far as the masons are concerned, but the work of the bricklayers and their labourers, joiners, navvies, and others is proceeding rapidly. The masons' work is well forward, and the principal business at present is the internal brickwork. Consequently Mr. Gould, the contractor, considers it will pay him better for the men to be off the job for six or eight weeks. He has just put down a new steam stone-dressing machine, which dresses two sides of a stone at the same time, and the task is well and more evenly done than can be done by an ordinary mason. The chief reason the masons have turned out, the delegates say, is because they have to take their food from home, and no mess-house is provided. The men also object to the bricklayers' foreman dismissing a mason. The masons will continue the strike.

CHIPS.

A new organ was dedicated at Holy Trinity Church, Oswestry, on Thursday in last week. It has been built by Messrs. Hele and Sons, Plymouth and Exeter, and cost about £600.

The foundation of two houses in course of erection in Great Portland-street, at the back entrance of the Queen's Hall, suddenly gave way on Tuesday, while some dozen workmen were engaged on different floors. Two men were seriously injured and taken to the Middlesex Hospital. One subsequently died.

A new pumping station at Liscard, which has been constructed by the Wallasey Local Board, at a cost of £35,000, was opened by Mr. Thomas Snape, M.P. The new works will practically double the water supply of the district of Wallasey. They have been carried out under the direction of Mr. H. Ashton Hill, engineer to the board. Messrs. Marr and Son were the general contractors, and the boring for the well has been done by Messrs. Vivian and Co. The well is 12ft. in diameter, and 175ft. in depth.

Statues of SS. Mary and John, each about 6ft. high, by Earp and Hobbs, of Lambeth and Manchester, have just been placed in position at All Saints' Church, Middlesbrough. They occupy niches on the interior walls of the north and south-western ends of nave.

The Emperor William will open the new building of the Reichstag at Berlin on Wednesday next, the 5th of December, with great pomp and ceremony. His Majesty will receive the key from Herr Wittich, the chief executive architect, and be addressed by Professor Wallot, the architect who designed the building, and will then lay the keystone of the portal.

Mr. John Bell, of Lockner Holt, Chilworth, Surrey, the founder of Bell's Asbestos Company, died a few days ago after a short illness.

At Widnes Town Hall, an inquiry was held on Tuesday, by Mr. Arnold Taylor, an inspector appointed by the Local Government Board, into the application of the town council for permission to borrow £11,503 for the extension of the gasworks, £4,200 for works of private street improvement, £4,100 for the acquisition of a depot for nightsoil refuse, and £1,500 for sewerage works.

The new out-patients' department of the Women's Free Hospital in Portland-terrace, Southampton, was opened on Tuesday week. The new building consists of a large waiting-room for out-patients, capable of seating some 80 persons. Below this room is a doctors' consulting-room, and a second waiting-room. Mr. Ingalton Sanders, of Southampton, was the architect, and the work was carried out by Mr. A. Warden, of Fitzhugh.

The London and North-Western and the Great Western Railway Companies contemplate extensive improvements at Shrewsbury station and in the railways near it. The station was built half a century ago, and the need of additional accommodation has consequently become very pressing. It is proposed to widen the viaduct which crosses the Severn on the Birmingham side of the station. Two other bridges on the other side of the station are also to be widened, additional land is to be acquired, new lines are to be laid down, and the station generally is to be greatly extended. A new approach for foot passengers is also to be made from the Abbey Foregate and Belle Vue districts.

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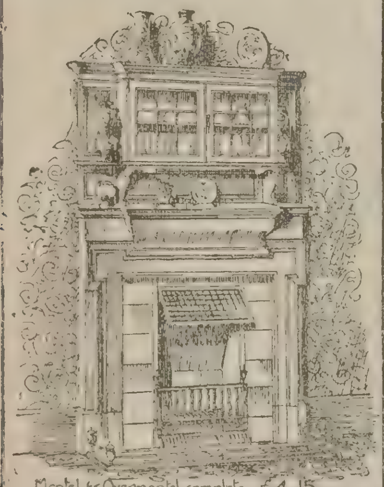

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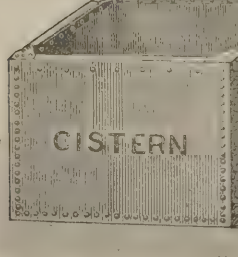

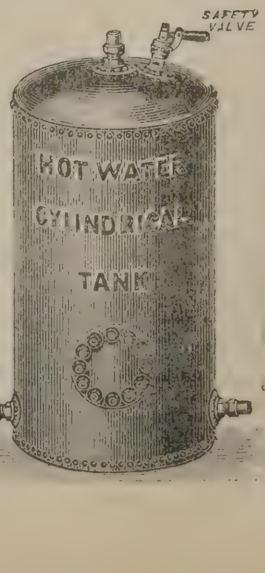

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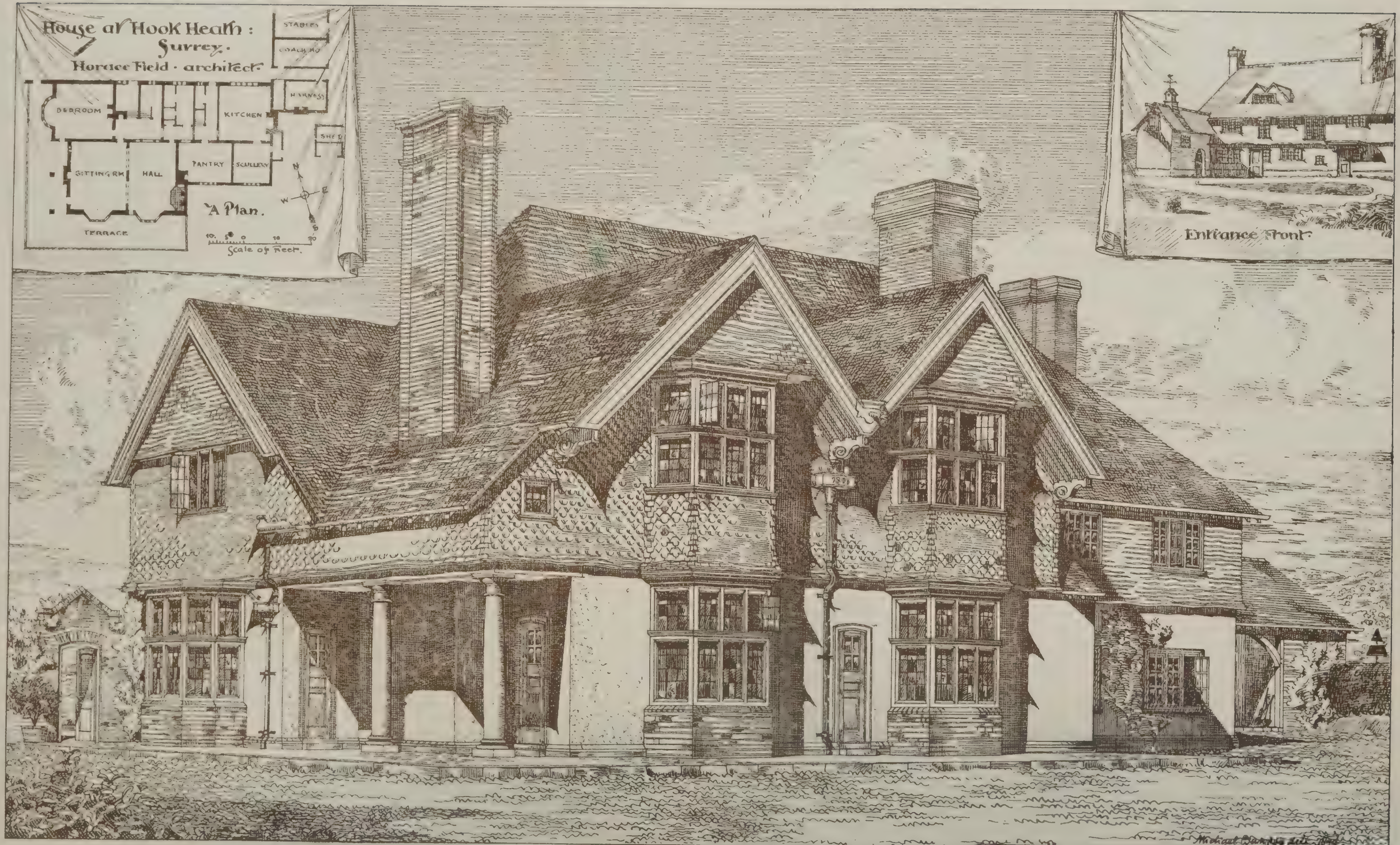

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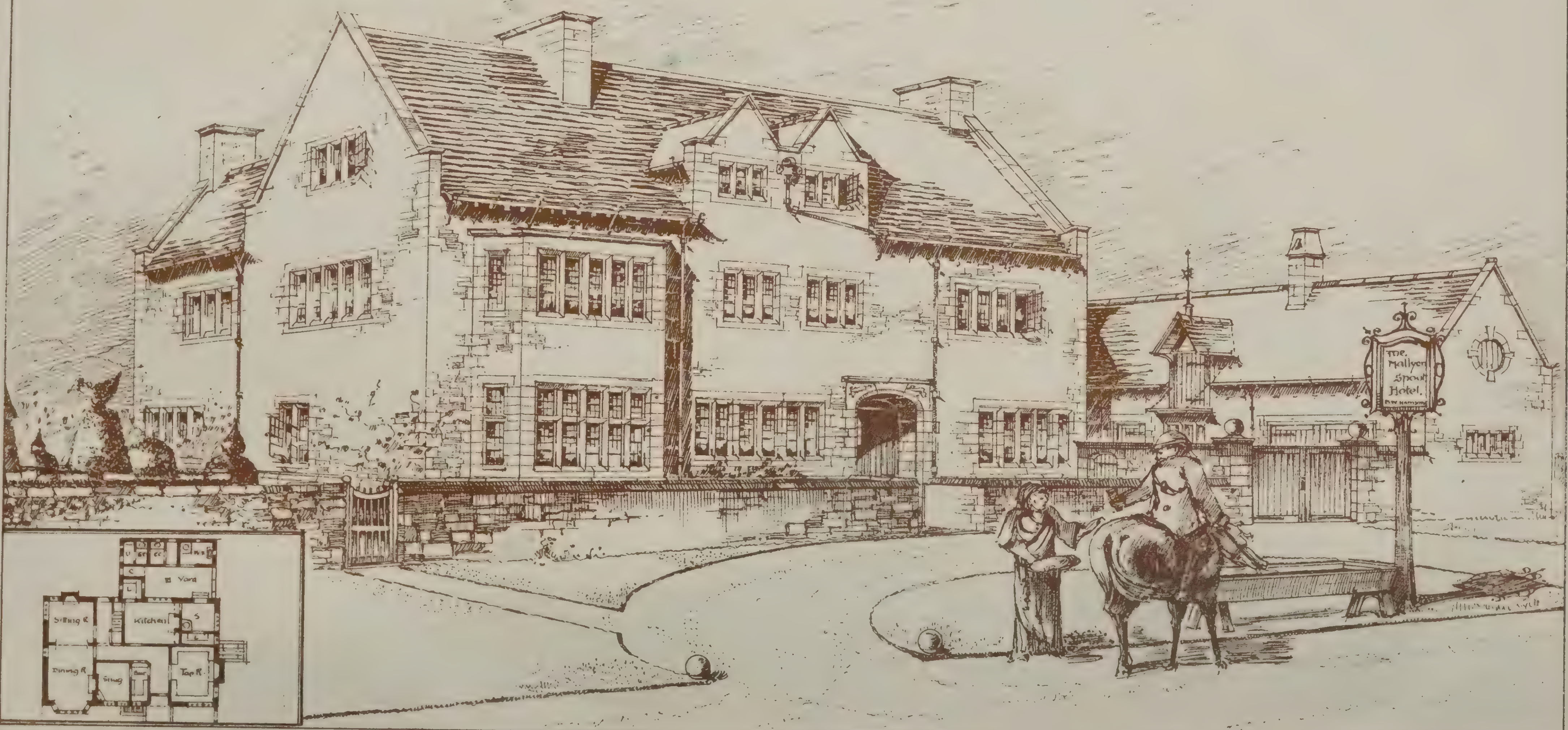
Demaine and Brierley. Architects. York:



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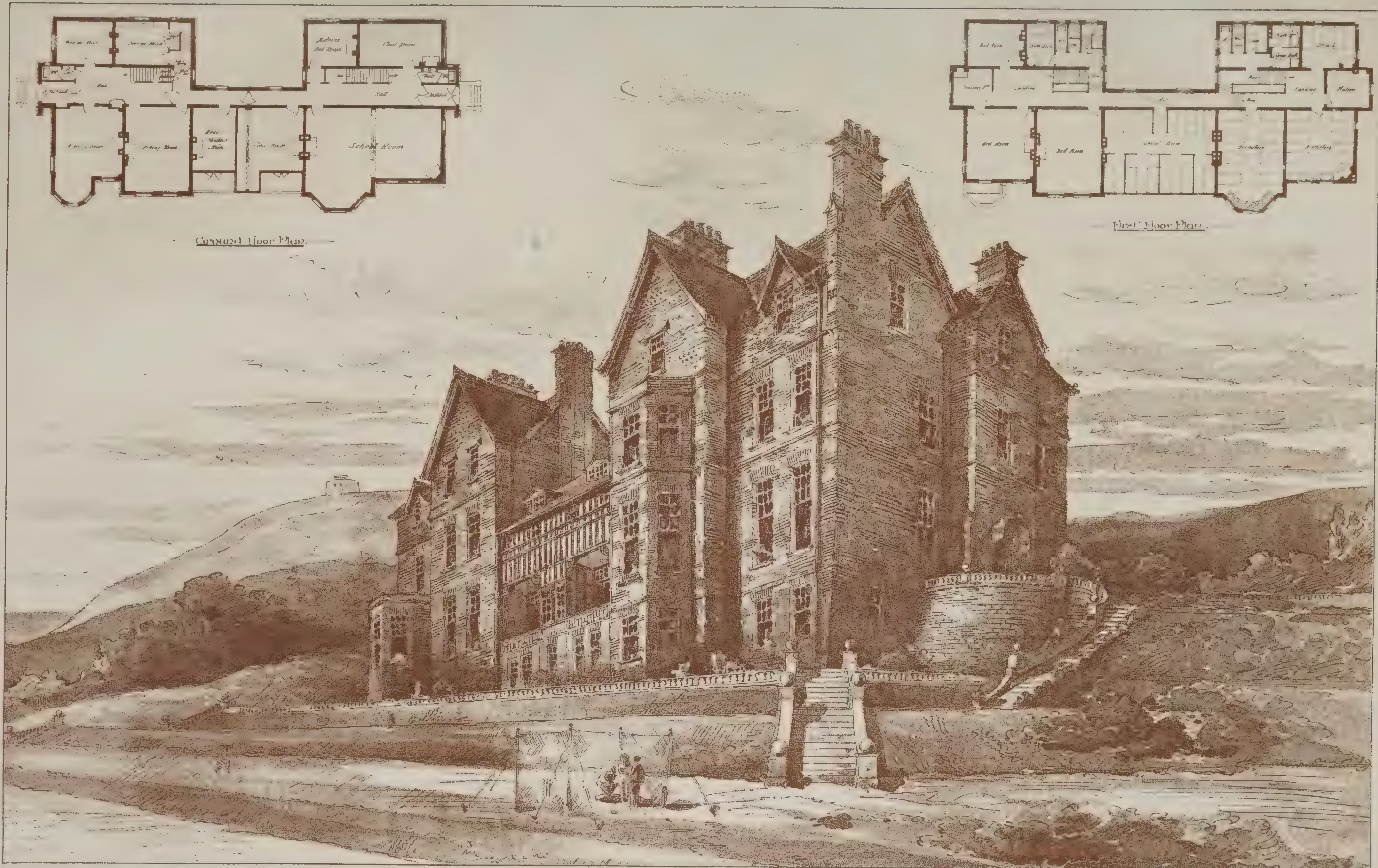

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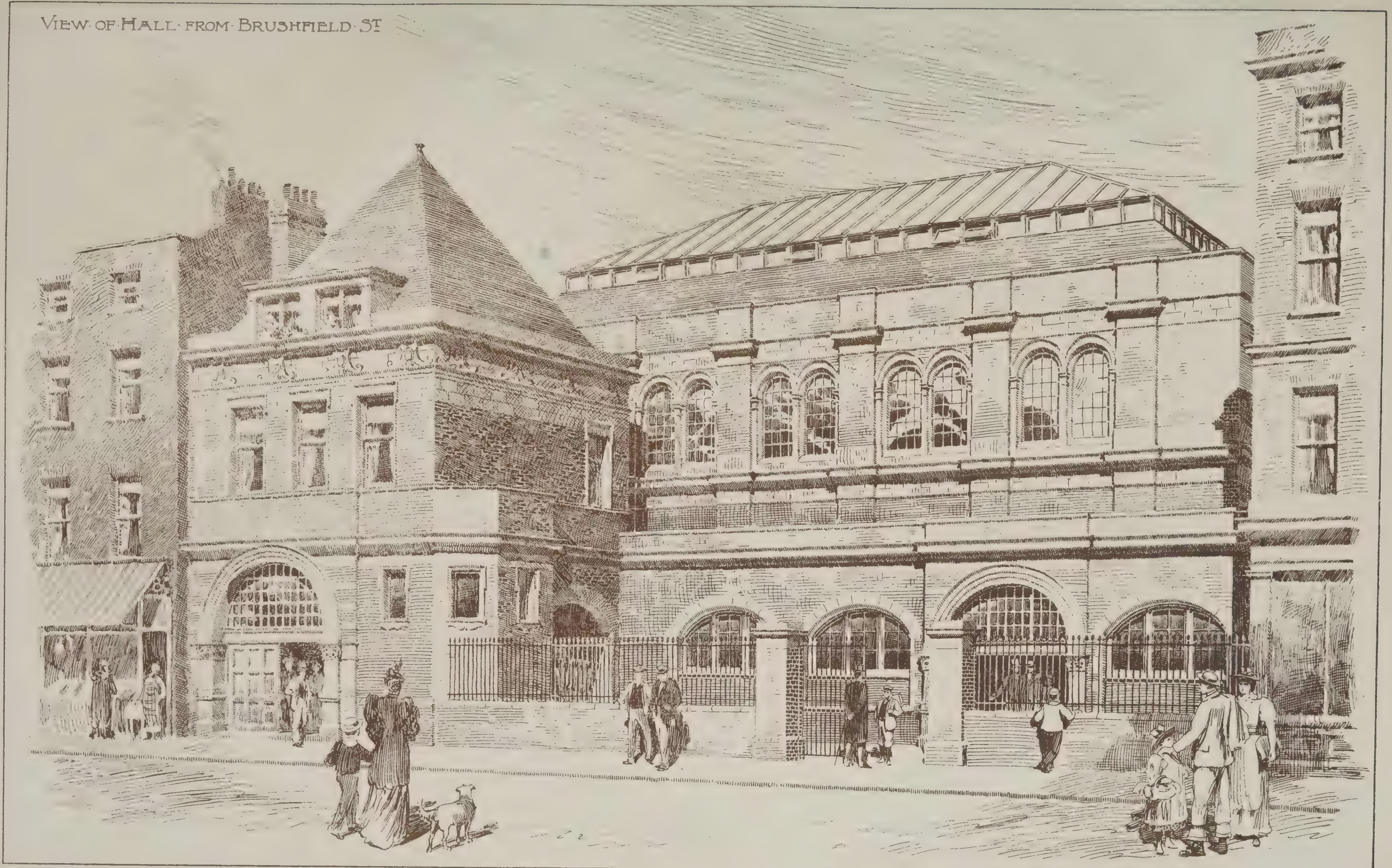
VIEW·OF·HALL·FROM·BRUSHFIELD·ST.

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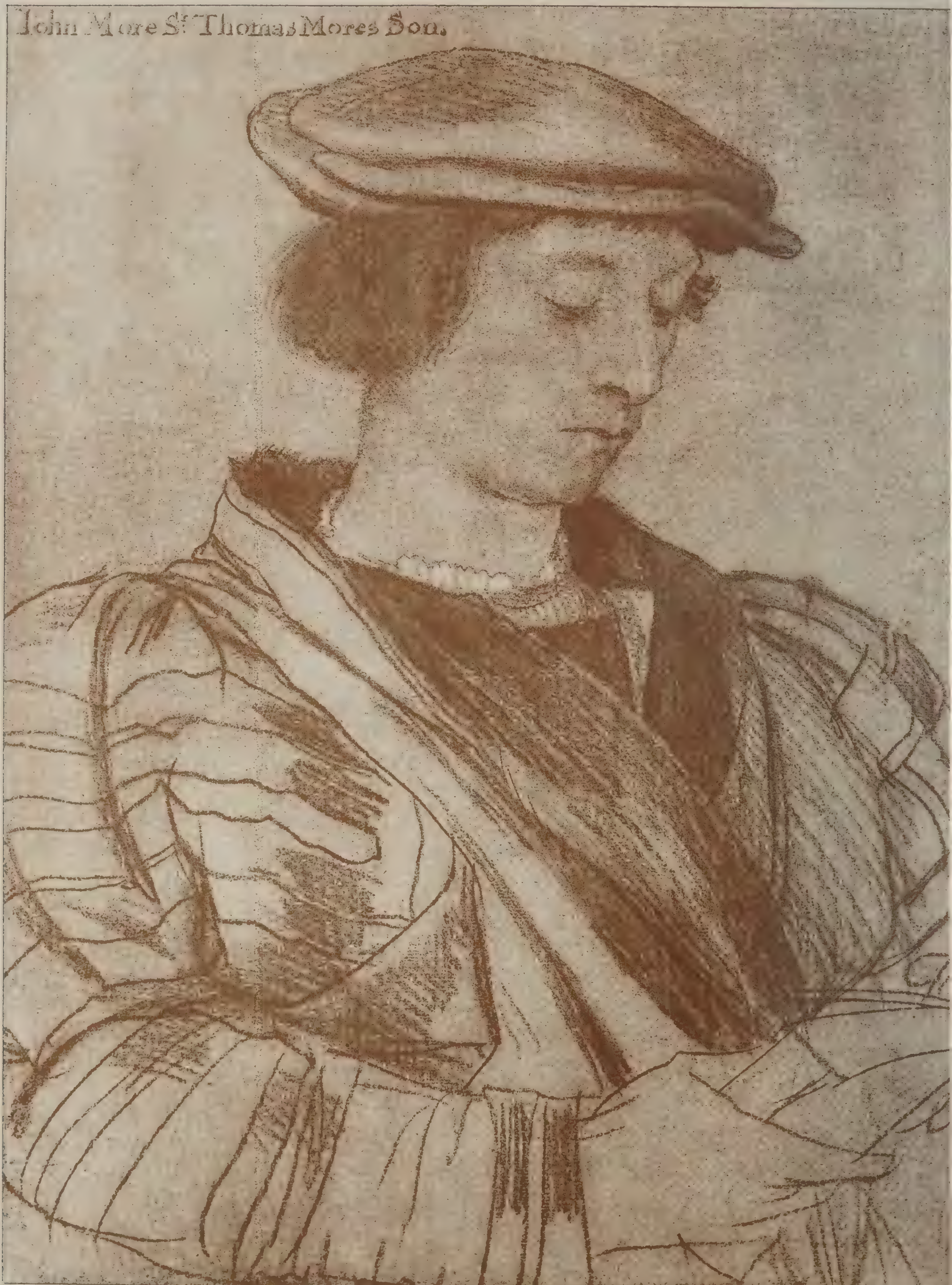
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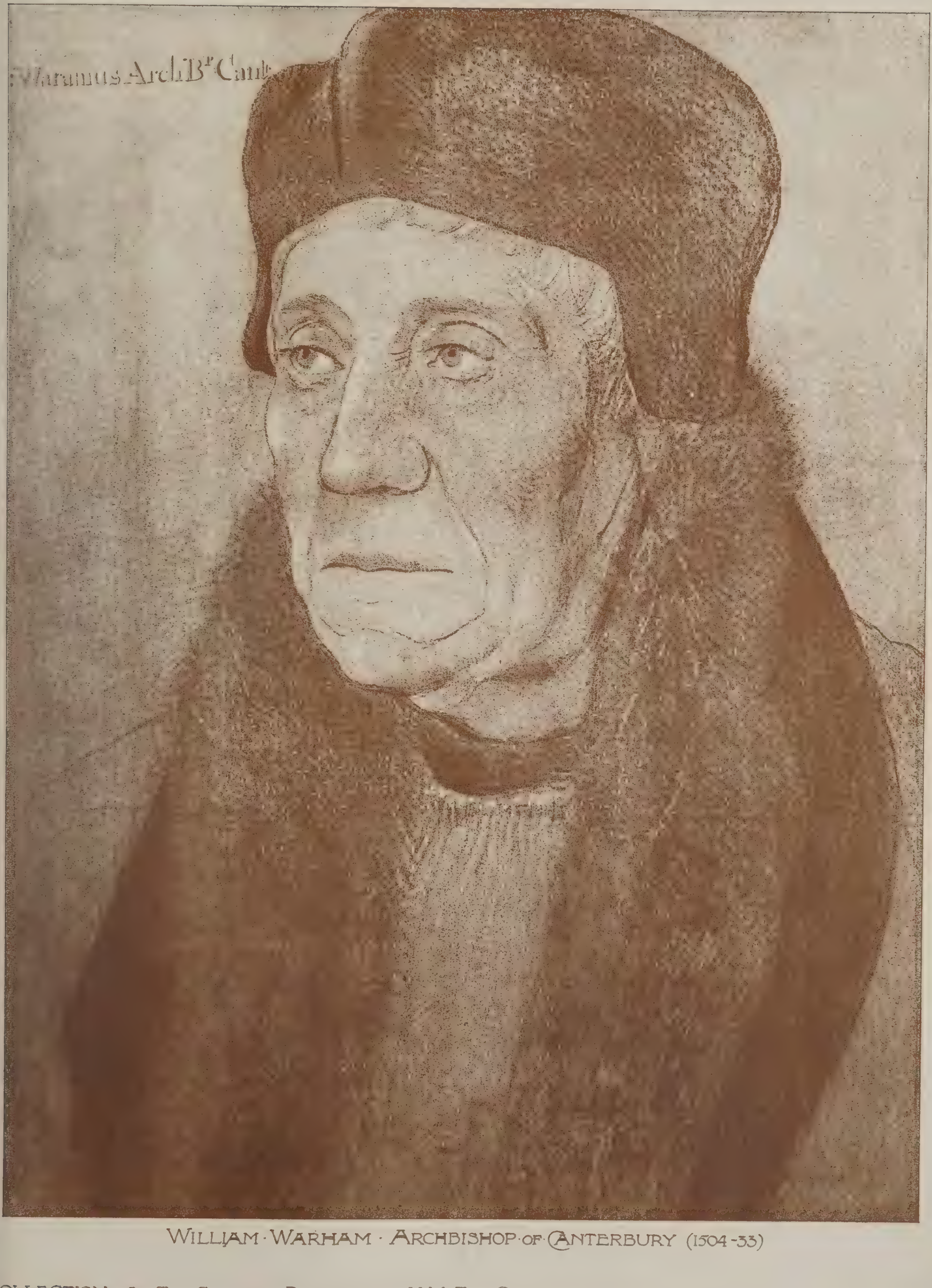

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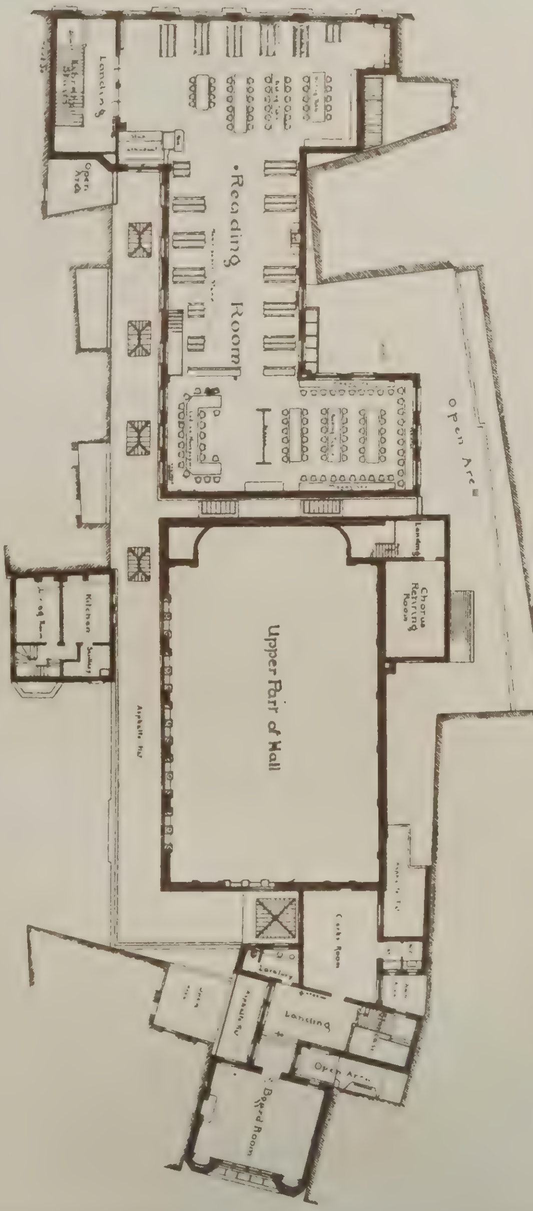
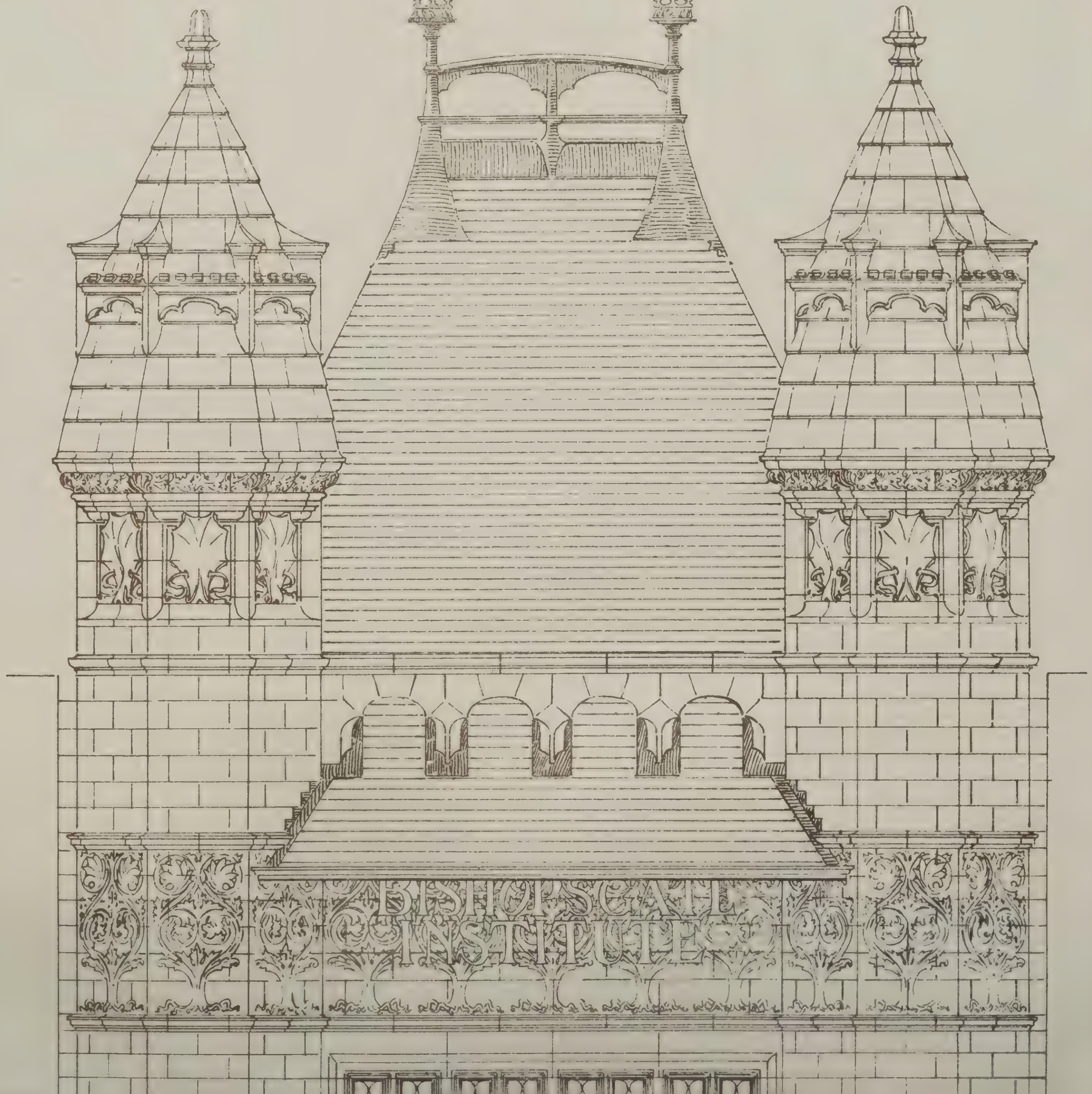
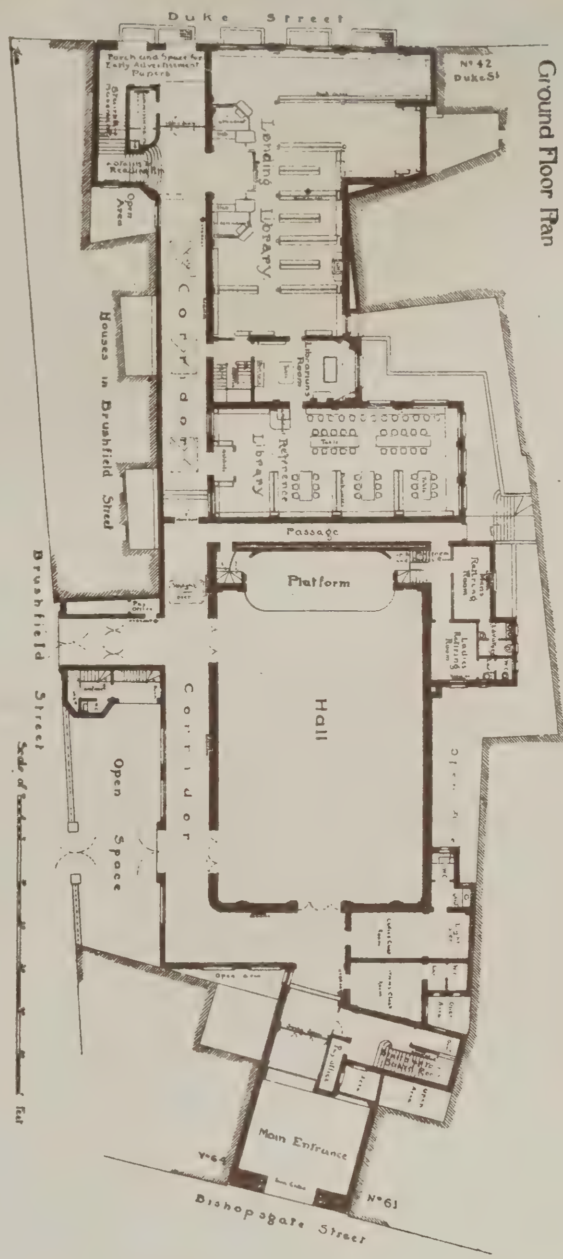
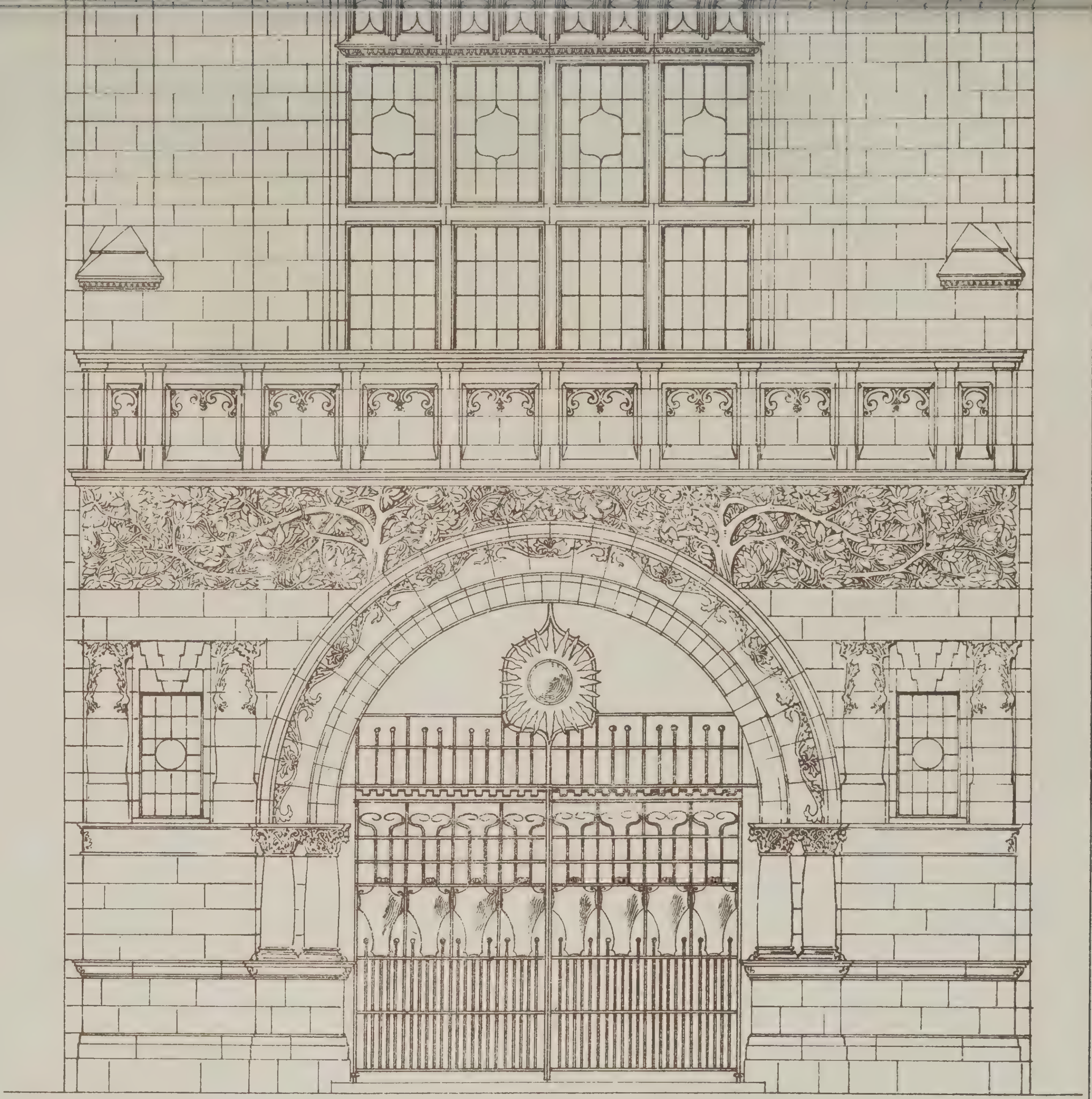


First Floor Plan







ELEVATION · IN · BISHOPSGATE · ST.

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THE · BISHOPSGATE · INSTITUTE · (OPENED · NOV · 24th) C · HARRISON · TOWNSEND · F.R.I.B.A · ARCH.T

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2083.

FRIDAY, DECEMBER 7, 1894.

REAL AND SHAM DESIGNERS.

TWO sorts of designs are represented in competition drawings, one kind exceedingly simple, very often inadequately and meagrely drawn, exhibiting the appearance of haste, the other kind elaborate, often pretentious, and drawn with masterly effect. The general or superficial observer will at once come to the conclusion that the elaborately-drawn set is by far the only one deserving of attention. The author has at least taken the trouble to draw it effectively, to appeal to the eye, knowing that this is the wisest policy when a committee of not very critical persons are the adjudicators, and public opinion has to be consulted. On the motto that a "thing that is worth doing is worth doing well," we are compelled to admire the care and the labour spent on the executive part of a design. To set forth an indifferent thought or idea artistically, to make the most of the draughtsmanship, is commendable in itself, if people and competition judges only understood how to distinguish between design and drawing. But they do not, and therefore the latter wins; so much the worse for the real designer, and the better for the tactical one.

It has been said by a well-known essayist that Shakespeare's principal merit may be conveyed "in saying that of all men he best understands the English language, and can say what he will." And is not this the precise merit of the real designer? He best understands the language of art or of architecture, and can say what he likes. Not, mind, what pleases, but what he thinks is the best. The real artist can see quicker than other people, and can interpret his wants directly and simply as no other man can. No doubt this meaning or expression often shocks the common perception of people; it is often positively distasteful to them, as when they see a blank wall where they look for a window, or a plain tile roof instead of balustraded and crested finish, or a bare vertical parallelopiped of brickwork for an elaborate tower. How strangely repulsive to the ordinary eye after florid Italian and Gothic erections was the bare, little-paned sash window in a wall of red brick and many of the quaint devices introduced on the revival of Dutch "Queen Anne"? People laughed and scoffed at the seeming impertinence and audaciousness of making our villas and civic buildings like old 17th-century manor houses. They hardly believed that the revival would be seriously maintained. It was too much of a joke to see the leaders of architecture one after another following each other—men, too, who had been purists; but did not these leaders have an inkling of what was true and honest? Did they not see the folly of trying to Gothicise or Italianise our buildings? All became clear to the mental vision when the style or revival was looked at in this light.

And precisely the same surprise is evinced by those who, comparing the work of real and pseudo-architects, observe with astonishment the indifference of the former to all kinds of cheap display and adventitious aids. Look, for example, at the manner many leading architects draw their competition designs. In many recent exhibitions of these designs—as, for instance, in that of Christ's Hospital Boarding School—the drawings submitted by one or two leading architects were extremely bare and meagre—quite unworthy of the design for so important a building. A well-known architect, who has been largely engaged in university and other buildings, sent in a set of drawings of the most crude and perfunctory kind—plain, matter-of-fact elevations of the various blocks, that could not have escaped notice by the side of other designs admirably and artistically set forth. In the competition for the South Kensington Museum extension, many must have noticed the same declension in the style of drawing, and only the other day we examined two designs for a free library to be built in the north of London, by leading architects, who, probably on the strength of their reputation, sent in very poor and indifferent drawings, which surely puzzled many. On the ground that "good wine needs no bush," the authors of the designs abstained from doing anything which could be thought to emphasise the merits of their work. From the point of view held by these leaders, anything approaching professional tactics is ignored. Because mere draughtsmanship, in their eyes, is misleading and derogatory to the real character of art, they have discovered how many competition drawings have belied the actual design, that the association of draughtsmanship and design has often proved delusive—that, in fact, good design has frequently emanated from men destitute of the facile pencil, and who have disdained the assistance of the professional artist.

We have not to go far to seek a solution of the matter. The real architect puts on paper exactly what he wants, no more and no less, and he knows what he wants. If he is drawing a window or a doorway in elevation, he represents it by no more lines than will express his intention, and, if he can, he will try and express his meaning with as *few* lines as possible. Thus a jamb containing shafts and members will be simplified by defining only the deeper shadows or hollows. If it is an ornament or a cornice, he will be equally particular not to make it more important or more elaborate. No doubt this rule, if carried out in elevations of ordinary buildings, produces a meagre appearance. The pseudo-architect designs in excess. He makes more lines than necessary on paper to express his meaning, he exaggerates the size and importance of features because he does not know exactly what he wants, and puts his drawing in place of design. Precision is not his *forte;* he beats about the bush till he finds something that will please him and look effective. Let us take a few simple cases to illustrate our meaning. A plain level roof, with hipped ends, is considered ugly by the quasi-artistic mind, and forthwith he adds such features as end pavilions or Mansard terminations. The level cornice or parapet is distasteful, and is superseded by a number of gablets or dormers. These features are not actually wanted, but they are introduced for the sake of appearance, and to make the elevation attractive. The real architect objects to them; he would simply emphasise the plain hipped roof and eaves line. Again, the quasi-designer is not fond of plainly following the necessities of plan or construction by dropping a roof or ridge line over a part which is not carried up. He carries on his elevation or lines level by some disguise. Hence we see that while one elevation presents a return façade of the same height as a front, another will boldly break his elevation, so as to make it conform to the interior requirements. He does not attempt to compromise, but to make picturesqueness out of necessity. His attention is clearly and unmistakably expressed, instead of being timidly manipulated to produce a regular effect. In such things as chimneys, turrets, cupolas, we notice the same prevarication and dodging; they are made higher or lower, more or less ornamental, just to suit the vagaries of the designer, who is not exactly sure of his meaning. We see it also in detail. An iron support in the hands of some men is made to represent a Corinthian column, or some other elaborate form. The real artist would fashion it with a simple and unostentatious capital, forming a cradle with brackets or studs. The former does not hesitate to use cast iron in such forms as crests for ridges, brackets, and finials; the latter would repudiate such use of ornaments. The excess in design which we have attributed to the pseudo-artist is seen also in details like ornamental leadwork, such as pipe-heads, finials, hip-knobs. The ordinary plumber does not express his own meaning, but "executes" a design of somebody else; and in like manner throughout all the trades where design enters, the lack of directness of aim has been prejudicial.

Excess in drawing and excess in design and ornament are the main qualities which distinguish the sham from the real designer. Facility of pencil often outstrips the power of conveying the artist's thought—in proof of which we may instance a florid and pretentious drawing which has no definite character. And the same facility may be seen in language. A crude and imperfect thought is often wrapped up in a redundant speech by a man who has no distinct idea of his meaning. And it is this surplusage of the means of expression which has given to professional artists their chief success. It will be a long time before the public are made to distinguish between the real and the counterfeit. People are easily led away by impressions and clap-trap. They are not able to strip off the adventitious extrinsic from the real and essential, and it is this difficulty which has hindered them from distinguishing a good from a made-up design. An obvious want clearly and simply expressed is always less popular than a flimsy disguise. Architects have, of course, to gain a reputation as much by their drawing as by their executed designs, and it would be absurd to deny that much of their success depends on designs skilfully prepared. Those who have gained a reputation by their executed buildings can afford to undervalue the aid of the draughtsman and the many subterfuges of tricky drawing and colour, but it ought not to deter them from sending skilful and artistic representations of their designs. To do otherwise is disrespectful to those who invite their services and to the profession they represent. On the other hand, the experience of recent competitions ought to have its lesson in bringing about a more healthful reaction. Excessive elaboration of detail and a trashy, misleading kind of draughtsmanship have, no doubt, partly been the cause why the leading members of the profession have become disgusted with the tactics of competing members, and have sought to make a protest against the too-frequent habit of putting rival draughtsmanship in the place of design. There is, no doubt, much to complain of even now in this direction. Even the experienced professional assessor cannot always affect an honest disregard of a clever artistic get-up; many are unconsciously led captive by the snares laid by the artful expert in disguising portions of the design. Against this tendency to try and win by extraneous aids, a few of the leading lights of the profession have revolted, and their eagerness to show their disdain of competing on such terms has led them into a position sometimes almost unnatural, if not grotesque.

ROYAL SOCIETY OF PAINTERS IN WATER-COLOURS.

THE present winter exhibition of the "Old" Water-Colour Society shows that the older conventions are still prevalent among members of this society. The early traditions of the art still linger in the works of Birket

Foster, Fripp, Callow, Carl Haag, and some others. Two admirable figure studies by J. Henry Henshall show that his pencil is versatile in depicting subjects other than melodramatic incidents. "The Stool of Repentance" (2) represents a flaxen-haired little girl standing on a stool, her dog behind, for some act of insubordination; while another version of the same idea is "The Naughty Girl" (23), where the little delinquent is standing, her face to the wall, with her arms behind her, holding the detached or broken head of her doll. The drawing is excellent, and the expression in the eyes of the young culprit indicating the unruly temper is strong; but there is a too boy-like look about the face. Thomas M. Rooke's beautiful drawing of "Sculpture on the West Porch, Chartres Cathedral" (9), is executed by subscription for the Birmingham Town Museum. Mr. Rooke has faithfully delineated in detail the jamb and colonettes of this great portal, the statues of saints, and the beautiful enriched capitals and abaci above them are portrayed, showing the Byzantine feeling of the work. His other views of Chartres (17) and the carved bracket on the house of the Sulmon, Chartres, show equal care and feeling. Miss Clara Montalba has no less than eight examples of her colour harmonies, all Venetian subjects, rendered with inimitable beauty and delicacy of colour. These are ivory-like in their soft, subtle tones, as in "Early Morning, Venice" (6), "Shipping on the Guidecca" (66), "Before the Storm" (144), and one or two on the screens, amber-toned studies of light and colour. What a charming piece of grouping and colour is the sketch, "A Venetian Welcome," where the placid lagoons are brightened by the colour of gaily-decked gondolas and banners. Tom Lloyd is strongly represented, too, on the walls. His garden scenes are daintily drawn, of suffused warm sunlight and summer evening tranquillity. "Cherry Ripe" is a walled garden bathed in warm sunlight, with children. "Gone" (22), a lady and her dog watching the gliding away of a punt on the river, in a summer evening glow. "Summer Time" (78), "After Dinner" (185), are also pleasing studies in their way of the summer moods of life, soft and melodious in colour. In sharp contrast are the works of Robert W. Allan, whose Dutch harbours and landscapes are, as usual, full of strong colour and vigorous handling. "Goes, Holland," is a capital view of the picturesque market-place, with its groups of people and the background of municipal buildings. "Montrose Harbour" (150) is fresh in colour, and the blottesque touch and vivid light and movement of this master may be seen in several other works and sketches, as in "A Scotch Fishing Village" (262). Lionel Smythe is a charming painter of rustic scenery and children. "Songs without Words" (27), two children in a wood, their hands in one another's, looking up at a tree, listening to a feathered songster, is full of grace, sentiment, and beautiful colour. The spring woodland, the daffodil-spangled ground, and the charming simplicity of the two little wanderers are excellent. "A Picardy Lass" and "Gooseberries" (342 and 345) are both delightful studies.

Albert Goodwin contributes a large number of his drawings, full of subtle colour and atmosphere. The view of "Bridgnorth" (94), from an old bridge in the foreground, is a charming subject, masterly handled in crow-quill and colour. The heavily laden waggon on the bridge and the distant view of the pretty Shropshire town, with its hilly background, church tower, and houses in red brick and tiles, make an attractive subject, and Mr. Goodwin's technique is well suited to such a theme. His other views of "Clovelly" (48), with its cliffs and harbour, also a delicately drawn harmony of "Lynmouth" (114), with its blue sea seen through delicate foliage of autumnal tints; of "Lucerne" (142), "St. Mary, Redcliff, Bristol," and "Portsmouth," are equally clever compositions, full of colour, in one case a red sunset glow, and in another quite Turneresque in prismatic harmony. Drawings of "Wells" and "Venice," and of "Dartmoor Prison" make up a very large collection of this industrious artist's work. The latter, with its figure of a fugitive in the foreground, is perhaps the least satisfactory; but there is a true poetic meaning to be discovered in all of them.

Miss Rose Barton's new departure shows that her sympathies and talents are not entirely devoted to drawing London streets, parks, and squares. In "Noonday" there is evidence of ability in quite a new direction. It represents a peasant woman trudging along over a ploughed field in the heat of an autumn day, exquisite in feeling and painted with all the subtle power and pathetic suggestiveness of toil that Clausen has given us. The solitary figure of the peasant in a wide expanse of stubble-field in the hands of many would have been purposeless and commonplace; but Miss Barton has, by subtle drawing and subdued colour, imparted to those simple elements a true pathetic interest. The grey mist rising over the landscape suggests the close of a toilsome day, and the qualities of maternal care and patience are written in the figure and gait of the lonesome figure. In the same vein are her drawings, "Returning from Hop Picking" (154), peasants and children wending their way homewards in a grey, misty evening; "Tower Bridge from Cherry Garden Pier" (67), and "Cromwell Road."

Samuel J. Hodson's drawings of "Verona" (60), "Dordrecht" (90), "Hoorn" (81), are careful and sympathetic. Sweet and melodious in colour and feeling, Mrs. Allingham contributes two delightful cottage studies—"A Surrey Cottage" (89) and "Cottage near Freshwater" (202)—both charming examples of her power of investing simple country life with exquisite grace and sentiment. In a similar class of subject we welcome again the conscientious art of Birket Foster, one of the oldest members, in such delightful subjects as "A Suffolk Well," "June in a Cottage near a Wood" (188), a group of children at a stile, "On the Beach, Southwold" (219), all full of painstaking drawing of gambolling country children, and of English rustic life. The work of Alfred D. Fripp, the secretary, is confined to Italian scenery. "The Campagna of Rome from the Via Appia" (213) is a pleasing subject well handled. George A. Fripp sends several drawings in his finished style. "Egglestone Abbey" (30), "Distant View of the Isle of Mull" (181), are examples; the latter is full of sunlight, and the coast and bay, with its pebbly beach, are carefully drawn. W. Callow sends also several drawings. "Venice from St. Giorgio" is perhaps one of his best. "Canal in Ghent" (229) is also strong in those qualities for which this master has achieved success—strong masses of light and shadow, and excellent drawing. One of the few figure-subjects is E. R. Hughes's "Biancabella, and Samaritana, her Snake Sister" (251). The subject is taken from "Straparola," a modern French fairy legend. A beautiful girl, quite nude, stands in a basin of white liquid or milk, in a secluded part of a garden, the green bank of which forms the background to the figure. She has a green-hued snake entwined round her body and limbs. The snake is "moulding" into beauty the form of her earthly sister, so the tale goes. Beautiful as the drawing of figure and the technique is, there is wanting imaginative power in the picture. Below it is G. H. Andrews' large picture of "Blast Furnaces at the Iron and Steel Works, Barrow-in-Furness," a rather uninviting subject. William Pilsbury paints delicately "May Blossom" (278). Professor Herkomer sends an interesting "Design" (296), and some sketches, and a portrait of his wife. The heads in chalk are admirable studies of light and shade. Frederic Shields' "Obedience" (292) is another clever decorative design in ink-shaded outline, and on the screens we note some nice drawings by Walter Crane, Herbert Marshall, Sir O. W. Brierly, R. Thorne Waite, Lionel Smythe, and especially a very clever figure-study by J. R. Weguelin (360), a nude figure of "Pelagia" standing on a glistening sea-beach against the blue sea, admirable in drawing and colour.

THE LONDON BUILDING ACT, 1894[*].

(*Continued from page* 748, *last issue.*)

THE section relating to courts within a building, for light, air, and ventilation, is divided into two parts—viz., courts inclosed on all sides, and courts inclosed on all sides except one. If a court is inclosed on all sides, and its depth to the ceiling of the ground story exceeds its length or breadth, adequate provision must be made and maintained by the owner for the ventilation of such court by means of a communication between the lower end of the court and the outer air. The expression "adequate" is rather vague, and it does not appear who is to decide as to what is considered adequate, and there is no reference to the Tribunal of Appeal in this section. No habitable room is to be lighted and ventilated into a court inclosed on all sides, unless the width of the court is equal to half its height. The height is to be measured from the sill of the window to the eaves or top of the parapet of the opposite wall. It is somewhat uncertain whether it is the vertical line which is to be taken in measuring the height, or the diagonal line, as the Section states "from the window sill to the eaves or top of the parapet of the opposite wall." A court inclosed on all sides can be made oblong in shape if it contains as much superficial area as a square one, provided the length is not greater than twice the breadth. Courts inclosed on all sides except one, and the length being greater than the width, cannot have the window of a habitable room lighted into it unless the distance from the window to the opposite wall is equal to half the height of such wall, measured from the window sill. Every habitable room must now open into the external air, and the size of the window or windows in such habitable room, is to equal to $\frac{1}{10}$th of the floor space, half of which is to be made to open. Habitable rooms may, however, be lighted by a skylight or dormer, and in that case the window is to equal $\frac{1}{12}$th of the floor space, half of which is to open. Staircases in tenement houses must be ventilated upon every story above the ground story by means of windows or skylights, opening directly into the external air, or shall be otherwise adequately ventilated; but who is to determine what is adequate ventilation is not stated. Staircases to ordinary dwelling houses have also to be ventilated by means of a window or skylight, opening directly into the external air. Ventilation is also required under the floors of basements, except where the floor is of solid wood blocks bedded on concrete.

The height of buildings in old streets—*i.e.*, streets laid out before the 7th of August, 1862, is now restricted to 80ft. and two additional stories in the roof; but towers, turrets, or other architectural features or decorations are excluded from the restriction, as also are churches and chapels. This, however, does not prevent you from completing a building taller than 80ft. if begun before the passing of the Act, or from rebuilding a building which now exceeds those dimensions, or of continuing a row or block of existing buildings belonging to the same owner exceeding 80ft. high to an equal height. The Council have power to consent to buildings being erected exceeding this limit of 80ft.; but they must within one week after giving consent publish the fact for the benefit of adjoining owners being within 100 yards of the site. These adjoining owners, if they object, may appeal to the Tribunal within 21 days, and should the Council refuse to consent to any building exceeding 80ft. high, the applicant can also appeal to the Tribunal. In a street formed after the 7th August, 1862, and of a less width than 50ft., no existing building is to be raised, and no

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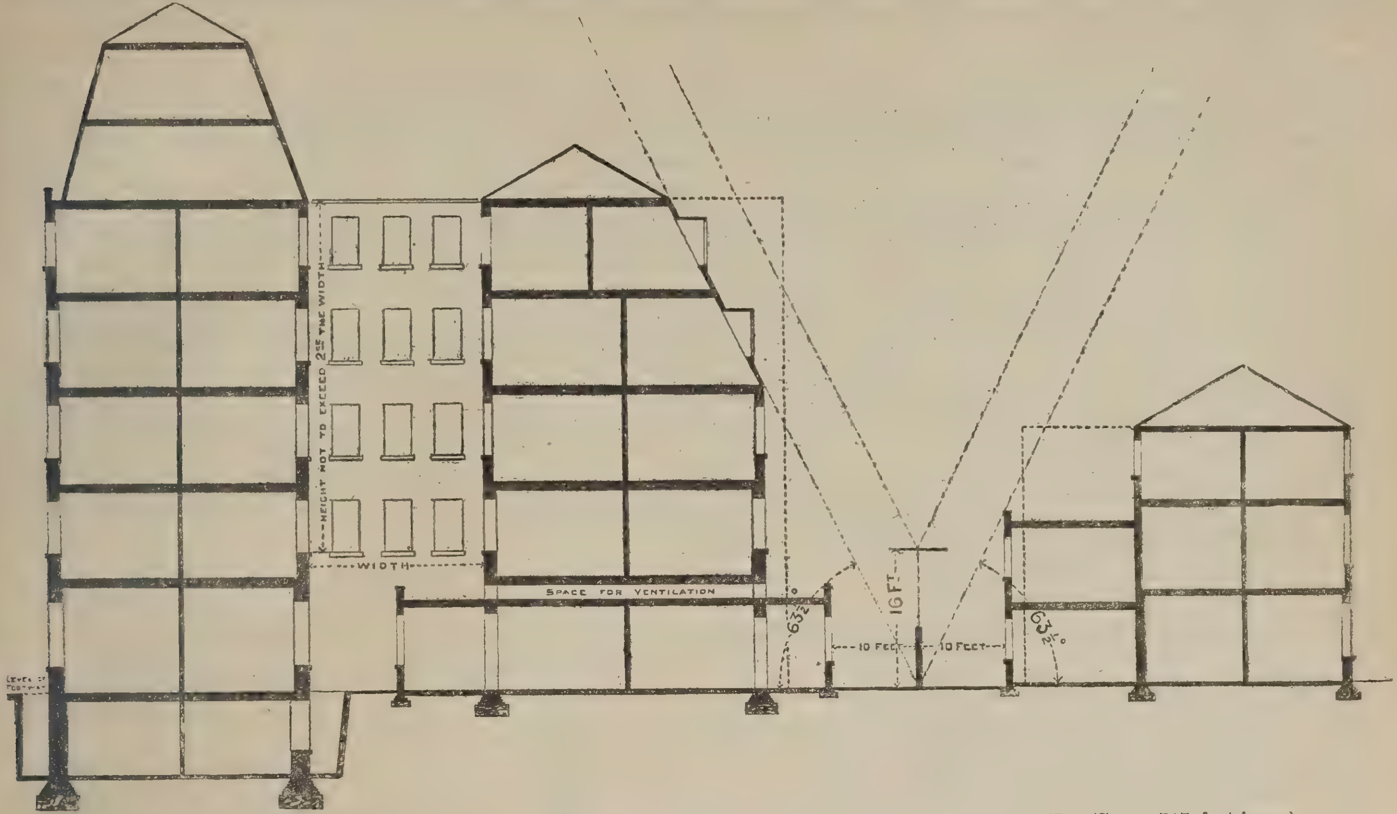
[*] By Ellis Marsland, Hon. Sec. Society of Architects, and District Surveyor of Camberwell. A paper read before the Society of Architects on Tuesday, Nov. 27, 1894.



Section of Domestic Buildings Erected under the London Building Act, 1894, Parts V. and VI. (See p. 747, last issue.)

new building is to be erected so that the height of such building shall exceed the distance of the front or nearest external wall of such building to the opposite side of such street, unless with the consent of the Council. A church or chapel is excepted from this section. Where a corner building abuts upon streets of different widths, the height is regulated by the wider street, and this height may return along the narrower street for 40ft. The height of habitable rooms is increased from 7ft. to 8ft. 6in., except for rooms wholly or partly in the roof, and these may be 8ft. throughout not less than one-half the area of such rooms. This will prevent the formation of three stories within the limit of height of a 9in. wall. Living-rooms over a stable have now to be separated from the stable by a concrete pugged floor, or floor of other solid construction, 3in. in thickness, and the soffit of the stable is to be ceiled with lath and plaster. The access to the living-rooms is to be separated from the stable by a 9in. brick wall.

We now turn to the additional clauses relating to safety from fire in private buildings, and from fire and panic in public buildings. Every dwelling-house or factory having a parapet is to be provided with a dormer window or door opening on to the roof, or with a trapdoor furnished with a fixed or hinged step-ladder leading to the roof, or with other proper means of access to the roof. Any story in the roof of any domestic building, the floor of which is 60ft. above the street level, shall be constructed of fire-resisting materials throughout; and every new building exceeding 60ft. in height, the upper stories being 60ft. above the street level, is to be provided with such means of escape in case of fire as can be reasonably required under the circumstances of the case, and no such stories are to be occupied until the Council shall have issued a certificate that the provisions of this section have been complied with. In the clauses dealing with chimneys and flues, section, 64, clause 4, a flue is not to be adapted to or used for any new oven, furnace, cockle, steam-boiler, or close fire used for any purpose of trade or business, or to or for the range or cooking apparatus of any hotel, tavern, or eating-house, unless the flue be surrounded with brickwork at least 8½in. thick from the floor on which such oven, furnace, cockle, steam-boiler, or close fire is situate, to the level of the ceiling of the room next above the same; and a flue is not to be used in connection with a steam-boiler or hot-air engine unless the flue is at least 20ft. in height, measured from the level of the floor on which such engine is placed. The floor under every oven, copper, steam-boiler, or stove which is not heated by gas, and the floor around the same, is to be for a space of 18in. formed of materials of an incombustible and non-conducting nature, not less than 6in. thick. The floor over any room or inclosed space in which a furnace is fixed, and any floor within 18in. from the crown of an oven, is to be constructed of fire-resisting materials.

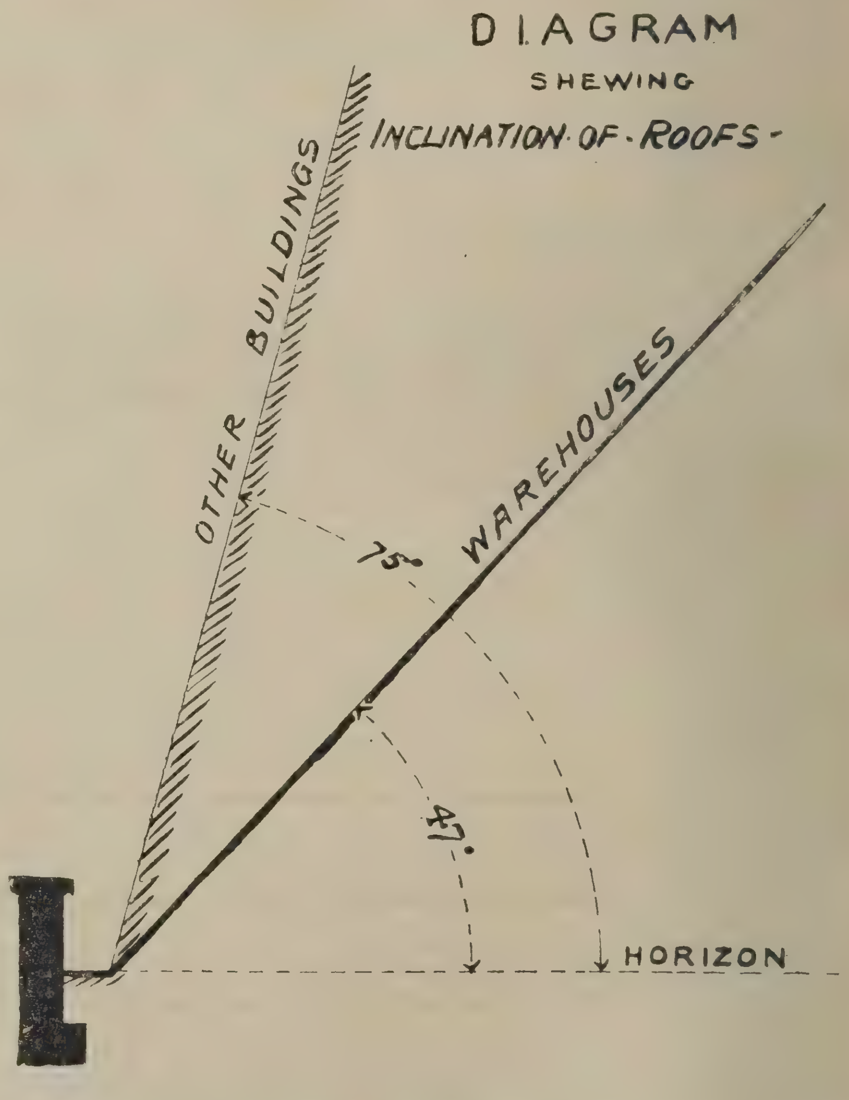
A most important provision as affecting the safety of shop assistants and the pockets of the shopkeeper is contained in Section 74. In every building exceeding 1,000sq.ft. in area used in part for purposes of trade or manufacture, and in part as a dwelling-house, the part used for the purposes of trade or manufacture is to be separated from the part used as a dwelling-house by walls and floors constructed of fire-resisting materials, and all passages, staircases, and other means of approach to the part used as a dwelling-house shall be constructed throughout of fire-resisting materials. The part used for purposes of trade or manufacture shall, if extending to more than 250,000c.ft., be subject to the provisions of this Act relating to the cubical extent of buildings of the warehouse class. It is, however, provided that there may be constructed in the walls of such staircases and passages such doorways as are necessary for communicating with the different parts of the building, and there may be formed in any walls of such building openings fitted with fire-resisting doors. It does not seem at all clear. however, if the openings from the business part into the domestic part are to be fitted with fire-resisting doors; to make the section of any use, it should have been distinctly stated, and that the openings should be closed with iron doors, for if we refer to the schedule defining fire-resisting materials, we find that an oak or teak door, 2in. thick, is considered fire-resisting. Another important clause is: In every building exceeding 2,500sq.ft. in area containing separate sets of chambers or offices or rooms tenanted by different persons, the floors and principal staircases shall be of fire-resisting materials. The limit of cubical space for buildings of the warehouse class has been increased from 216,000c.ft. to 250,000c.ft., but there are certain exceptions to buildings situate at a greater distance than two miles from St. Paul's, and used for certain specific purposes, constructed of brick, stone, or iron, and of one floor only. The council, however, have power to consent to buildings up to 450,000c.ft. provided they do not exceed 60ft. high, and are not used for the purpose of any trade or manufacture involving the use of any explosive or inflammable materials. The rules as to openings to be provided in party-walls separating large buildings are somewhat altered. The size is 7ft. by 8ft., as at present, but the number is limited to one-half the length of the wall. If, however, the distance between the iron doors in each side of the wall is not less than 24in., the opening may be 9ft. 6in. in height. Respecting the safety from fire and panic in public buildings, several provisions have been added which it is most important for the architect to note. Every staircase for the use of the public shall be supported and inclosed by brick walls not less than 9in. thick, and the treads of each flight of stairs shall be of uniform width.. No staircase, internal corridor, or passage-way for the use of the public shall be less than 4ft. 6in. wide, except where the accommodation is for only 200 persons, and then the passage-way may be 3ft. 6in. wide. The width of the staircases, internal corridors, or passages is to be increased by 6in. for every additional 100 persons above 400, until a maximum width of 9ft. is obtained, and a handrail is to be provided up the centre where the width is 6ft. and upwards. You may, however, if you prefer it, substitute two staircases, corridors, or passages for one; then in that case they need be but two-thirds of the width of a single staircase, but in no case less than 3ft. 6in. You also want a separate set of staircases, corridors, and passages to each gallery where you have more than one. All doors and barriers shall be made to open outwards, and no outside locks or bolts are to be fixed thereto. All staircases, corridors, passages, and landings are to be constructed of, and carried by, supports of a fire-resisting material. All public buildings have to constructed in such a manner as may be approved by the district surveyor, or in the event of disagreement may be determined by the Tribunal of Appeal, and no public building is be used as such until the district surveyor or Tribunal of Appeal shall have declared his, or their, approval of the construction thereof. This, I think, exhausts all the new clauses under my second head.

We now turn to the additional structural requirements. The most important of these is the additional thicknesses required for walls. I give (p. 779) a diagram, showing in black the thickness of walls under the old Act, with the additional thickness shown in outline required by the new. It will be observed that the height of walls of dwelling-houses jumps from 25ft. to 40ft., and although you may have two stories of 8½in. work to a building 25ft. high, if it exceeds this height, and you go to three stories, the lower two have to be 13in. thick, even if a part of the third story is in the roof. The thickness of walls is increased in most cases, and, I think, only in one case—in warehouse walls—are they reduced in thickness. The new Act does not countenance hollow walls, for, if they are constructed, there is to be a wall on one side of the hollow space of the full thickness described by the Act. The footings of walls are somewhat altered. They are to project on each side to half the thickness of the wall, as at present, but their height is to be two-thirds the thickness, and where an external wall is built against another external or party-wall the footings on the one side may be omitted. The underpinning of walls is to be done in cement, and where a wall is thickened, this also is to be done in cement. The top six courses of all chimney-stacks are also to be built in cement. There is an additional rule with regard to cross-walls wherever a cross-wall becomes in any part an external wall. Such cross-wall shall be of the thickness required for an external wall of the same length and height.

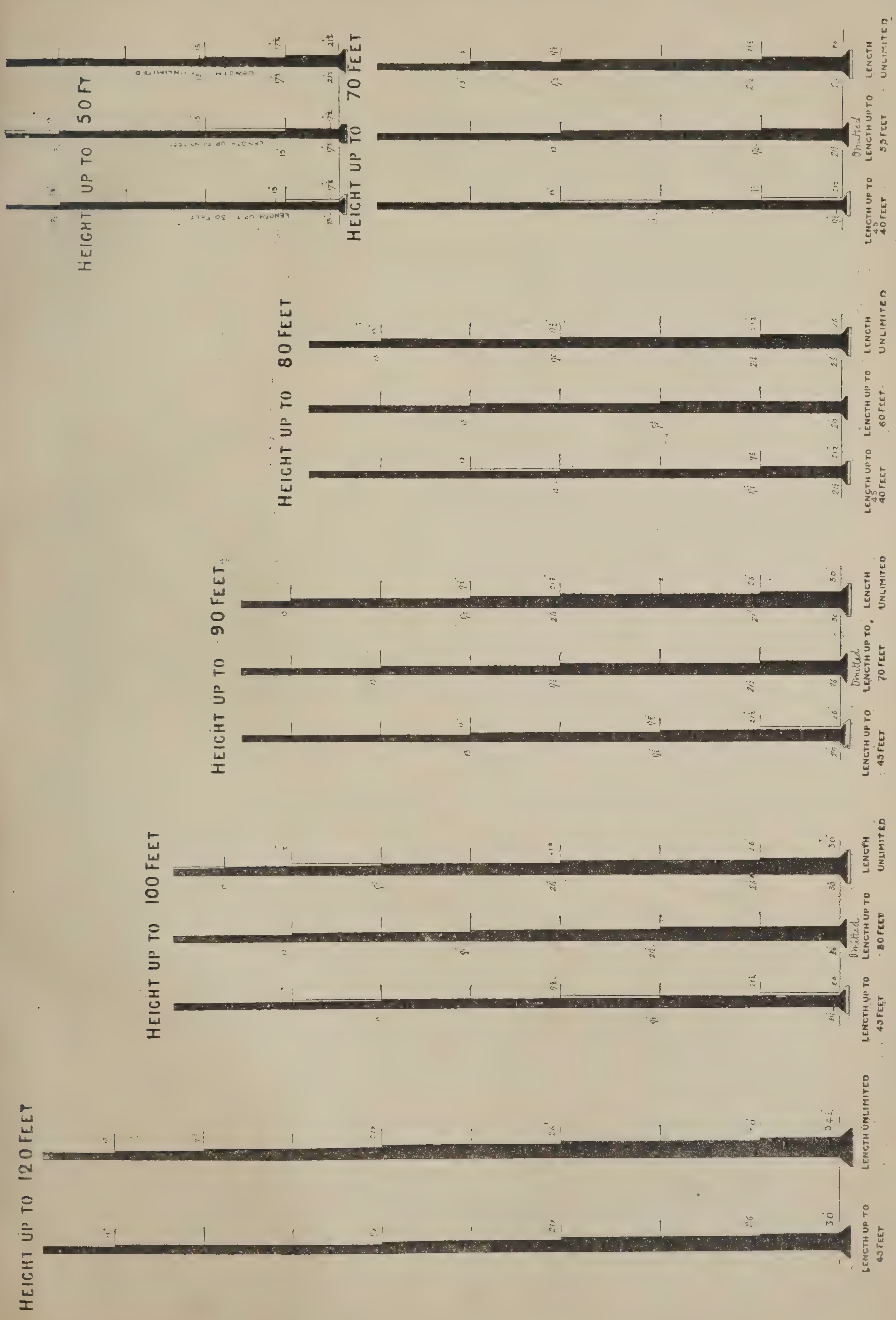
Sections 65 and 73 will be welcomed by architects, as they will save them a considerable amount of time and delay in preparing their plans. Under the present Act, if we desire to erect a furnace chimney shaft, or project a bay window or oriel beyond the general line of frontage, an application was necessary to the Council; but under the new Act a furnace chimney shaft may be erected without this preliminary, provided that it taper at the rate of 2½in. in 10ft., that the top 20ft. is 8½in. thick, and that every additional 20ft. measured downwards increases in thickness half a brick; that the footings project to a distance equal to the thickness of the inclosing wall at its base, and the space inclosed by the footings filled in solid; that the width of the base be at least one-tenth of the height if the shaft is square, and one-twelfth if round or any other shape; that if there is a firebrick lining it must be independent of the thickness of the shaft, and not bonded therewith; and, lastly, that the concrete foundation and the cap be to the satisfaction of the district surveyor. A bay window may now be projected beyond the general line of fronts in a street 40ft. wide and on to the forecourt, if it does not exceed three stories in height above the footway, and does not project more than 3ft. or exceed in width three-fifths of the frontage. It also must not come within 20ft. of the centre of the roadway, or nearer to the party-wall than its projection, and must not be used for trade purposes. Oriel windows must not be less than 10ft. above the footway of the street or project more than 3ft. from the building, or 12in. over the public way; their width must not exceed three-fifths of the frontage, and they must not come within. 4ft. of the centre of the nearest party-wall. The whole must be constructed to the satisfaction of the district surveyor, and if you disagree with him you may go to the superintending architect, whose determination shall be final. It should also be noted that the eaves, barge-boards, and cornices to dwelling-houses need not now be of fireproof material, nor is it necessary that the wooden cornices and barge-boards to dormers, not exceeding 12in. deep, be covered with incombustible material. You have still, however, to get the consent of the Council to any porch, portico, verandah, balustrade, outside landing, or staircase if you desire to construct them of wood. Frames of doors and windows may now come out to the face of an external wall, which will be good news to those who practise in the Queen Anne style. Shop fronts, under Section 73, are not now confined to the ground story, but may extend to the first floor provided the total height does not exceed 25ft. This will create quite a revolution in the appearance of our streets, although Section 55 seems to confine the frames of doors and windows of shops to the ground story. Bressummers, whether bearing upon a party or external wall must have an additional bearing of 4in. upon a sufficient pier of brick or stone or upon a timber or iron story-post, and the district surveyor is to have power in his discretion to require that every bressummer shall have such other story-posts, iron colums, stanchions, or piers of brick and stone or corbels as may be sufficient to carry the superstructure. There is to be a space left between the ends of iron girders to allow for expansion, such space to be equal to ¼in. for every 10ft. of the length. Hearths may now be 6in. thick instead of 7in.

Just a word or two on Part VII., which deals with special and temporary buildings and wooden structures. These cannot be erected without the Council's consent, who may impose certain conditions as to their erection, and limit the time which they may remain; but an open shed, whatever the definition of this may mean, can be erected, not exceeding 16ft. high and 400ft. in area, of any substances and in any manner approved by the district surveyor. This seems to me a most extraordinary clause.

Part VIII., dealing with the rights of building and adjoining owners, contains in Section 87, some very useful provisions which will facilitate the operations of the architect in dealing with walls abutting on neighbouring lands. Where lands of different owners adjoin and are unbuilt on at the line of junction, the following provisions shall have effect:—If you desire to build a party-wall on the line of junction you may serve a notice thereof on your neighbour. If he consent to the building of a party-wall, the wall may be built half on the land of each of you, or in such other position as may be agreed. The expense of building the wall is to be defrayed by you and your neighbour in due proportion, regard being had to the use made and which may be made of the wall by both of you. If your neighbour does not consent to the building of a party-wall, you may not build it otherwise than as an external wall placed wholly on your own land. If, on the other hand, you do not want to build a party-wall but only an external wall up to the boundary of your land, you give notice to your neighbour, and one month after you may proceed with your wall, and project your concrete and footings on to his land, making compensation to him for any damage you may occasion him, and if you cannot agree on the amount, this is to be determined in the manner provided in this section. The only other points to which I wish to draw your attention in this part of the Act is that it provides that a building owner may underpin a party-wall, a point uncertain in the old Act. Also, he has a right to raise a party-fence wall, or to pull the same down and rebuild it as a party-wall. The minimum limit of time in which a building owner may proceed to exercise his rights is reduced to one month in the case of a party-fence wall, and two months in the case of a party-structure or party-wall. The building owner has now, at his own expense, where he lays open any part of the adjoining land or building, to make and maintain for a proper time a proper hoarding and shoring or temporary structure for the protection and security of the adjoining owner. If a building owner serve a party-wall or structure notice on an adjoining owner, it is not available unless the work to which it relates is begun within six months after the service thereof, and prosecuted with due diligence. A fresh provision is contained in Section 93. It is incumbent on the building owner to serve a notice on the adjoining owner if he (the building owner) proposes to build within 10ft. of the adjoining owner's wall, if such building will extend to a lower level than the foundations of the building adjoining, and if the adjoining owner so requires he is to underpin the wall, or, if the building owner thinks it necessary he may underpin it; but he is to be liable to compensate the adjoining owner for any inconvenience, loss, or damage which may result by reason of the work. If the building and adjoining owner disagree as to the necessity for underpinning, the matter is to be settled in the same manner as other differences under this part of the Act. If, after a building owner has rebuilt a wall, and the adjoining owner subsequently wants to use any more of it than he previously enjoyed, he must pay for it.



In Part IX., relating to dangerous and neglected structures, a new provision affecting architects occurs. After the district surveyor has certified a structure to be in a dangerous condition, and the owner dispute the certificate, he may, within seven days from the service of the notice, inform the Council in writing that he requires the matter referred to arbitration. He may then engage his own surveyor to report on the condition of the structure in conjunction with the district surveyor, and if these two cannot agree they are to appoint an arbitrator, or the Court may appoint one for them, and such arbitrator is to make his award within fourteen days. If it is against the district surveyor, the Council pay the costs; if in his support, the owner has to



THICKNESSES OF WALLS UNDER THE LONDON BUILDING ACT, 1894, PART VI.

pay the costs. In the mean time, I suppose the dangerous structure may take care of itself, or promptly fall down.

In Part XIV., the Council take power to make by-laws on the following additional matters:—The dimensions of wooden bressummers, the dimensions of joists of floors, the protection of ironwork used in the construction of buildings from the action of fire, woodwork in external walls, the regulation of lamp-signs or other structures overhanging the public way not being within the city, the means of escape from fire in buildings exceeding 60ft. in height.

Before closing, I must make reference to the Tribunal of Appeal. The number of its members consists of three, one to be appointed by the Secretary of State, one to be appointed by the R.I.B.A., and one to be appointed by the Surveyors' Institution; but no member or officer of the Council is to be on it (but ladies are not excluded), and they are to be appointed for a term of five years, and to be paid. They also may appoint their own clerks, officers, and servants, who shall be paid such salaries as may be determined by the Council. Offices are to be provided, as well as such professional advice and assistance as they may find necessary. These gentlemen will have a busy time, as the following will be some of their duties: to hear appeals as to what is considered the "level of the ground" on a building site, setting back and bringing forward buildings, accuracy of plans of old buildings, laying-out or widening of streets, the superintending architect's decisions on lines of frontage, and which is the front and which is the rear of buildings, open spaces required in rear, height of buildings, construction of public buildings. A point of archæological interest to architects is contained in Section 191. In the event of the destruction, or its being necessary to take down any portion of an old building of architectural or historical interest not in accordance with the rules, it may be restored, by permission of the Council, as originally constructed. One word more as to the exemptions beyond those at present allowed, and they include—Buildings not exceeding in area 30sq.ft. and not exceeding 5ft. high, containing no heating arrangements, and not beyond the frontage line; party fence-walls under 7ft. high; greenhouses, if not attached to other buildings; cases of metal and glass in window openings for plants not projecting over the public way, or more than 12in. from the external wall.

My task is now done. I have intentionally forborne any attempt at criticism, as the time for this ceased when the Bill became an Act, and have contented myself with explaining its provisions. It is for us now to loyally interpret it and carry it out to the best of our ability, and when we have become accustomed to its working, the time may come when we may venture to point out any defects it may contain.

THEATRES.—XLVI.

By Ernest A. E. Woodrow, A.R.I.B.A.

THERE is another aspect from which to look at the necessity of ventilation which I have not yet mentioned, except in quoting Mr. Paul Gerhard's opinions in the last article. I refer to the reduction of the risk of fire in well-ventilated theatres. This is especially advantageous in regard to the stage, where, if not well ventilated, the contents become so hot and dry that they will the more easily ignite. Again, it is well known that the smoke caused by a fire brings about more deaths from asphyxiation than the actual fire itself, and also that the contents of the stage will cause, whatever the construction of the theatre, the first and the most fatal smoke.

The exhaust ventilator over the stage required by all modern authorities therefore serves the purpose of ventilation and as an extract for smoke.

Mr. Frederic R. Farrow, in his Godwin Bursary report, the notes and diagram of which he has kindly placed at my disposal for the purpose of this paper, devotes some short space to describing the methods of ventilating the Opera House, Vienna, where fresh air is supplied to an audience of over 3,000 persons at a minimum rate of 900c.ft. per hour for each person. "The fresh air enters from the garden at the side of the building into the cellar A (Fig. 1), passing through a water-spray shower, which washes it from dust and also cools it for summer use, so that the temperature within the auditorium is frequently in hot weather below that of the external air. From A it is drawn through a circular channel, 7ft. 6in. diameter, by a 10ft. fan B, from which it flows by a rectangular corridor 45sq.ft. in section, and this shortly divides into three channels, the middle one, 32sq.ft. in section, supplying the arena and boxes, the others, 12½sq.ft. each, supplying the galleries. From these channels the air enters the lowest of the three chambers already described as forming an essential feature of Dr. Böhm's system, the cold-air chamber C, and then flows either through the cylindrical tubes D, 3ft. diameter, direct to the uppermost space, the mixing chamber E, or by openings, F, round the tubes to the heating-chamber G, where it is warmed by passing over steam pipes, and then ascends to the mixing chamber E. From the mixing chamber the air enters the auditorium, at the rate of 1ft. per second, through the risers of the seats in the pit and through vertical wall channels to the corridors of the pit boxes and the first and second tier of boxes, and from the corridors enters the boxes themselves through openings in the doors. The upper galleries and boxes are supplied similarly from the lesser channels already mentioned. The area of the openings for the in-streaming fresh warmed air is as follows:—

	Pit	554	square feet.
	Pit passages	28	,,
	Pit boxes	28	,,
	First tier of boxes	28	,,
	Second ,,	28	,,
Same level	Third ,,	14	,,
	First gallery	28	,,
	Second ,,	42	,,
	Total	750	,,

"The foul air from the pit and boxes ascends naturally, assisted by the heat of the central gaselier, and is collected in the great cylindrical tube H, and the foul air from the galleries passes through separate channels I, leading from their ceiling and joining the central tube H, to which also enters a branch channel K from the stage. From the collecting tube H the foul air is expelled at the roof by the fan L.

"In order that this great system may be thoroughly under control, telegraphic thermometers are placed in all parts of the house and communicate with the inspection room M, where the engineer in charge of the ventilation can at once see if the temperature of any part of the house is above the proper standard, and can telegraph his instructions to the engine-room or regulate the supply of fresh air or rate of extraction."

The same system of ventilation is carried out at the Vienna Hofburg Theatre, and as the diagrams (Figs. 2 and 3) for this theatre are more in detail, I include them herewith, trusting they will make more clear to my readers the care and attention given abroad to the methods adopted for making the atmosphere in theatres bearable in winter and summer.

Not long since I was in a place of public entertainment in the provinces where the provisions for ventilation were absolutely nil. There was not even the familiar sun-burner to draw off what vitiated air it could from the ceiling level, not an inlet beyond the entrance doors and not an outlet could I perceive. The air of the auditory became foul very shortly after the performance commenced, and I pitied those in the gallery. Their discomfort was evidently known to the proprietor, for he had endeavoured to overcome the defects left by the architect by placing a *punkah* over the heads of the occupants of the gallery, which was pulled with the energy I have only seen aboard ship or in India and Ceylon. No doubt it was deemed an effectual means of overcoming the evil, and no doubt the proprietor considered the cooling and moving of the air, vitiated as it was by gas, tobacco-smoke, and a crowded audience, an effectual remedy for the architect's omission. Very different, it has been seen, are the means adopted abroad. In Fig. 2 is shown the mode of extracting the foul air in the Hofburg Theatre, A A being the exhaust fan, B B the arrangement of extract shafts influenced by this fan. Fig. 3 gives in fuller detail the section through the cellars, A being the cold air-cellar, B the warm-air cellar, C the mixing cellar, D the floor of the theatre with the various inlet shafts under each seat.

The late Mr. Thomas Verity, in describing the ventilation of the Criterion Theatre—which, as I have said, is in reality the only mechanically-ventilated theatre in London—showed how the air is drawn in by a 4ft. 6in. fan, and forced under the floor of the theatre into a chamber, from which shafts are carried up the walls to admit the air into the different parts of the house. For the extraction of the vitiated air a centre perforation, 5ft. in diameter, is provided in direct communication with a powerful extraction shaft, 4ft. by 3ft., running the entire height of the building. In order to increase the power of this shaft, the waste heat from the grill of the restaurant is carried into it, as well as the products of combustion from the sun-burner. At the gallery level and at the back of the stage other shafts are provided. A special arrangement is also made for carrying off the foul air in flues created by the gas-burners on the stage and at the back of the seats, the latter lights being inclosed.

Efficient ventilation, therefore, we have seen, is a means of saving life, of avoiding illness, often fatal, through breathing vitiated and over-heated air, and is also a great preventive of fire, by keeping substances cool which at a high temperature would the more easily ignite, as well as an influence over fire and smoke by withdrawing the smoke from the audience when a catastrophe does occur. With these points in view, it is well here to see in what way various countries regard the importance of this vital question in their theatre regulations.

Beginning with London, we read that—

> "All parts of such premises shall be properly and sufficiently ventilated in a manner to be approved by the Council.
>
> "All openings for ventilation shall be shown on the plans, and described in the specification, which shall be submitted to the Council for its approval.
>
> "An opening shall be formed in the roof near the back of the stage, of a superficial area at the base of at least $\frac{1}{10}$th of the superficial area of the stage. Such opening shall be covered with a lantern light, glazed on the top and sides, and be fitted with suitable exhaust cowls."

With regard to warming, after prohibiting open fireplaces in the auditorium and stage, and insisting upon protecting fireplaces and stoves, where permitted, by fixed wire-guards, these same regulations continue that—

> "All heating apparatus shall be placed in a position to be approved by the Council, and inclosed upon all sides by brick walls not less than 9in. thick, and shall be properly ventilated.
>
> "All hot-water pipes or coils shall, where necessary, be recessed in the walls, or otherwise arranged so as not to diminish the clear width of the gangways.
>
> "Where such premises are heated by artificial means, the high-pressure hot-water system with sealed pipes will be inadmissible, and either hot-air or the low-pressure hot-water circulation system shall be adopted, having an open cold-water supply cistern, and the pipes throughout the system shall be of galvanised wrought iron, with the exception of those in immediate contact with the boiler, which may be either of galvanised wrought iron or copper.
>
> "The boiler shall be made of wrought iron, copper, or mild steel, and shall be provided with a dead weight or other approved safety-valve, which must be attached to the boiler by an independent galvanised wrought iron or copper pipe, and must not, under any circumstances, be fixed to the circulating pipes, and must be placed in such a position as will insure protection from soot and dirt.
>
> "The term 'low-pressure' shall be understood to mean the pressure due to the vertical head of water between the boiler and the supply cistern."

In Austria a definite quantity of fresh air per hour is specified as compulsory, and on days when two performances are given there must be an interval of at least two hours and a half between the performances. In these days, when so many places of entertainment in London give two shows in one evening—one about 6.30 and one about 9 o'clock—such a rule as this would greatly interfere with the management, but would, on the other hand, greatly improve the conditions under which the second audience have to witness the performance.

The roof over the auditorium of a Brussels theatre must have openings at least equal in area to that of the opening over the sun-burner (*lunette du lustre*), and the openings must be only closed in such a manner as to permit their being easily opened from some accessible portion of the building to carry off any smoke which may penetrate by accident into the building in the event of fire occurring on the stage.

Paragraph 27 of the new police regulations

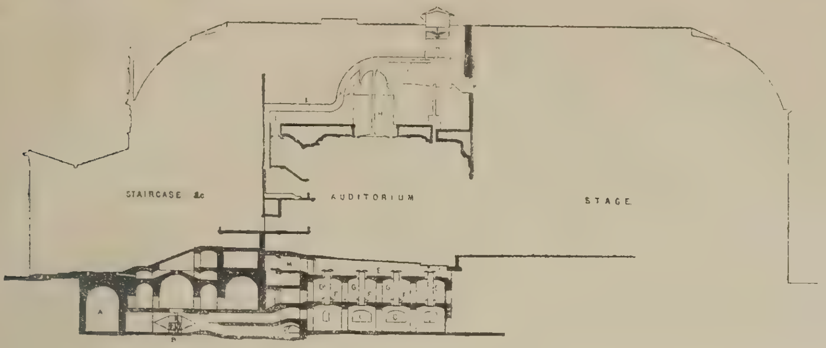


Fig. 1.

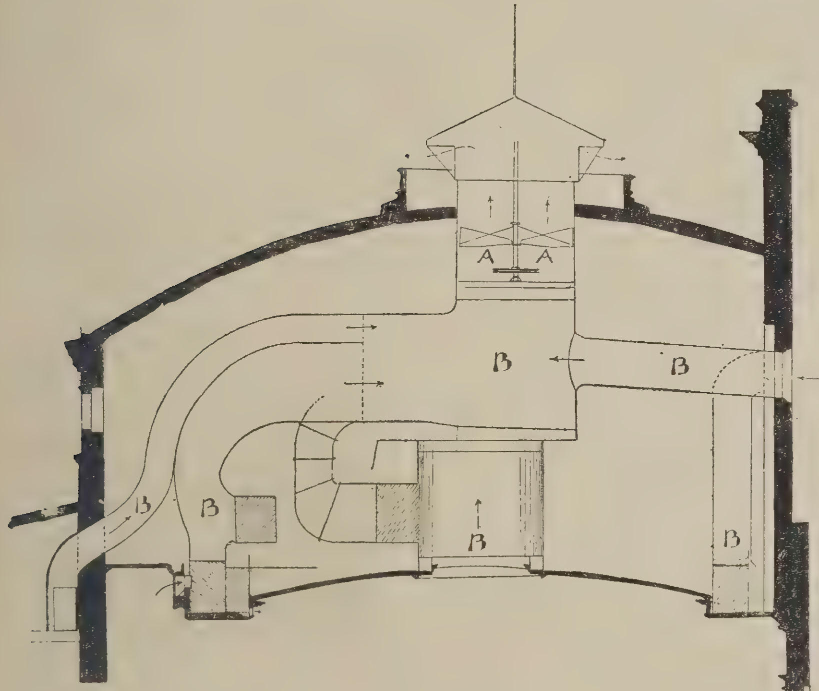


Fig. 2.

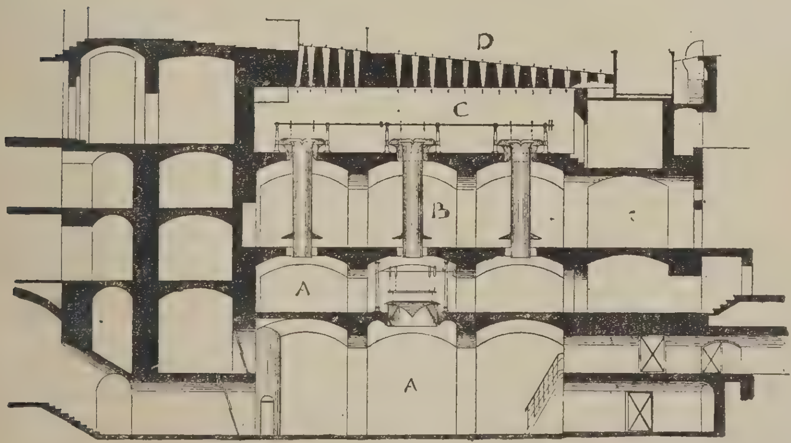


Fig. 3.

relating to German cities enforces that the auditorium and the stage, with its adjoining rooms, shall be heated by one central system, the heating-chamber for this being contained in solid walls, completely isolated and approached only from the outside, and not through the building. All the ducts or conduits for hot air, pipes or coils for steam, shall be surrounded by fireproof materials, and be so constructed so as to be easily cleaned. All hot-air ducts or gratings and steam pipes or radiators shall be 25 centimètres away from any inflammable material. Hot-air gratings shall have flaps of incombustible material to prevent the transit of smoke in case of fire. In a few exceptional cases rooms distant from the stage may be heated by tiled stoves, if adequate precautions are taken in their erection and position of their flues. No heating apparatus is allowed in the store-rooms.

Paragraph 28 of the same rules deals with the ventilating ducts, and specially provides that they be arranged so as to prevent the spread of fire. Ventilators must be placed over the stage near the ridge of the roof, and constructed so that they can be opened by a single movement, the apparatus for working them being in such a position of safety as to allow the person working it to be sheltered from all possible danger. The area of the ventilator over the stage must be at least five per cent. of the superficial area of the stage itself.

The same paragraph details the requirements for the ventilators over the auditorium. An exhaust ventilator is compulsory, the inlets to which must be at least one mètre above the level of the ceiling of the topmost gallery, and the area of the ventilator at least three per cent. of the superficial area of the auditorium. The opening of these ventilators must be from a "safe" position. Note this: All staircases and passages must be adequately ventilated. This is a most important provision, as staircases and passages have been often the scenes of asphyxiation.

The ventilation and warming of dressing-rooms, where actors spend so much time, must not be overlooked. There should never be a dressing-room without an external window.

I cannot conclude this chapter without some reference to the sliding-roof so common now over the auditorium of music-halls. Even where these cannot be opened during a performance, they play an important part in purifying the atmosphere during the daytime, and rendering the hall more fit for occupation the following evening.

There is one favourite method of warming often introduced where no permanent provision has been made. I refer to gas-stoves. These are too frequently placed where no flue can take off the products of combustion; they certainly warm the air somewhat, but they also vitiate it. There is also a danger in gas-stoves, in places of public resort, from fire; they are sometimes only connected with the supply by a length of indiarubber tubing, and placed in positions where they can be easily overturned. Where used, there should always be a flue, and they should never be placed where there is any risk of their being pushed over in the case of a rush.

"BUILDING NEWS" DESIGNING CLUB.

A MOORLAND CHURCH WITH SUNDAY SCHOOL ATTACHED.

THE work for the new session of our long established Club has opened well, if we may judge by the numerical response with which the first competition of the present series has been favoured, and on the whole it is abundantly clear that the merit of the majority of plans contributed is equal to, even if it does not surpass, that of previous years. None quite realise, however, the exact kind of building which we had in view, and not a few of the designers have obliged us to set their proposals on one side, because of their unduly ambitious character, with even florid detail in some cases; in others much too magnificent a scheme has been adopted, while a general lack of simplicity is conspicuous in nearly all of them. Here are the instructions issued for the use of the competitors:—A Moorland church, with a Sunday school-room attached, and a shelter adjoining for carriages. The church to seat 200 persons, including two priests' desks and choir-stalls for six men and eight boys in chancel. Provide a commodious vestry, with a fireplace in it, and provision must be made to protect the entrances, as the site is an exposed one. The land on the mountain side falls from west to east 1 in 14, and from north to south rather more than 1 in 8 in irregular contours. The chancel is to be furnished with an organ, and be arranged properly, with altar pace seven steps above level of nave, two steps being at entrance to choir, where there is to be placed a simple rood-screen in oak on a stone base. No aisles to nave, but a small tower with spire. A covered way is to connect the Sunday school-room with the church. This room to be available for parish meetings, and to measure 45ft. by 22ft. inside, or be of that area. The shelter is to be suitable for carts and carriages standing during service for the use of those driving to the church. The difference of level in the site may permit of the shelter being continued under the school, if desired. Stone and slate to be the material used, and the design is to be simple in detail, with solid and sturdy proportions. Scale 8ft. to the inch. Plans, two elevations, and view. The plans may be drawn to 16ft. to the inch if necessary; but they must show the seating arrangements intended."

We have placed "Sphinx" first, "Ictinus II." second, and "Red Rose" third. The remainder rank in the order in which we have referred to them in the following brief review. "Sphinx" does not exhibit much originality, and his plan is even ordinary, and marked by faults which we have not overlooked. The flat sprawling arch to the covered way between the school and the church is actually ugly, and an inclosed stable under a school is not conducive to health. An open shelter is a different matter, and we did not exactly ask for a stall-stable. However, it would, of course, be useful. The chancel has an organ recess, but there is no attempt at contriving a way for returning communicants. In so small a church perhaps the convenience is scarcely necessary. The pulpit is badly placed, as it would be very much in the way of the priests' stall on the north of the choir, and quite hide him from the view of those in front of it. The simplicity of the building generally is its chief recommendation; but beyond this, in an architectural sense, there is not much more to be said. It would be suitable, and seems to be in harmony with a moorside site, besides which the scheme is within the limits of available funds usually forthcoming for undertakings of this kind. "Ictinus II." takes precedence for much the same reasons; but the position of the vestry in his plan is a mistake, and the external passages beyond the nave seats are not wanted. The roof over the baptistery may be thought to give quaintness. It hardly enhances the design, and certainly does not add to its dignity. The belfry stage is not attractive, and the tower cutting off the vestry from the chancel is a great objection. Located south of the chancel on the other side of the tower, as in the first design, it would have been far better. The grouping has a good effect, and the school being isolated is a considerable advantage. The tower space on plan is wasted, as it is needlessly large for a mere passage way. "Red Rose" exhibits a closer knowledge of Gothic work than either of the designers placed before him, and his design is excellent in many respects; but we cannot overlook its unsuitability for an ordinary moorside site, where funds are limited, and its chance of erection would be out of the question in consequence. The scheme seems better adapted to a larger church; but we commend the arrangements in detail with this proviso. The returning ways from the sanctuary are well managed, with the organ on the south side, though the way up to it seems hardly clear. We suppose it is in the lobby. The priests' prayer-pews are a little out of sight behind the lectern and pulpit. The open gallery way from the school to the western porch is quaint enough, but very expensive, running through the buttresses and built on arches. After all, it has no roof. The entrance is well screened by the outer lobby, and the baptistery looks well; but we can hardly say we think the treatment of the spire at the west end a success. We shall hope to see more of "Red Rose" in our Club work this session. "Myst," too, is a clever draughtsman—in fact, his design shows a considerable amount of skill; but the American-cum-Spanish big archway entrance to the tower dwarfs the whole composition. The plan has some good features, and is arranged with an eye to the services of the church, though the length of the sanctuary is hardly justified. "Myst" has much to learn in respect to the relative value of space and void in realising the beauty of proportion. His roof inside, and screen and pulpit are shockingly poor. "Heather" is meagre in his detail, even to the verge of the commonplace, so anxious is he to err on what is called the "safe" side. The seating in the tower, after the fashion of a quasi-transept, and the miserable little organ-chamber, are both faults of importance. The porch to the school covered way repeats meaninglessly, and almost to the same scale, the design of the main entrance to the church, and both are spiritless in design. The general grouping of the buildings is effective, and the raised terrace area, bringing the doorways conveniently to one level, is a good feature, and the treatment has the merit of simplicity. "Chichevache" draws with a thin weak line, with a tendency to scribble. His detail seems to suggest that he has been in a "good office," as the term goes; but he must be more careful, and has much to learn. The springing of his arches are items in point. His perspective is poor, and the general arrangement of his sheet lacks contrivance. We shall expect better things than this from "Chichevache." "Manetho" is another contributor who ought to improve. His plan is well suited for the object in view, but he has a little overdone the tower. The square window in the base of the tower for the vestry ill accords with its elevation, which otherwise, as seen from the east, is rather effective. The key-stones to the gable tops are ugly, and the trumpery dormers to the nave-roof would be best omitted. "Floreat Sherringham" has much deserving of our praise, and his group, with its quaint little cloister garth is the work of an artistic mind, and so is one which we are not likely to overlook. The idea which would at once suggest itself to the stranger on going along the moorside pass would be that a small monastic establishment had been built by contemporary piety, for Mediæval origin would hardly be suspected, so up-to-date is the design. The great west tower would render its realisation impossible in the ordinary way, and, indeed, is too ambitious. The whole thing wants to be really larger for the lines adopted by the author; therefore we cannot award him a higher place on this occasion. His detail is harshly drawn and poor.

It is not easy to precisely classify the designs which follow, they are so equal in their degree of merit, and yet so varied in exactitude of style and method. Some of the plans have the good point of contriving the approach to the school from the west end of the church, so that the pupils can be brought into the nave without noise or needless disturbance. Both the plans illustrated render it obvious that the children must either go out into the open air, or pass into the church near the chancel, and so on into their places. Whether scholars should not occupy the front seats in church instead of the back rows is a point upon which churchwardens differ; but such a prominent position has many advantages which are mostly overlooked. In any case, however, it would be best to bring them in from the west end. "Minstrel" does this, but by making his plan take the shape of the letter E, the grouping fails in effectiveness, though the detail of his work is unassuming and picturesque. "Just My Luck" is very careful, and takes pains to avoid extravagance; but in this determination he has failed to invest his design with an appropriate feeling and character suited to the site. The stone broached spire thus handled seems devoid of scale, and really looks like a bigger example done in miniature. A small tower and spire ought to look its size, and be designed with some reference to its scale. "Birmingham" makes his tower too much like a Chinese one, with its curved leaded roof. The schoolroom and shelter are plain and domestic-looking; but the church itself is rather nondescript. "The Stormfiend" sends a peaceful-looking design, the best part of which is the end elevation of the schoolroom. The church tower has a good, sturdy ringing stage; but the belfry and parapet cannot be described as successful. The drawings are crisply delineated, though the view might be better. "Red Lion" sends no view. He is too fond of canted bays and fanciful items of detail: otherwise this design is by no means poor, if we are not able to say exactly that it is really good. A less ambitious attempt is made by "Wykehamica" in a regulation Lancet sort of style which in reality would work out very well. With a more keen sense for proportion, this design might be considerably improved without any serious departure from its present lines. It suffers from poor, spiritless draughtmanship. "William of Sens," in a very modern mode, adopts French features, and boldly goes in for a central tower and spire of costly and sturdy proportions. His design is neatly set forth; but we do not really like it—apses and spirelets bristling up the skyline. "Pal," on the dear old village-church lines, follows a much safer and more worthy type of work; but his square-headed windows are needlessly severe and so low down in the flanks of the building. The only connection with the church from the schoolroom is through the vestry and the chancel. This is fatal, as even if the pupils need not go that way, others must, and the sanctuary in no case should form part of a thoroughfare. "Phœnix" sends a striking and broadly-treated church with a central tower, which would look well among the mountains. He makes the same mistake as "Pal" in his plan, however, and, besides that, the design is too elaborate for the purpose. The unity of the general lines of the composition well merit commendation. "Midnight-oil" does not do his design justice, and the flatly-proportioned gables are crude without quaintness. The tower and spire, with the turret and steps leading up to the entrance, combine to make an exceedingly pretty and well-managed piece of design. The drawings are scrappy, and excessively poor. "Cyclist" sends a tower which is enough to spoil whatever chance he might otherwise have relied on, though we are unable to approve of his plan with the choir-vestry on the one side of the chancel, and the priests' vestry on the other. His perspective transposes entirely the arrangement of the building as shown by the geometrical drawings. Possibly it is intended as an alternative? "Ivy" comes next, and then "Tamar," whose rounded piers and reveals would be better adapted to brick construction. The plan is poor. "South Devon" is not churchy enough, and shows his work so indifferently that we can hardly see what he means. "Albyn" is a more serious worker, though he has by no means realised the problem. His central tower is spoiled by its spire and overdone upper stage, which is far from beautiful. "Do Do" is simple, but his design is unworthy of its purpose. "Nyoola" has planned a barn-like interior, more like a meeting-house. "Jupiter" in a general way suggests a sense for picturesqueness; but on closer inspection both his drawings display ignorance of planning and paltry detail. "Kelly's" church inside would be baldness untempered with the grace of proportion, and externally it has little claim upon one's sense of fitness. "Sesame" is a trifle more effective, but, like "Pal," he contrives a way through the choir to reach the school. "'Ampshire 'Og" drops the essential letter H. Let him also drop curved lines for parapets and gables, if he cannot manage them better than he has done in this instance. His windows are more than ugly—they are vile; nothing could be worse than the pair at the end of the schoolroom. "Ageepee" seats his nave wrongly with passages round all the benches. His perspective is the best part of his set of drawings. "Esto Quod Es" is the motto of the next design, and then comes "Quaigh," who spoils his chance of a better place by cutting off the vestry, and bringing the way to the school through the chancel. His drawings in themselves are rather good. "Nestor" furnishes his fabric with a central tower spanning the chancel, while "Inkerman" does the same, reckless of cost, and not thinking much of so mundane a consideration as suitability. The vestries are too clever by half. "Kirk" has little idea of what a church should be like. "Raven" has drawn a very effective looking western tower and spire, though its perspective hardly accords with its plan. The arrangement of this design is poor. "1 2 3" in a circle ranks next, and then "Artifex" odd beyond compare, and "Xedra" with flying buttresses and a florid screen. "May" might be better, and if he wants to know how—by providing better foundations for a big central tower. "Flute's" design is ornate enough for anything, and as ill-fitted as it can be for the site intended; the plan is not so bad. "Lux" has an odd notion of tower design, and little knowledge of church architecture. The other designs may rank as follows:—"Triagane," "Fronté," "Pallene," "Maori," "Lux" (Scarborough), "Petrel," "1894," "Creon," "Ledis," "Gryph," "Stabilitas," "Yill," "Flash in the Pan," "Leonidas," "Tim," "Sparks," "Victor," "Norvic," "Yum Yum" (stalls under the sanctuary is anything but a nice idea, though it may be "Yum Yum's"), and "Waverley."

CHIPS.

Princess Christian will lay the foundation stone of a new church-room for St. Matthew's, Bayswater, on Friday, the 28th inst.

At a meeting of the shareholders in the Lancashire, Derbyshire, and East Coast Railway, it was reported that the works were rapidly progressing, and that the contract has been let of the section from Tuxford to Lincoln.

A meeting of the Architectural Section of the Philosophical Society of Glasgow, was held on Monday evening, when Mr. Thomas Gildard, architect, read a paper entitled, "An Old Glasgow Architect on Some Older Ones."

Dr. G. Danford Thomas held an inquest on Tuesday, in St. Pancras, on the body of Herbert Richard Tatton, aged 27 years, an architect's clerk, lately residing at 38, George-street, Portman-square, who was discovered in a dying condition in a cell at the Hunter-street Police-station on Friday. The jury returned a verdict that the deceased died from syncope when suffering from coma, and the effects following an attack of delirium tremens and chronic habits of intemperance.

It was reported to the City Commissioners of Sewers on Tuesday, that for the erection of the new offices of the Commission, in Basinghall-street, the Finance Committee had accepted the tender of Messrs. J. Chessum and Sons, at £32,266, that being the lowest. This was approved. The same committee submitted specifications for the construction of sewers, subways, vaults, &c., in the new thoroughfare from Bishopsgate-street to Middlesex-street, estimated to cost about £13,500, and it was referred to them to advertise for tenders and carry out the works.

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ILLUSTRATIONS.

"THE ENTOMBMENT," BY RAPHAEL.—RESIDENCE FOR SIR E. B. MALET, AT MONACO.—A PAIR OF COTTAGES AT RUDGWICK.—"BUILDING NEWS" CLUB DESIGNS FOR A MOORLAND CHURCH AND SUNDAY SCHOOLS.—NO. 1A, TOTTENHAM COURT ROAD.—SKETCHES OF IRONWORK FROM LIEGE CATHEDRAL.—DIAGRAMS ILLUSTRATING MR. ELLIS MARSLAND'S PAPER ON "THE LONDON BUILDING ACT, 1894."

Our Illustrations.

"THE ENTOMBMENT," BY RAPHAEL.

This magnificent altar-piece was painted in 1507 for the Church of St. Francesco, at Perugia, and was divided into two groups. It is now in the Borghese Gallery at Rome. On the left the body of the Saviour is borne to the grave by two men with great energy of action. Close to the body are Mary Magdalen, Joseph of Arimathea, and John, variously expressing the deepest sympathy. On the right, supported by women, is the Blessed Virgin Mary, fainting. "This," says Kugler, "is the first of Raphael's compositions in which an historical subject is dramatically treated, and, as is evident from the number of designs and studies he made for the picture, it tasked his powers to the utmost. This work has been the subject of criticism by Rumohr and others, who ascribe to it flatness of execution and want of real pathos; and accuse Raphael of having borrowed parts of the composition from Mantegna's grand etching of the Entombment, and from Michael Angelo's group of the Pietà; from all of which we entirely dissent. The execution of the picture is severe and careful, but extremely beautiful; the action true and powerful, the expression of the single heads as fine as anything that issued from the master's hand; while the modelling of the Saviour's body—the work of a painter only twenty-four years of age—may take its place among the master-works of Christian art." The lunette, now placed above an altar-piece of the Birth of Christ, by Oranzio Alfani, in the Church of St. Francesco de Conventuali, at Perugia, represents the First Person of the Trinity surrounded by angels, with upraised hands in benediction. The Vatican possesses three compartments of the predella, containing allegorical figures in chiaroscuro, illustrative of Faith, Hope, and Charity, on a greenish ground, accompanied by two boy angels or genii, in circular medallions, treated with grace in a light and spirited manner, very pleasingly composed. Crowe and Cavalcaselle's "Life of Raphael" may be mentioned as containing many interesting particulars of his masterpieces, including the "Ansidei Raphael," so called from the family for which it was painted, and now in the National Gallery, having been bought from Blenheim in 1885 by the Government for no less a sum than £72,000, the largest price ever paid for a single picture.

RESIDENCE FOR THE RT. HON. SIR E. MALET, AT MONACO.

This residence, which is now nearing completion, is situated on the Cap d'Aglio, above Monaco, on a well-selected site, commanding magnificent views over the Mediterranean, the Rock of Monaco, and Monte Carlo, with Cap Martin in the distance. Externally it is designed in a free French Renaissance, but internally it is Rococo, *pur et simple.* The magnificent central hall is beautifully decorated by a French artist, the ceiling being founded on the ceiling at Würzburg, by Tiepolo. Sir E. Malet's splendid collection of art treasures will eventually be placed in this hall, which, on account of its good proportions and being well lighted, is admirably adapted for this purpose. All the rooms will have the comfort of open fireplaces, besides a system of heating throughout the whole mansion, carried out by Mr. J. Grundy, of Duncan-terrace, Islington. The contractor for the work is M. Marquet, of Nice, and he has had the assistance of Mr. Tersling, of Mentone, during the progress of the works, who has been superintending personally on behalf of the architects, Messrs. Giles, Gough, and Trollope, of London. The drawing, which we thus illustrate, was shown at the Royal Academy this year.

A PAIR OF COTTAGES AT RUDGWICK, SUSSEX.

These cottages are erected as a lodge at the entrance gates of a house belonging to Mr. Frederick Barker at Rudgwick, near to Horsham. They are built in red bricks, and are roofed with dark red Broseley tiles. The builder was Mr. F. T. Chinchen, of Kensal Green. The architect is Mr. W. H. Harrison, F.R.I.B.A., of 66, Victoria-street, S.W.

"BUILDING NEWS" DESIGNING CLUB: A MOORLAND CHURCH AND SUNDAY SCHOOLS.

(See description on page 781.)

1A, TOTTENHAM COURT-ROAD.

This building has lately been erected for the executors of the late Mr. J. Henderson. It has a bold front executed in red Mansfield stone, and red bricks surmounted with a cupola for electric light. The ground floor consists of two shops, the upper floors being planned to be let as flats or for showrooms. The total cost was between £6,000 and £7,000. Messrs. Wigg, Oliver, and Hudson, of 7, Bedford-row, W.C., and 80, Leman-street, E., were the architects, Mr. Walter Gladding, of 203, Whitechapel-road, E., being the builder.

COMPETITIONS.

The Paris Exhibition of 1900.—From Monday to Wednesday next plans for the construction of the forthcoming exhibition will be deposited by various competitors at the Palais de l'Industrie. Already 660 have been announced. The jury who will pronounce upon them will consist of 31 members, with M. Barthou, formerly Minister of Public Instruction, as their president. Ten jurymen will be elected by the competitors themselves. M. Casimir Périer will inspect the plans on Tuesday next, and the best 18 will receive prizes varying from 6,000fr. to 1,000fr.

CHIPS.

A monument to the celebrated chemist, Eilhard Mitscherlich, was unveiled on Sunday in the Chestnut Grove behind the University of Berlin.

Buff bricks and terracotta have been used, the *Canadian Architect* states, in quite a number of the larger buildings erected within the last year or two, and now under way, in Toronto and Montreal.

The Duchess of Albany visited Kingston-on-Thames on Monday, and formally opened the new home of the Kingston Nursing Association, which has been erected in Birkenhead-avenue, at a cost of £900.

Mr. S. Young, Master of the Barbers' Company, has presented to the City Corporation a portrait of Sir W. Grant, Master of the Rolls, which was painted by Sir T. Lawrence, P.R.A., in 1802, and exhibited at the Royal Academy. The picture has been accepted for the City Art Gallery.

A hall for the Manchester Unity Order of Oddfellows has just been completed in Castlereagh-street, Sydney. On account of the depressed state of trade in Sydney, the sum of between £6,000 and £7,000 has been spent on what would have cost £10,000 five years ago. The exterior is of Classic design. The large hall on the ground floor holds 1,500 persons, and there is a smaller hall on the first floor, in which 300 persons could be accommodated, and over this is the lodge room of the Order. The architect is Mr. John Porter, and the contractor Mr. W. J. Coleman, both of Sydney.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Birmingham Master Builders' Association.—The annual meeting of this Association was held on Friday, at 17 and 19, Colmore-row, Birmingham. Mr. T. Barnsley presided; and there were also present Messrs. R. Bulley, T. Surman, W. Sapcote, J. S. Surman, J. Goodman, T. Johnson, J. Jeffrey, F. G. Whittall, R. Fenwick, E. Bates, A. S. Smith, J. Archer, and E. J. Bigwood, secretary. The report of the committee stated that the depression of trade referred to in the last annual report continued; but the progress of several large works in the city—notably, the new General Hospital, the Technical Schools, and the railway extensions—had provided a fair amount of work for the operatives in several branches of the trade. The year had been an uneventful one, no matter of importance having disturbed the amicable relations existing between employers and employed. The number of members of the association was 65. The balance sheet showed total receipts for the year, £124 10s. 2d., which, with the balance from last year, £28 13s. 11d., made a total of £153 4s. 1d.; and the various disbursements, including the secretary's salary, to £88 12s. 5d., leaving a sum of £64 11s. 8d. to the credit of the association. On the motion of the chairman, seconded by Mr. Bulley, the report and statement of accounts were approved. Mr. Barnsley was unanimously re-elected president, Messrs. T. Rowbotham and R. Bulley were re-elected vice-presidents, Mr. G. Twigg, treasurer, and Mr. Bigwood secretary.

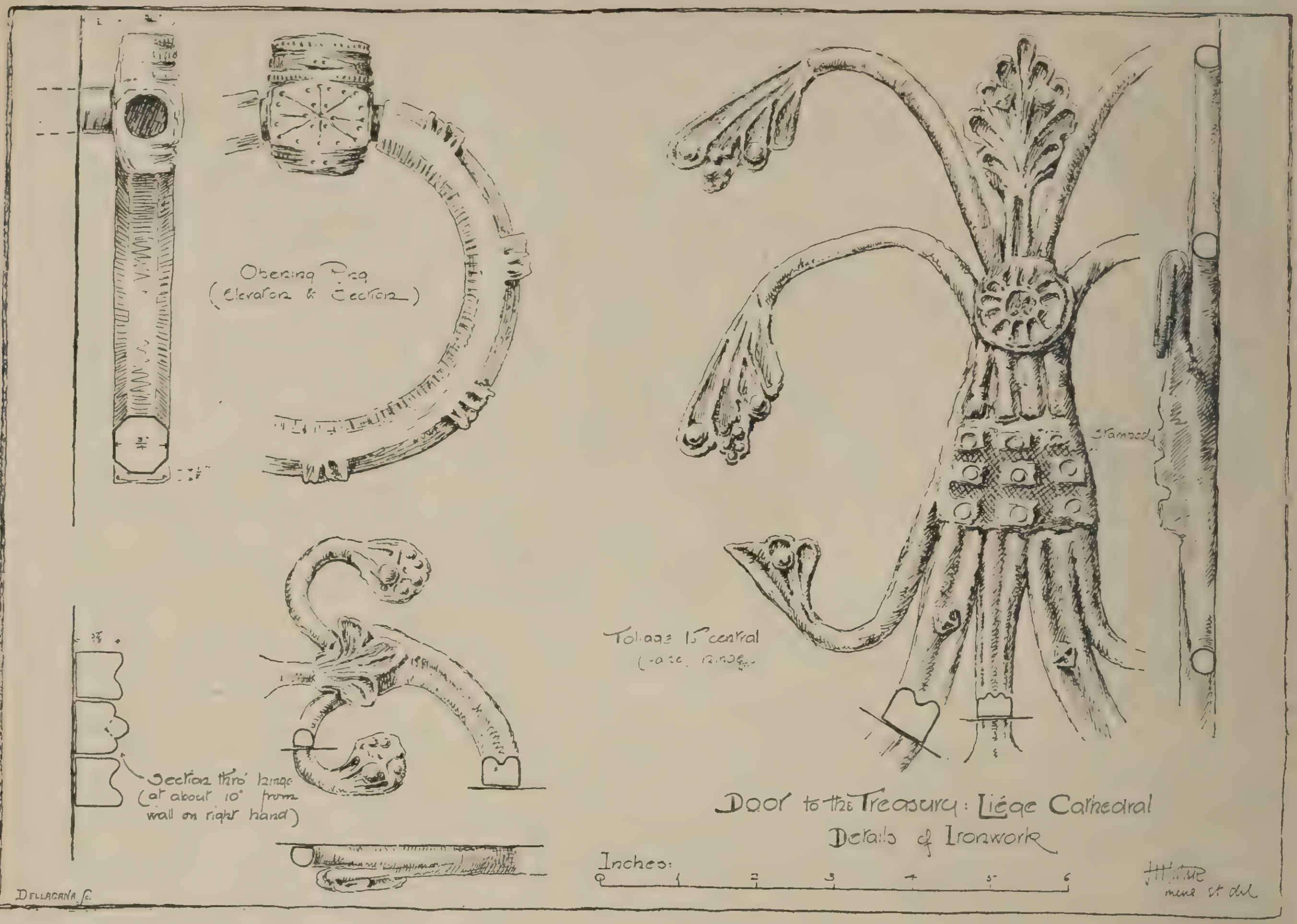
Glasgow Architectural Association.—The general monthly meeting was held in the rooms, 114, West Campbell-street, on Tuesday evening, the president, Mr. A. N. Paterson, in the chair, when Mr. Charles J. Davidson read a paper on "The Planning of Farmhouses," being a continuation of the series of essays on planning contributed by members. Dividing the subject into three classes—sheep-farms, dairy-farms, and stock-rearing farms, the different requirements of each were explained in great detail. Treating of the architectural appearance of farmhouses, Mr. Davidson said that in some cases the whole steading can be arranged symmetrically; and where this is not attainable, the extended lines of buildings, the varying outline caused by the different heights, and the numerous gables, seldom fail to give a certain degree of piquancy and picturesqueness. The paper was illustrated throughout by reference to a number of plans and diagrams hung upon the walls.

Institution of Civil Engineers: Association of Birmingham Students.—A meeting of the above was held on Thursday last at the Midland Institute, Birmingham, when an interesting paper on "Graphic Statics" was read by Mr. H. C. Adams, Stud.Inst.C.E., and hon. sec. of the Association, the president, Mr. Robert Godfrey, A.M.I.C.E., in the chair. After showing a comparison of five different ways of determining the stresses in a simple roof truss, Mr. Adams worked out diagrams showing the alteration made in the stresses in the roof by the action of the wind, and showed a very useful comparison of the formulæ for wind pressure on inclined surfaces in general use. Calculations of the stresses in a plate girder under three different loads were made, showing how the stresses from the various loads were combined in one figure. A short discussion on the paper followed. Professor R. H. Smith, of Mason College, made some useful remarks on the paper, and described some experiments he had made with regard to the loads on supports in the case of continous girders. He also commented on the stresses in a solid structure, taking the wind into account. The discussion was continued by the President, Mr. Twinberrow, and others. A vote of thanks to Mr. Adams concluded the proceedings.

* * *

A picture entitled "Eve and the Voices," by Mr. Robert Fowler, R.I., has been recommended for purchase by the arts committee of the Liverpool City Council as an addition to the permanent collection in the Walker Art Gallery. It is now hung in the autumn art exhibition at Liverpool, the catalogue price being £450.

The East Ham School Board, at their last meeting appointed Mr. R. L. Curtis as their architect for a new school to accommodate 2,000 children, to be built in Red Post-lane, and also accepted the tender of Mr. G. Sharp, of Stratford, at £5,090, for enlarging the schools in High-street in accordance with Mr. Curtis's designs.



IRONWORK OF DOOR TO THE TREASURY, LIEGE CATHEDRAL.

THE sketches herewith reproduced were drawn to full size on the spot by Mr. H. Hillier, of Trowbridge, to whom we are indebted for their loan. The entire door will be found fully illustrated in the Building News for June 9, 1893, giving the general design of this magnificent specimen of 13th-century wrought-iron work. Its crisp and delicate refinement is, perhaps, the leading characteristic of this fine example, and the detail delineations of some of its parts can but be useful for reference by those engaged in work of this kind. Every scroll and foliation differs somewhat from the other, no two being exactly alike, thus contrasting with the mechanical uniformity which mars so much of our modern metal work. A description of this doorway in the cloisters of Liège Cathedral is given in "Histoire de l'Eglise Collegiate de Saint Paul actuellement Cathedral de Liège," by Prebendary O. J. Thimister.

BUILDERS' BENEVOLENT INSTITUTION.

ELECTION OF PENSIONERS.

THE election of two pensioners on the funds of this charity took place on Thursday, Nov. 29, at the offices of the Institution, 35. Southampton-row, Bloomsbury-square. Mr. Basil P. Ellis, president, occupied the chair, and amongst other friends of the Institution, there were present Mr. Geo. Plucknett, J.P. (treasurer), Mr. C. Bussell, Mr. J. T. Bolding, Mr. T. Stirling, Mr. T. Stirling, jun., Mr. T. F. Rider, Mr. C. B. New, Mr. R. Perkins, and Mr. J. W. Scrivener. There were two vacancies for pensions—viz., for one man and one woman—there being one male and seven female applicants.

At the close of the poll, the scrutineers (Messrs. T. Stirling and T. F. Rider) announced the result, which was as follows:—Jack Taylor, Bermondsey, aged 62, master slater, 1,356 votes; Sarah Elizabeth Drake, Tylers' and Bricklayers' Almshouses, Ball's Pond, aged 64, widow of Francis Drake, builder (seventh application), 3,273 votes; Mary Ann Healing, Curtain-road, aged 64, widow of Samuel Healing, builder (fifth application), 590 votes; Maria Elizabeth Powell, Camberwell, aged 61, widow of G. T. Powell, late a pensioner (second application), 1,976 votes; Mary Anne Bowley, Tylers' Cottages, Ball's Pond, aged 67, widow of H. R. Powell, late a pensioner (first application), 569 votes; Eliza Ellis, James-street, W., aged 75, widow of E. G. Ellis, builder (first application), 1,126 votes; and Ellen Batchelder, Carshalton, aged 61, widow of Chas. Batchelder, builder (first application), 580 votes. The successful candidates were, therefore, Jack Taylor and Sarah Elizabeth Drake.

Votes of thanks were passed to the chairman and the scrutineers, and the proceedings terminated.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE third meeting of the Institute for the present session was held on Monday evening, Mr. F. C. Penrose, F.R.S., occupying the chair. Mr. W. D. Caröe, M.A., F.S.A., opened a discussion on the question as to "what steps can be taken to restore a proper appreciation of the statutory examination for certificates of competency to act as a district surveyor in London." Mr. Caröe referred to the difficulty which must ensue from the declaration demanded by the London County Council from candidates for the offices of district surveyors that they will devote all their time to the business of the Council, and that they will take no part in any private business. In the nine elections before the declaration was demanded the candidates were 72, and the passes 31, while in the elections since the numbers were respectively 25 to 10, and some expert witnesses before a Parliamentary Committee held that these later candidates were not of the same status as before. While deprecating any idea of conflict with the London County Council, Mr. Caröe held that it would be impossible to get the best class of professional men to act unless they were allowed to carry on their own business, but suggested that perhaps the difficulty might be met by a district surveyor being allowed to act as a practising architect, except in his own district. Mr. Caröe concluded by moving a resolution that "this meeting is most desirous of seeing the high status of district surveyors maintained, especially having regard to the increased responsibilities placed upon them by recent legislation." This resolution was seconded by Professor T. Roger Smith, district surveyor for West Wandsworth, who strongly insisted, from his own experience during nearly twenty years, upon the necessities of district surveyors being qualified architects. A discussion ensued, in the course of which it was stated that the declaration demanded had in many cases reduced the district surveyor's income 60 or 70 per cent.; but at the same time a hope was expressed that the members of the Institute should do their best to act with, and not against, the County Council, and a belief was set forth that the County Council could only be anxious to secure the best men to carry out these important offices, and that if the present declaration were proved to be a mistake, it might be withdrawn. Mr. Caröe's resolution was eventually put, with the addition of the words "by permitting them to practise privately, as heretofore, under such restrictions as may be considered necessary," and carried unanimously.

A joint meeting of the Newcastle-on-Tyne town improvement and sanitary committees was held on Friday to consider a report dealing with the question of building one-roomed tenemented dwellings on Miller's Hill. It was found that the stipulations made by the Local Government Board were such that the scheme would become entirely unremunerative, and therefore it was unanimously decided to report to the council accordingly, and recommend that the scheme be abandoned.

On Wednesday week the dedication of the new nave and aisles of the parish church of St. Mary, Plaistow, was performed by the Archdeacon of Essex. The first portion of this work was completed about four years ago, when a new chancel was added to the old nave. Further accommodation was found necessary, and there is now seating accommodation for about 1,000 persons, as against 400 or 500 in the old building. The cost of new edifice, including the chancel, was £11,500. The new nave is 44ft. wide, and consists of four bays.

In regard to the contracts sent to Tasmania from London for paving blocks, twelve sawmills will, the *Australasian Builder* states, begin work immediately with 300 men. After Christmas more mill-owners see three months' work ahead. The millers are co-operating harmoniously, and they are determined to sink trade differences in order to insure success. The quantity of blocks required for a shipment will be allotted amongst the mills now working.

WAYSIDE NOTES.

I have received the first number of the new magazine called *The Quest*, printed at the Press of the Birmingham Guild of Handicraft, and published by Messrs. Cornish Bros., of New-street, Birmingham, and Messrs. Simpkin, Marshall, and Co., of London. *The Quest* is to be issued three times a year, in November, March, and July, and the price is half-a-crown a number. Presumably the spirit of the enterprise is to be gathered from the opening poem on "The Quest of the Soul's Desire."

> "He follows her for ever, leaving all,
> Led on by sudden glimpses of her face,
> Each fairer than the last, and with a grace
> Of welcome, and sweet lips that seem to call;
> But weary is the knight who is her thrall,
> And well for him that Love is there to brace
> His strength, and will not let him slack his pace,
> Nor stay to take the apples as they fall.
> And though he never win this shadowy Best,
> Winning or losing, it is his to live
> For ever weary in a noble quest,
> With hope throned high and pleasure fugitive,
> And not to linger in an unearned rest,
> Tasting the soulless sweets the world can give."

The accompanying frontispiece, by Ernest G. Treglown, is fairly well done, and the description of the Grange at Broadway, near Pershore, by J. R. Holliday, illustrated by sketches by Edmund H. New, is interesting. There is also a ballad taken from the "Scottish Minstrel," decorated by Henry A. Payne, and an essay on "The Platonic Theory of Art," by Professor E. A. Sonnenschein. The larger portion of the magazine is occupied by "The Life of St. Silvester," as it is told in the "Golden Legend" of William Caxton, with illustrations and head and tail pieces by Charles M. Gere, Ernest C. Treglown, and G. T. Tarling. The paper is good, and the type reasonably so. The advertisements, illustrations, and all, are in keeping with the general character of the magazine, and the whole is very creditably produced. I hope *The Quest* may prosper—perhaps it is only envy and uncharitableness that prompts the wish that a long-suffering public would pay half-a-crown for the Building News, and give us a chance of showing what we could do in the way of giving a *little* more for the same money.

Referring to the use of sea-water for London, on which I commented last week, the borough surveyor of Great Yarmouth writes that they have been using sea-water there for upwards of eight years, with the best results, for street watering and sewer flushing, and that they now raise upwards of 100 millions of gallons per year for these purposes, in place of about ten million gallons of fresh water used previously. The sea water costs them, all charges included—that is to say, repayment of capital, interest, and working expenses—about 2d. per 1,000 gallons, against 1s. per 1,000 previously paid to the water company. The sewers are now completely flushed, and a large sum saved in cleansing. But he asks whether it is necessary that London should go to the sea for water for flushing and street watering? He considers that the Thames a few miles above Battersea would yield a water sufficiently pure for these purposes, and that this could be delivered ready for sewer flushing and street watering at a cost which would not exceed 2½d. per 1,000 gallons. That is probable. On the other hand, some of us, since the construction of the new lock at Richmond, fancy there is a good deal less water in the Thames than there used to be, and that in a dry season none could be spared.

Museum Sunday seems to have been a success, as within the last fortnight even a bishop has pronounced in favour of the opening of these places on Sunday, at hours which would not interfere with those of public worship, and it may be assumed that his words stimulated some clergymen, whose minds were in a state of suspense on the subject, to join in the advocacy of the Sunday Society. The society has been in existence for nearly twenty years, but it has not yet induced the House of Commons to consent to the opening of any one of our national collections to the public. In the House of Lords, however, the feeling is not very strong against the throwing open of these institutions. In fact, ten years ago the House of Lords recorded its vote in favour of Sunday opening. This is more than the House of Commons has yet done, but it is many years since its opinion was tested. At the same time, the society has been gradually acting on public sentiment. Fifty-four sermons were delivered in London last Sunday, in its aid. It has secured the opening of 85 municipal institutions throughout the kingdom, and in London eight special art exhibitions. Dissenting ministers, as well as clergymen, joined in Sunday's demonstration.

I wonder whether the ten-thousand-pounder architect of the L.C.C. is to be debarred private practice while he builds the new asylum, which is to be erected at a little over half the recognised professional commission? The asylum is to cost £350,000, exclusive of site and furniture. It was proposed originally that the lucky architect should design the building and superintend its erection at a yearly salary of £800; but the committee discovered that the gentlemen eager to accept that princely remuneration were "only theorists, and knew nothing about the work," and so, in spite of the opposition of certain frugal councillors last Wednesday, it has been agreed the architect shall get "a sum not exceeding ten thousand pounds." Possibly one of "the theorists" may yet be found to take five thousand, thus saving the L.C.C. the other five. It is all quite right and proper, of course. With big advertisement bills to pay to member-owned newspapers, and jobs done by its own contractors at fifty per cent. over contractors' prices, the L.C.C. must save something out of somebody, and the shorn lambs of architecture are fairly tempered to the wind of adversity.

The transformations of ancient cities due to the march of improvement and the adoption of sanitary regulations are often accomplished by the destruction of much that is picturesque in domestic architecture. Even in Normandy the "improver" is growing more and more ruthless. Rouen, for example, which is still one of the most interesting cities of Europe, has seen some of its most ancient streets and squares sacrificed; and now the French Government have ordered the demolition of the old buildings which surround Rouen Cathedral, with the object of enabling the proportions and dimensions of that noble church to be better seen. Some of these buildings are of but trifling architectural interest, though as a group they are distinctly effective. One small house actually attached to the Cathedral, after a fashion common enough in other places, is among the doomed group; but as it prevents the public from having a good view of the famous Butter Tower in all its beauty, its demolition will perhaps be generally deemed defensible.

The Town Hall of Nottingham, which stood in the way of the new line from Annesley to the metropolis, has been sold, apparently to the satisfaction of hundreds of curiosity collectors, who trooped down from London this week to secure odds-and-ends illustrative of a happily past age. Everything of a saleable nature—from the dungeon rings and chains which tortured unfortunate debtors generations ago, to the judge's seat—was keenly bid for, and some of the items were very curious. The dock only fetched 23s. Early in the century a girl, scarcely in her teens, was sentenced to the extreme penalty of the law in this dock and hanged—too tame a sensation, I suppose, to attract present-day archæologists? The other items included: Witness-box, 41s.; gaoler's chair, 11s.; judge's seat, £3 5s.; cell door, £3 5s.; carved stone slab in debtors' cell, £3 5s.; two oak dungeon doors, 25s.; condemned cell door, £6 10s. 6d.; strong oak door leading to dungeons, 3s.

Messrs. Henry F. Joel and Co., electrical engineers, of 31, Wilson-street, Finsbury-square, E.C., have just issued a new and revised edition of their illustrated catalogue and price list of electrical plant and materials. This catalogue embodies in a convenient form for office use the best and most recent types of steam, gas, and oil engines, dynamos, electric motors, accumulators, switches, &c., patented and manufactured by this firm, and everything necessary for an electrical installation. The instructions for fixing and attending to these machines and apparatus are useful. We find also the technical terms explained, such as the units of electrical measurements, and many useful tables. Plans of engine-room arrangements are given, and the architect will be able to select the most effective engine and dynamo, for illustrations and price lists are given of improved vertical engine for small country house installations. Several types of gas and oil engines such as the "Otto," and a very economical form of oil-engine and dynamo combined are described. Joel's patent slow-speed dynamo appears to have given the best results. Two types are illustrated; also Joel's electric motor for alternating and continuous currents. Improved Joel-Pilsen arc lamps, switches, and instruments, casings, patterns of glass globes, and fittings will be found illustrated and priced, and every requisite for installation detailed.

OBITUARY.

We regret to announce the death, at the advanced age of 78 years, of Sir Charles Thomas Newton, K.C.B., D.C.L., the distinguished Classic archæologist and the re-discoverer of the Mausoleum of Halicarnassus. From 1861 till 1885 he held the Keepership of the Greek and Roman Antiquities in the British Museum, and during this period, by wise administration, by writings, and lectures at the Royal Academy, at University College, and elsewhere, and by example, he did much to put the study of archæology upon a sound basis and to promote its interests in England. During the years of his reign, the Museum collections were enriched not only by the acquisition of many sculptured and inscribed remains, but by such collections as the gems belonging to the Duc de Blacas, acquired at a cost of £40,000, and the bronzes and vases from Cyprus and elsewhere of Signor Alessandro Castellani. He had previously held office in the British Museum from 1840 till 1852, and in 1856-59, while Vice-Consul at Mitylene, he carried out important and fruitful excavations at Bridium (the ancient Halicarnassus), Cnidus, and Branchideæ. Accounts of his travels and discoveries in the Levant were published by Newton in conjunction with the late R. Popplewell Pullan. In 1889 he received the Royal Gold Medal of the Institute of British Architects. He had been in failing health for some years past, and resigned his appointments at the Museum and that of Yates Professor of Archæology at University College nine years since.

CHIPS.

It has been decided that the memorial to the late Bishop Bowlby shall take the form of a bust of the late bishop, to be placed in St. Philip's Church, Birmingham, with the addition of a brass tablet.

The seventh annual Arts and Industrial Exhibition was opened on Monday at Douglas, Isle of Man, by Sir West Ridgway. The standard of the exhibits was distinctly higher than in previous years.

The parish church of Portobello has been reduced internally to a wreck by a fire, for the outbreak of which the heating-apparatus is, as usual, supposed to have been responsible.

On Saturday the new line from Denaby Main to Wrangbrook, a distance of twelve miles, was opened for passenger traffic. The line connects the Manchester, Sheffield, and Lincolnshire with the Hull and Barnsley Railway, and stations have been erected at Denaby, Sprotborough, and Brodsworth.

Colonel C. Langdon Coke, C.E., conducted an inquiry at the Tabenacle Hall, Skewen, on Thursday in last week, in reference to an application made by the Neath rural sanitary authority for sanction to borrow £6,000 for waterworks extensions.

The plans for the Callander and Oban Railway—Ballachulish, Fort-William, and Banavie extension—were lodged with the Sheriff-clerk of Argyleshire on Friday by the solicitors for the Bill. This will be the largest railway extension north of the Tweed for the session.

The local board of Holywell have adopted, subject to the approval of the Local Government Board, plans for the sewerage and supply of water to the town prepared by Messrs. Wood and Brodie, civil engineers, Liverpool. The estimated outlay will be about £13,000.

A most useful book on the London Building Act, 1894, edited by Mr. Bernard Dicksee, district surveyor for East Newington and part of St. George the Martyr, containing the Act printed in full, with a comparison section by section with the various repealed Acts, extensive cross references and notes, legal decisions upon the repealed Acts that would also apply to the new Act, tables of thicknesses of walls, also the sections of the Public Health (London) Act, 1891, that are incorporated with the Building Act, &c., the by-laws of the London County Council relating to building, and a full and complete index to the whole Act comprising over one thousand references, illustrated with various diagrams, is being published by Edward Stanford, 26 and 27, Cockspur-street, Charing Cross, London, S.W.

Building Intelligence.

Bristol.—A fifth block has just been added to the chocolate and cocoa factories of Messrs. J. S. Fry and Sons. It forms an oblong structure fronting the bottom of Union-street, Nelson-street, and Little St. James's Back. Cornish grey granite has been used to the second-floor height, and the tiers of oriel windows at the angle of the principal streets are supported by a granite corbel, carved from a 10-ton block, and even now weighing half that amount. The upper portion of the building is constructed of buff Cattybrook bricks, with bands of red Mansfield stone and terracotta cornices and balustrading. A Mansard roof covers the premises, and there is a cupola at the chief angle. The cellar is fireproof. Lifts run from top to bottom of the new factory, and each floor communicates with an emergency fireproof staircase at the back. The floors are laid with slate slabs, 2in. thick, resting directly on the girders. The structure stands on 625 piles, driven to the rock 40ft. below the street level. The proprietors dispense with a contractor in their new buildings, and Mr. Hobbert and Mr. Searle have acted as clerks of works. Mr. R. Milverton Drake, of Bristol, was the architect.———The new Roman Catholic Church of the Holy Cross in Victoria-street, Bristol, was dedicated on Sunday. The first section of the church is 40ft. wide by 63ft. long, but the nave will be 81ft. in length to the chancel, which will be 20ft. 6in. by 20ft. The church is lit by electricity. The church in height is 60ft. to the apse, and is lit with traceried windows on either side. The roof is of pitch-pine. The tympanum at the entrance represents the Crucifixion; in the niches above are two figures. The carving has been executed by Messrs. Bolton, of Cheltenham. The contractors were Messrs. R. Wilkins and Sons, of Bristol.

Edinburgh.—The Victoria Hospital for Consumption and Diseases of the Chest, Craigleith House (adjoining Barnton-terrace), has been inaugurated by Lord Stormonth-Darling. A few years since the institution was removed from Lauriston-terrace to larger premises in Lauriston-place, and the latter building is to be retained as an out-patient department. Early this year Craigleith House was obtained on lease, and has now been transformed into a hospital. The structure is a mansion-house, surrounded by 7½ acres of wooded park, and provides accommodation for fifteen patients. The ground floor contains two male wards, each with accommodation for three patients, the resident physician's apartments, laboratory, and store-room. The first floor contains three larger wards for female patients, and two smaller rooms, holding in all eight patients, and the matron's room. The second floor contains bedroom accommodation for day and night nurse and maids. The buildings have been adapted to their present purpose from plans by Mr. S. H. Capper, architect, of Edinburgh.—A baldacchino of white Bath stone has recently been constructed in the sanctuary of the Catholic Apostolic Church, Broughton-street. The canopy is carried on four pillars, which constitute a square of 13ft. They have carved capitals, and are carried up into four pinnacles, between which is an arch and gablet. On each gable apex is an angelic figure holding a musical instrument. The canopy is vaulted and domed, and around the dome, which is capped by a finial and cross, are statues in niches of apostles and prophets. The total height of the baldacchino is 37ft. Above each arch is a panel of Venetian mosaic work with a design on a gold ground. The baldacchino was designed by Dr. Rowand Anderson, the architect of the church. It has cost £1,000, exclusive of the statuary, which cost other £300. The statuary was executed by Mr. Birnie Rhind, A.R.S.A. Another work in completion of the church has been the carving of the capitals of the pillars in the chancel and of the great chancel arch. There are about a hundred of them, and each forms a separate design.

Heywood, Lancs.—The technical school in Hind Hill-street was opened on Saturday by Mr. Thomas Snape, M.P. The building on the three principal sides is faced with red stock Ruabon bricks, with dressings of Clayton stone. The internal joiners' work throughout is in pitch-pine. The school covers 680 square yards. There are three large class-rooms, science lecture-room, 60ft. by 30ft., and science drawing-room, 32ft. by 21ft. 6in., and committee-room, 18ft. 6in. by 18ft. The first floor is devoted to chemistry and art. The chemical lecture-theatre is 31ft. by 21ft. 6in.; the laboratory 34ft. 9in. by 21ft. 6in. There are also balance and store rooms. Messrs. Blakeley and Bell, Hopwood, have carried out the main contract. Messrs. Woodhouse and Willoughby, of Manchester, have been the architects, and Mr. Robert Hardman, of Heywood, was the clerk of works.

Heydon, Norfolk.—The fine old parish church of SS. Peter and Paul, which for the last few months has been undergoing partial restoration, was formally reopened the other day The principal works of restoration have been that of the nave roof, the old timbers of which have been removed, cleaning and re-using, however, such of the old as were practicable, the deficiency being made up with new timbers of English oak, the whole oiled and covered with oak boarding; re-casting and re-laying the lead, repair to the coping and parapets, new gutters, &c.; re-glazing the clerestory windows, and re-stuccoing the external walls. Mr. T. H. Blyth, contractor, of Foulsham, has carried out the principal works, under the superintendence of Mr. Herbert J. Green, architect, of Norwich.

Leeds.—Opening services in connection with New Zion Chapel, Clark-lane, were held last week. The chapel, which is 60ft. by 39ft. 6in., will seat 300 persons on the ground floor and 70 persons in an end gallery. At the rear is a schoolroom accommodating 300 scholars. Advantage has been taken of the fall of the land to provide underneath the school and chapel a lecture hall, 28ft. by 21ft., and also eight class-rooms, each of which is 15ft. by 11ft. The style adopted is a simple treatment of the Gothic style. In the front gable is placed a large tracery window of stone, and on the left is a small tower. The contracts for the building amount to £2,600. The buildings have been erected from the designs, and under the superintendence, of the architect, Mr. W. Braithwaite, South Parade. The cost, exclusive of the site, has been £2,700.

South Queensferry.—Lord Rosebery formally handed over to the town council of South Queensferry a permanent memorial to his late wife, in the form of a hall for the use of the inhabitants of the burgh. The hall, which has cost between £3,000 and £4,000, is situated immediately behind the old Tolbooth of South Queensferry. It is built in the 17th-century Scottish style, and is in keeping with the old steeple which immediately adjoins. At the further end of the hall there is a small gallery, capable of seating about fifty persons. The ceiling is formed of three elliptic arches, supported by pilasters. A decorative effect is given by the modelled cornice and frieze work. On a level with the gallery is a billiard-room, with card-room adjoining. The architects of the hall were Messrs. Sydney Mitchell and Wilson, Edinburgh, and the work has been carried through under the superintendence of Mr. William Campbell, Lord Rosebery's clerk of works.

St. Austell.—The first Y.M.C.A. building erected in Cornwall was opened at St. Austell on Thursday in last week. About £2,800 has been spent on the building, which is situate in the centre of the town, at the corner of Victoria-place and Vicarage-hill, on a site formerly occupied by a public-house. The style is a simple treatment of Italian. On the ground floor there are an entrance hall, cloak-room, and lobby, a reading-room, 20ft. by 16ft., secretaries' office, gymnasium, 30ft. by 20ft., lavatory, and offices. The floor above contains a library, 17ft. by 13ft., and a lecture-room, 35ft. by 18ft., the latter of which is capable of division into two class-rooms by means of revolving shutters. Those on the ground floor are 14ft. high, and those on the second floor 13ft. The masons' and plasterers' work was intrusted to Mr. Hunkin, and the carpenters' and joiners' work to Mr. W. H. Smith. Mr. H. Snell, of Plymouth, was the architect.

Torquay.—St. Matthias' Church, Torquay, which was built in 1858 and has twice been enlarged, was reopened on Friday, after undergoing considerable alterations. The church was designed by Mr. Selwyn, but the present alterations have been carried out from plans prepared by Mr. J. L. Pearson, R.A., of London. They have included the lengthening of the nave, rebuilding the nave arcades, building the clerestory, raising the aisle walls, and putting in a new pitch-pine panelled roof. The latter is divided into bays, and the aisles have new roofs similarly treated. The west end of the nave is inclosed between the wide responds of the arcade by an oak screen executed by Messrs. Harry Hems and Sons, of Exeter. The floors are to be laid in mosaic work. The contract for the alterations has been carried out by Messrs. J. W. Bunning and Son, of London. The clerk of the works was Mr. H. Cane.

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STATUES, MEMORIALS, &c.

Edinburgh.—On Saturday a memorial to the Scottish singers Wilson, Templeton, and Kennedy, which has been placed on the rock face of the Calton Hill overlooking Waterloo-place, was unveiled. The memorial is in the form of a freestone slab, with three portrait medallions in bronze encircled by wreaths. That on the left incloses a portrait of Wilson, modelled from an old engraving; that on the right, Templeton, taken from a portrait presented by the singer to David Kennedy; while lower, in the centre, is a medallion with a likeness of Kennedy. The memorial is the work of Mr. W. G. Stevenson, A.R.S.A., from a design by Mr. Thomas Bonnar. Mr. John Smart, R.S.A., president of the Burns Club, handed over the memorial to the Lord Provost.

Winchester.—A memorial, erected by subscription, to the late Bishop Harold Browne was unveiled on Saturday in Winchester Cathedral by the Dean of Durham (Dr. Kitchin). The memorial, which is placed between the nave and south aisle in the fourth bay from the east, consists of a cenotaph of alabaster raised upon a marble plinth, ornamented in the Gothic style with open panels filled-in with Purbeck marble. At each end are statuettes of saints in niches, and six similar figures are in other niches at the sides of the monument. The recumbent figure of the late bishop in mitre and cope, and having the pastoral staff, rests on the slab. Messrs. Bodley and Garner, of Gray's Inn, designed the memorial.

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CHIPS.

The new hospitals, Gosport, are being warmed and ventilated by means of Shorland's patent Manchester stoves, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

A marble bust of the late Earl of Derby, K.G., set upon a pedestal of veined Connemara marble, was unveiled in the Town Hall at Liverpool on Friday. It has been executed by Mr. Thomas Brock, R.A.

On Wednesday last, the new church schools which have been built in the parish of St. Andrew's, Wigan, were opened. The schools will provide a total accommodation for about 500. The work has been carried out by Mr. C. B. Holmes, of Wigan, at a cost of about £2,800. The architects are Messrs. Heaton and Ralph, Wigan.

The new market provided by the local board of Pontypool was formally opened on Saturday. It stands on the site of the old one, covers an area of 20,070ft., is estimated to provide standing accommodation for 6,000 people, and has been built at a total cost of £22,280. The style is Free Tudor, and there are five exits for the public, together with an unloading dock for goods. The architects were Mr. R. Williams, A.R.I.B.A., London, and Mr. D. J. Lougher, Pontypool, and the contractors Messrs. Morgan and Evans, Pontypool.

The contract for the new North Bridge at Edinburgh being now signed, Sir William Arrol and Co. will lose no time in setting about the work. A portion of the street near the Post-office, where the foundation of the first pier of the new bridge will be laid, is being barricaded-in this week.

After complete renovation, St. Matthew's Church, Little Lever, Lancs, has been further embellished by the addition of a chancel screen in oak, and oak Communion rails, both elaborately carved by Messrs. Earp and Hobbs, of London and Manchester, who have also erected a mural monument on the north wall of chancel to the memory of the late vicar. The work has been carried out from designs, and under the superintendence of Mr. R. Knill Freeman, F.R.I.B.A., and surveyor for the diocese.

The foundation-stone of a new church in Ferry-road, Littleham, near Exmouth, was laid on St. Andrew's day. At present it is not intended to build more than the chancel and a part of the nave, and this section, it is estimated, will cost about £2,000. The style is Gothic, and the building is to be faced with limestone and Ham Hill dressings. When completed it will be 102ft. 5in. by 57ft. 11in.; the designs provide for chancel, nave, aisles, vestry, and bell tower, and there will be seating accommodation for 800 persons. The architects are Messrs. Paul and Cogswell, London; and the builder is Mr. W. H. Perry, of Exmouth.

FIRE PROTECTION.

A LECTURE on this subject was delivered before the Society of Arts on Wednesday evening by Mr. Edwin O. Sachs. He pointed out that towns owed their safety from fire, not so much to brigades, as to preventive legislation based on the practical experience and research of architects, engineers, and fire experts. Fire protection was a combination of fire protection, fire combating, and fire research. Preventive measures might be partly contained in the local building Acts and partly in a separate code of fire-survey regulations, supplemented by special rules as to the treatment of extraordinary risks, such as the storage of petroleum, the manufacture of explosives, and the performance of plays. Self-help for the shopkeeper, the lodger, or the private householder could scarcely be regulated. There were places where, without any regulation being attempted, and thanks entirely to the influence of training in classes, most residences could boast of a hand-pump, a bucket, and a crowbar, the proper use of which was known to most of the household. Self-help in small risks must be distinctly encouraged by the authorities, without any irksome interference with personal liberty, simply by the provision of street pillar-boxes, with the necessaries of first aid, including perhaps a couple of scaling-ladders, and, further, the arrangement of some opportunities for householders to learn how to handle them. The link between self-help and outside help was the fire-call. The efficiency of the fire-call depended not only on the instrument employed and its position, but also on its conspicuousness and the indications given to find its whereabouts. As to the organised outside help, it need not simply be limited to the attendance of the fire brigade. Special arrangements might be made for the attendance of the local police force, a public or private salvage corps, an ambulance, or in cases a military guard. Arrangements might further be made for the attendance of the water and gas companies' servants, even officials from the public works office and insurance surveyors. The author laid stress on the point that the efficiency of the outside help depended in the first instance on the clear definition of duties and powers of all concerned, then on the organisation, and last, but by no means least, the prestige, the social standing, the education of commanders and their ability to handle men easily. In dealing with the provisions of local bylaws for protection from fire, the author urged that if a locality had a proper fire-brigade and the force was decently handled, spreads of fire from one house to another could be absolutely barred. The division of a building or a large "risk" into a number of minor ones was only possible to a certain extent. In lieu of spending enormous sums trying to make each of the minor "risks" impregnable, the aim should be to try to retard the spread for a certain limited time after the flames had really taken hold of the contents. In those minutes most fires would have been discovered, and a sufficient number of firemen could be on the spot to localise the outbreak, and prevent the conflagration being a big one. In a warehouse or factory, with well-built wooden floors, thickly pugged, and the ceilings perhaps run on wire-netting instead of on laths, with ordinary double-ledged doors safely hung, at the most perhaps lined with sheet-iron on asbestos cloth, a very stiff blaze could be imprisoned for an hour. The general mistake of expensive iron and concrete construction was its aptitude to allow some breach being easily made through which the fire spread. Directly a fire had got a hold these composite floors were, again, much too dangerous for firemen to work on or under. Further, if a strong stream of water touched the hot iron there was often an extra danger, and after the fire had been extinguished the ironwork would be so damaged that it would require entire renewal, and the brickwork would probably be so strained and bulged that the re-erection would have to commence from the footing. A simpler construction was in most cases the most satisfactory. The few iron and concrete floors, for instance, which would stand some strain were too expensive to allow their introduction for fire protection alone, for it was not only the expense of the floors which have to be considered, but that also of the supports and the surrounding walls. All shaft openings should be as small as possible, well armed with shutters, and the lift not only vertical doors, but also horizontal flaps, which would cut up the well into sections. Division of "risks," commonsense construction, and proper staircase accommodation were really all that fire protection required, and where the special Building Act clauses had been kept within the lines indicated there had been little friction and discontent. As to the fire survey regulations, they should mainly prevent the actual outbreak of fire. In certain classes of risks fire survey could also increase the personal safety of the inmates, and the possibility of a fire spreading might be lessened. The actual preventive work of the surveyor would, however, mostly consist in the warning of property owners against temporary stoves standing on ordinary floor-boards, sooty chimneys, badly hung lamps, dangerous burners, and gas brackets fixed in risky positions. So far as the safety of the public in theatres and public assembly halls was concerned, attention should be chiefly given to the exits. Spread of fire, and even its outbreak, were secondary considerations, for a panic caused by a suspicion of fire would be quite as fatal as where a conflagration was actually started.

A SPECIFICATION ANNOTATED.—IV.

17. *Extra Work.*—Where work extra to that provided for in this contract is contemplated, notice thereof shall be given by the architect to the builder, and an estimate obtained for same; and in no case will any claim for extra work be entertained unless the claim be made when that work is ordered, and the price agreed upon before the work is commenced.

Nine out of ten building disputes arise from neglect of this simple provision. It seems incredible that a man will order any alterations to be made in work, involving a departure from the contract, without first ascertaining, quite definitely, the extent and cost of the proposed alteration; yet this is done every day, and in the most reckless fashion. A contract is based on plans, specification, and quantities prepared, may be, with the greatest accuracy; in a thoughtless moment, an order is given for some alteration, apparently insignificant in itself, but which involves some modification of items in every trade. No estimate has been made of the cost before the alteration has been carried out; the work is done, and the circumstance forgotten; other alterations are made from time to time with the same result. The client, too, may directly or indirectly order alterations of one kind or the other to be made, without first ascertaining if such involves any extra cost, and, if so, to what extent. In this way architect and client muddle the matter between them until the building account is presented, when both, astonished at the formidable sum set down for extras, determine to dispute payment, and thus find themselves landed in a lawsuit, or, what is worse, an arbitration. In this game the builder, like "Brer" Rabbit, "lies low" until "Brer" client is securely fastened in his box, and then, through holes in the lid, boiling water is poured on him in the shape of extras until he is well-nigh scalded to death. "Brer" architect, looking on, enjoys the fun, for the more extras are piled on, the better for him. Young architects, who have only learned the "tasty" part of their business, will perhaps find it well to be warned in time that many builders undertake to do certain work for less than its value, feeling certain that in "extras" they will recoup themselves, and turn a prospective loss into a handsome profit, and this through the incompetence of the architect. One of the strangest facts connected with the building trade is the enormous increase in the value of labour and materials which invariably takes place in every job after the contract is signed, especially in the execution of extra work. No architect worth his salt will involve his client in any expense beyond the contract without first obtaining his consent, and the client will indeed be an *idiot* if he does not warn his architect in writing not to pledge his credit with the builder or any manufacturer who may supply goods for his work. It is simply monstrous that an architect should negligently, or deliberately, involve his client in an outlay never contemplated by him, and yet this irregular system of doing work is of common occurrence.

18. *Written Order Necessary.*—No claim from the builder will be entertained for extra work without the architect's written order for it, and the builder is invited to decline doing any such work without having first obtained the written order necessary to secure payment for same.

The necessity for this clause is obvious. If it is strictly enforced, no dispute can ever arise out of the question of extra work, for each separate alteration made as the work progresses is valued, and the written order for its execution placed with the contract papers. The architect will, if he is a wise man, furnish his client with a copy of every such order, and the latter cannot, on completion of the works, plead ignorance of the extra cost. He may, however, very reasonably complain if works are ordered and expenses incurred without his knowledge. Extra works somehow reflect on the ability of the architect as well as on the honesty of the contractor, and both will anxiously avoid them if they are honourable men. This does not, however, apply to additional works which are not in any sense extra works, as the word "extra" is usually understood. An "extra" is some work undertaken of necessity to make good an omission or defect in the original contract.

19. *Departures from the Contract.*—No departure from the drawings in this specification will be allowed, except by the architect's written permission. Should such departure involve extra cost, then it shall be dealt with as already provided for in preceding clauses. Should it involve a saving of cost in the original contract, then such saving shall be deducted from any sum due to the contractor on account of the work; but should such departure be made through error, or neglect to carry out this contract, then all such work as may be found deficient in any way must be pulled down and reinstated at the contractor's sole expense.

From the very beginning of the work, some contractors never cease to offer suggestions as to how the work could be done in some way better than that provided in the specification. If the latter is written by a competent man, such suggestions become a nuisance, and these may be best dealt with in this way: The proposed alteration may involve extra cost, and this will probably be the reason why the suggestion was made; the contractor may be allowed to carry it out at his own expense, giving this permission with its proviso in writing. The alteration may effect a saving in the work. If permitted, the saving should be assessed at once, and an arrangement made to deduct such saving from the contract sum. If the alteration is made intentionally or by the neglect of the contractor or anyone in his employment, then the architect should at once insist on the work being carried out in accordance with the contract. When the contractor sees he has nothing whatever to gain by making suggestions, then he will cease to make them. A builder who has been brought up to the business, and who is not a mere financial agent, as many builders nowadays are, must of necessity have acquired some experience, and this, if brought to bear on the documents which go to make up a contract, may lead to suggestions deserving consideration. In this case there is no conceivable reason why the architect should not meet the builder in an amicable way, *and, before the contract is signed*, discuss the various clauses and provisions in the specifications, with a view to any modification that may appear desirable. This would render the necessity for any subsequent departures from the contract altogether unnecessary, except something unforeseen happens during the execution of the work. The foregoing remarks are made in the interest of the architect, and some advice to the contractor may not be altogether out of place here. He will act wisely if, when plans and specification are placed in his hands for an estimate, he makes no remark on any absurd clause in the specification or any mistake in the plans. An architect who cannot make plans and specifications for a contract without the builder's assistance is unfit to be intrusted with the work, and he will not care to employ a builder who gives any evidence of being possessed with a knowledge superior to his own. The chief duties of a contractor are:—(1) To believe in the architect's infallibility. (2) To make everything pleasant for the architect. (3) To carry on the work in such a manner that the client shall be satisfied with the architect and the contractor. In fact, the contractor sought after at the present day is the man who will make things work pleasantly "all round." The execution of the work in a substantial manner he will find to be altogether a secondary consideration. In illustration of this statement the following story is worth telling. Men of any experience in building work can no doubt call to mind similar instances in their own practice. A young man just commencing work, and who had served his apprenticeship in the office of an eminent London architect, was intrusted with the designing and erection of a public building to cost about £2,000. His professional knowledge was apparently limited to the facts that a 19th-century building should be "fixed up" with 15th-century doors and windows, and that all arches should be four-centred with horizontal cubic mouldings, including the usual little panelled spandrels at the sides. So, of course, designs were made, embodying the foregoing very original conceptions, and these were duly approved by his clients, who thought them "splendid." Now, though a man may pick up any quantity of details of doors, windows, mouldings, &c., by visiting any of the numerous Mediæval buildings in this country — and hundreds, aye, thousands, have done so—yet as the Mediæval men did not apparently leave their specifications for posterity to copy, as they left their buildings: our architect's mind was saturated with 15th-century details; but he had not a single idea of construction as practised in the 15th or any other century. Yet, as before obtaining an estimate, he must have a specification, and failing to evolve one with the aid of a "Comprehensive Specifier," he found refuge—like many others of his kind—in the bosom of "a mere quantity surveyor," who fitted him up with specification and quantities to match his plan. A contract was entered into, and some few months after, the roofs of the building being fixed, our architect paid one of his usual visits to the work. Another architect, who had not the same educational advantages as the 15th-century man, was invited by him to look over the work—the latter happened to be passing at the time. Now this second man had read through the specification some few months before, and being rather interested in this building, he preserved a fair recollection of many of the clauses det scribing the class of material to be used. Amongs- many other things, he noticed that the pieces of timber lying about, and cut off the rafters, looked very sappy, and very unsuitable for any purpose but fire-lighting. On referring to the specification, the provision was found to be for "Best Memel, Dantzic, or Riga fir, free from sap, &c." No remark was made about this at the moment; but subsequently, when they were together alone, the two professional men conversed in the following fashion:—19th-century Man: "I noticed that all your roof-timbers are of foreign sawn timber, nearly solid sap, many not of the scantling specified, the copes being waney, and covered with bark. Such timber is 4th or 5th Swedish, and worth not more than 6d. or 7d. per foot, whilst the contract provides for sound timber, free from sap, and worth six times more than your contractor is giving you." 15th-century Man: "Is it so? I did not notice this; but it must be all right, for the contractor is a *very pleasant fellow*, and was strongly recommended to me by——, you know, that Queen Anne man who puts such 'go' into his work. Well, I don't know anything about timber, and don't want to be bothered with it. The work will, I suppose, last our time, and if it does, I shall be quite satisfied." 19th-century Man: "But this is very unfair to the other builders who tendered for the work, as they may have set down a price for the timber you specified, and therefore must have sent you higher estimates than your contractor; and it is also unfair to your clients, for you are allowing them to be robbed of about 2s. 6d. on every cube foot of timber used in that building." 15th-century Man: "My dear fellow, why should I bother about it? My clients have seen the work, they are delighted with it, and it would be cruel to ask a decent fellow like that to take the roofs off. Besides, the disgrace of the thing!" The roofs, of course, remained, as well as other departures from the contract, all made by the contractor, in his interest, and with impunity, because he was a "pleasant fellow," and the architect a fool. One other anecdote may find a place here. An architect in a provincial city sought by advertisement for a "clerk of the works." A foreman mason who had for some years been employed by another architect in the same city applied for the post. On being asked who he had worked for, he explained that he worked for an architect who frequently dispensed with the contractor, and had his work done "day-work" under a general foreman. The advertising architect replied, "I know him, he looks after his work himself without a builder; but *I am an architect—I don't profess to know anything about building*," and he didn't! The contractor, then, who works for men of this class, can make what departures he pleases from the contract, and many fully calculate on being able to do so when they send in estimates for any ordinary work, the enforcement of the specification being the exception, not the rule. It is pleasant to know that all contractors are not altogether indifferent as to the class of work they turn out. One who had a very good knowledge of 13th-century mason work, and who liked good work for the work's sake, sometimes sent back the architect's details with the message that "he was not going to put up rubbish like that"—meaning what was shown on the drawings—"for anyone, and the drawings must be altered." This contractor frequently put mouldings into his work that were not shown on the drawings, and did not hesitate to pull work down if it was not satisfactory in construction or design. It need scarcely be added he did not succeed in making his business a financial success.

20. *Architect Sole Arbitrator.*—It is generally found advisable to make the architect's decision on all points of dispute arising out of a contract final and binding on both parties to it. This arrangement shall, therefore, obtain in this contract, and must be accepted by the builder. Is this clause fair to the builder, or is it not?

Answering from experience, it is perfectly fair under certain conditions, and these are:—(1) That the architect should act impartially between client and contractor. (2) That he should have a thorough practical knowledge of building work and materials, and the customs of the various trades, so that, having a desire to act justly, he shall be competent to do so. To illustrate this, an architect specified that a shop was to be lined throughout with ¾in. matched boarding. When the work was completed, he refused to certify for payment because the matched boarding, as fixed, measured to little more than ½in. thick. Now he had no desire to act unjustly. He wanted ¾in. boarding, and specified it, not knowing that in the trade ¾in. boarding meant, by common custom, boarding prepared from ¾in. rough boards—that is, from the saw. This would, of course, hold to ⅝in. slack. Here the architect acted unjustly through ignorance of trade customs, and he should have inserted a clause in his conditions of contract which would have placed the interpretation of his specification outside them. It is most unsafe with some architects for the builder to agree to abide by their decisions, and accept them as final, for many cases of dispute arise through omissions in the plans and specification, and these have been due to incompetence or neglect. The architect, in these cases, will be sitting in judgment on himself, and it need not surprise anyone if his judgment is given in his own favour by deciding against the contractor. A favourite clause in some specifications is to this effect: "Everything necessary to complete the buildings in a proper manner and to the architect's satisfaction is to be done by the contractor, *whether such be shown on the drawings or not, or included in this specification.*" This is setting a net for the builder with a very small mesh indeed, and if he gets caught he has himself only to blame, for how is anyone to tell what the architect may consider "proper" to the completion of a building? Plastering is necessary to the proper completion of a building. What if it is omitted altogether in the specification? A specification for a house in the North of England provided no skirtings to any of the rooms; it provided a pump to a rain-water tank, but no tank; and the drawings showed a drawing-room projecting beyond one side of the house, with joists to carry a ceiling, but no provision was made for a lead or any other roof! In this case the architect had a clause in his contract similar to that sketched above, and decided that the contractor must supply all these things to his satisfaction, though they were omitted from the plans and specification. It will, then, be advisable for the architect at all times to make himself sole arbitrator between client and builder, and the latter will, if he is a cautious man, be careful who he accepts as sole arbitrator in disputes involving his personal credit, and frequently large sums of money. In many instances in which a contractor will sign anything an architect may send him, and do it with impunity, it may be surmised that arrangements of a delicate nature exist between them—in plain English, that the contractor affords aid of a material kind to the architect in consideration of the latter interpreting the specification and other contract drawings in a manner not to the client's advantage. No architect of any standing will descend to such conduct as this; Fellows of the Royal Institute of Architects never do it—well, "hardly ever." It is sometimes arranged that a dispute shall be referred to the President of the Institute of Architects; but this would be, so far as the builder is concerned, to get from the frying-pan into the fire. To refer a dispute to a builder of high standing would be a better plan, but not so satisfactory to the architect; and perhaps the worst plan of all would be settlement by a law-suit, for a number of very ingenious gentlemen talk learnedly about, and decide on, matters of which they know nothing. One is at first much impressed at the solemnity with which legal gentlemen discuss building questions; but when a listener hears counsel talking seriously about "a looped and sheeted stock lock," the proceedings pass from the sublime to the ridiculous.

BOOKS RECEIVED.

Joints in Woodwork, by Henry Adams, M.Inst.C.E., &c. (London: 60, Queen Victoria-street), is a reprint of a paper read before the Civil and Mechanical Engineers' Society by the author. Professor Adams' paper treats in a thoroughly comprehensive manner this subject. He takes it out of the dry, technical phraseology of the treatise, and handles it from a philosophical standpoint. Professor Rankine's well-known principles are laid down as those necessary to be considered in designing wood-joints and framing. To these useful rules Mr. Adams adds a sixth: "To select the simplest forms of joints, and to obtain the smallest possible number of abutments." The joints are classified into those for lengthening ties, struts, and beams, such as lapping, scarfing, &c.; bearing joints, as halving, notching, cogging, &c.; joints for posts and beams, as tenons, joggles; joints for struts, with ties and posts, as oblique tenons, &c. Many practical remarks are made about "building up beams" and bearing joints. Fastenings are also discussed under different heads, and the experiments of Mr. Bevan on adhesion of nails are quoted. The paper may be read with advantage by all students of wood or timber construction.——*Electric Lighting and Power Distribution*, by W. Perren Maycock, M.I.E.E. (London: Whittaker and Co.), is an elementary manual for students preparing for the preliminary and ordinary grade examinations of the City and Guilds of London Institute. Mr. Maycock is an able exponent of the subject in the above Institute, and this volume has been prepared by him as an elementary work for his classes. Some acquaintance with the science of electricity and magnetism is presumed. As an introduction to more advanced works, the book will be found well suited. The definitions are clear and concise, and all unnecessary verbiage is avoided. The work is full of well-drawn diagrams and illustrations of machines and apparatus; it is simply arranged, and the author has taken ample pains to give directions to the student, and to initiate him in the principles of the science.——*Electric Light Installations*, Vol. III. Application: a Practical Handbook, by Sir David Salomons, Bart., M.A., vice-president of the Inst. of Electrical Engineers; seventh edition revised (London: Whittaker and Co.), is the concluding volume of a work we have before noticed. The reputation and experience of the author are a sufficient recommendation and guarantee. The accumulators and apparatus have been described in the two first volumes; in this the author deals with the most efficient method to produce the best results. The information is up to date, and the outline specification given is valuable. The work is well illustrated.

NOTES ON BUILDING PRICES.

By John Leaning.

(*Continued from p.* 769.)

SCREWS.

Nails have been considered in a previous section of this series. Screws are much more used in joinery than in carpentry, and their value may reasonably be mentioned here.

Their variety is considerable, and those used by the carpenter or joiner are sometimes by them called "wood-screws," possibly to distinguish them from those used for metal. The old shape of screw (with a blunt point) has been almost entirely superseded by Nettlefold's patent pointed screw, which is pointed like a gimlet, and acts in the same way.

The screw merchants publish a screw list, the prices in which are invariable, but subject to a discount, sometimes, but not often, changed. This discount is now 60 per cent. off iron, and 50 per cent. off brass, and for specially large quantities another 2½ per cent.; but this latter does not concern us, as it is practically a cash discount.

The numbers indicate the diameter of the screw, the first number being the smallest in each series, except ¼in. and ⅜in., which include screws of still smaller diameter than No. 1, designated 0 and 0 0, and ½in. designated 0.

The stereotyped list is here appended—

IRON WOOD-SCREWS PER GROSS.

¼, ⅜, and ½ inch.			⅝-inch.			¾-inch.			⅞ and 1-inch.			1¼-inch.		
No.	s.	d.	No.	s.	d.	No.	s.	d.	No.	s.	d.	No.	s.	d.
1	0	8½	2	0	9½	3	0	10	4	1	0½	5	1	3½
2	0	8½	3	0	9½	4	0	10	5	1	1	6	1	4
3	0	8½	4	0	9½	5	0	11	6	1	1½	7	1	5
4	0	8½	5	0	10	6	1	0	7	1	2½	8	1	5½
5	0	9	6	0	11	7	1	1	8	1	3	9	1	6½
6	0	9½	7	1	0	8	1	1½	9	1	3½	10	1	7½
7	0	11	8	1	1	9	1	2½	10	1	4½	11	1	9
8	1	0	9	1	2	10	1	3	11	1	6½	12	1	11
9	1	1	10	1	3	11	1	4	12	1	7½	13	2	1
10	1	2	11	1	4	12	1	5½	13	1	10	14	2	4
11	1	3	12	1	5	13	1	8	14	2	0	15	2	8
12	1	4	13	1	8	14	1	10	15	2	3	16	3	0
13	1	8	14	1	10	15	2	2	16	2	7	17	3	3
14	1	10	15	2	2	16	2	6	17	2	10	18	3	7
15	2	2	16	2	6	17	2	10	18	3	2	19	4	0
16	2	6	18	3	2	18	3	2	19	3	7	20	4	5
						19	3	4	20	4	0	21	4	9
						20	3	7	21	4	5	22	5	2
						22	4	9	22	4	9	23	5	6
						24	5	6	24	5	6	24	5	10
						26	6	2	26	6	2	26	6	2
						28	8	0	28	8	0	28	8	0

1½-inch.			1¾-inch.			2-inch.			2¼-inch.			2½-inch.		
6	1	6	7	1	10½	8	2	0	9	2	5	10	2	8
7	1	6½	8	1	11	9	2	1	10	2	6	11	3	0
8	1	7½	9	1	11½	10	2	2	11	2	8	12	3	4
9	1	8½	10	2	0	11	2	4	12	3	0	13	3	8
10	1	9	11	2	2	12	2	8	13	3	4	14	4	0
11	1	11	12	2	4	13	3	0	14	3	8	15	4	5
12	2	1	13	2	8	14	3	4	15	4	0	16	4	9
13	2	4	14	3	0	15	3	8	16	4	5	17	5	2
14	2	8	15	3	4	16	4	0	17	4	9	18	5	6
15	3	0	16	3	8	17	4	5	18	5	2	19	5	11
16	3	4	17	4	0	18	4	9	19	5	6	20	6	4
17	3	8	18	4	5	19	5	2	20	5	11	21	6	10
18	4	0	19	4	9	20	5	6	21	6	4	22	7	4
19	4	5	20	5	2	21	5	11	22	6	10	23	8	0
20	4	9	21	5	6	22	6	4	23	7	6	24	8	8
21	5	2	22	5	11	23	6	9	24	8	2	25	9	8
22	5	6	23	6	4	24	7	1	26	9	6	26	10	6
23	5	10	24	6	8	26	8	6	28	12	6	28	13	0
24	6	2	26	8	0	28	12	0	30	16	0	30	18	0
26	7	6	28	10	0	30	14	0	32	20	0	32	22	0
28	8	6	30	12	0	32	18	0	34	25	0	34	26	0
30	10	6	32	15	0	34	22	0	36	30	0	36	32	0
						36	27	0	38	35	0	38	38	0
						38	32	0	40	40	0	40	42	0
						40	38	0						

2¾-inch.			3-inch.			3½-inch.			4-inch.			4½-inch.		
11	3	4	12	4	0	14	5	10	16	8	1	14	10	0
12	3	8	13	4	5	15	6	6	17	9	0	16	10	0
13	4	0	14	4	9	16	7	2	18	9	10	18	11	6
14	4	5	15	5	2	17	8	0	19	10	8	19	12	6
15	4	9	16	5	10	18	9	0	20	11	6	20	13	6
16	5	2	17	6	6	19	9	8	21	12	4	21	14	6
17	5	9	18	7	3	20	10	8	22	13	0	22	15	6
18	6	6	19	7	11	21	11	10	23	13	8	23	16	6
19	7	0	20	8	7	22	12	4	24	14	4	24	17	6
20	7	6	21	9	4	23	13	0	25	15	6	25	18	6
21	8	0	22	10	2	24	13	8	26	16	6	26	19	6
22	8	8	23	11	0	25	14	8	27	17	6	27	21	0
23	9	6	24	11	8	26	15	6	28	18	6	28	22	6
24	10	4	25	12	6	28	17	6	30	24	0	29	24	9
26	12	0	26	13	6	30	22	0	32	32	0	30	27	0
28	14	0	28	15	0	32	30	0	34	37	0	32	32	0
30	20	0	30	20	0	34	34	0	36	42	0	34	40	0
32	25	0	32	26	0	36	40	0	38	48	0	36	45	0
34	30	0	34	32	0	38	45	0	40	56	0	38	50	0
36	35	0	36	38	0	40	50	0				40	60	0
38	40	0	38	42	0									
40	45	0	40	46	0									

5-inch.			5½-inch.			6-inch.			7-inch.			8-inch.		
18	13	6	18	16	0	20	20	0	20	23	9	20	25	0
19	14	6	20	18	0	21	21	3	22	25	0	22	27	6
20	15	6	22	20	0	22	22	6	24	27	6	24	30	0
21	16	9	23	21	0	23	23	9	26	34	0	26	38	0
22	18	0	24	22	0	24	25	0	28	40	0	28	45	0
23	19	0	26	25	0	26	30	0	30	45	0	30	50	0
24	20	0	28	30	0	28	35	0	32	50	0	32	60	0
25	21	0	30	35	0	30	40	0				**9-inch.**		
26	22	0	32	40	0	32	45	0				26	42	0
28	26	0	34	45	0	34	50	0				28	50	0
30	30	0	36	50	0	36	55	0				30	60	0
32	35	0	38	60	0	38	65	0				32	70	0
34	40	0	40	70	0	40	75	0						
36	45	0												
38	55	0												
40	65	0												

Bright round heads charged one size higher than flat; japanned round heads or flat heads two sizes higher; lath-screws charged 4d. extra per gross net.

BRASS WOOD-SCREWS PER GROSS.

¼, ⅜, and ½-inch.			⅝-inch.			¾-inch.			⅞ and 1-inch.			1¼-inch.		
No.	s.	d.	No.	s.	d.	No.	s.	d.	No.	s.	d.	No.	s.	d.
4	1	6	4	1	8	4	1	10	6	2	9	6	3	3
5	1	7	5	1	10	5	2	0	7	3	0	7	3	7
6	1	9	6	2	0	6	2	3	8	3	4	8	4	0
7	2	0	7	2	3	7	2	6	9	3	8	9	4	5
8	2	3	8	2	5	8	2	8	10	4	1	10	4	11
9	2	6	9	2	8	9	3	0	11	4	6	11	5	5
10	2	9	10	3	0	10	3	4	12	5	0	12	6	0
11	3	4	11	3	4	11	3	10	13	5	7	13	6	8
12	3	8	12	3	8	12	4	4	14	6	3	14	7	5
			13	4	6	13	4	10	15	7	0	15	8	3
			14	5	9	14	5	9	16	7	10	16	9	2
						15	7	0	17	8	11	17	10	4
						16	7	10	18	10	0	18	11	6
						17	8	11	19	11	2	19	12	9
									20	12	6	20	14	2
									22	17	3	22	17	3

1½-inch.			1¾-inch.			2-inch.			2¼-inch.			2½-inch.		
6	4	0	7	5	3	8	6	3	8	7	0	10	10	0
7	4	4	8	5	6	9	6	9	9	7	6	11	10	6
8	4	8	9	5	11	10	7	5	10	8	3	12	11	0
9	5	2	10	6	7	11	8	2	11	9	1	13	12	1
10	5	9	11	7	3	12	9	0	12	10	0	14	13	3
11	6	4	12	8	0	13	9	11	13	11	0	15	14	6
12	7	0	13	8	10	14	10	11	14	12	1	16	15	10
13	7	9	14	9	9	15	12	0	15	13	3	17	17	5
14	8	7	15	10	9	16	13	2	16	14	6	18	19	0
15	9	6	16	11	10	17	14	7	17	16	0	19	20	8
16	10	6	17	13	2	18	16	0	18	17	6	20	22	6
17	11	9	18	14	6	19	17	6	19	19	1	22	26	5
18	13	0	19	15	11	20	19	2	20	20	10	24	30	8
19	14	4	20	17	6	22	22	9	22	24	7	26	36	0
20	15	10	22	20	11	24	26	8	24	28	8	28	44	0
22	19	1	24	24	8	26	32	0	26	34	0	30	48	0
24	22	8	26	30	0	28	38	0	28	40	0	32	54	0
26	28	0	28	36	0	30	44	0	30	46	0			
28	34	0	30	42	0	32	50	0	32	52	0			

2¾-inch.			3-inch.			3½-inch.			4-inch.			4½-inch.		
12	13	0	12	14	6	12	16	6	14	22	6	14	27	0
13	13	9	13	15	0	13	17	3	15	23	6	16	30	0
14	14	5	14	15	7	14	18	0	16	25	0	18	34	0
15	15	9	15	17	0	15	20	0	17	27	0	20	37	0
16	17	2	16	18	6	16	22	0	18	29	0	22	43	0
17	18	10	17	20	3	17	24	0	19	31	6	24	50	0
18	20	6	18	22	0	18	26	0	20	33	6	26	55	0
19	22	3	19	23	10	19	28	0	22	39	0	28	65	0
20	24	2	20	25	10	20	30	0	24	45	0	30	75	0
22	28	3	22	30	1	22	35	0	26	50	0	32	90	0
24	32	8	24	34	8	24	40	0	28	60	0			
26	38	0	26	40	0	26	45	0	30	70	0			
28	45	0	28	50	0	28	55	0	32	85	0			
30	52	0	30	60	0	30	65	0						
32	60	0	32	70	0	32	77	6						

5-inch.			5½-inch.			6-inch.			6½-inch.		
16	34	6	18	46	0	20	60	0	22	75	0
18	37	0	20	50	0	22	65	0	24	80	0
20	40	6	22	55	0	24	70	0	26	90	0
22	47	0	24	60	0	26	80	0			
24	55	0	26	70	0	28	96	0			
26	60	0	28	84	0	30	120	0			
28	72	0	30	100	0	32	150	0			
30	86	0	32	130	0						
32	100	0									

Round Heads are charged one size higher than Flat Heads.

Ideas as to the proper length of screw to be used for a given thickness of wood will vary with different men; but the following table shows some reasonable conclusions. The maximum length ever used is equal to twice the thickness of the wood.

SCREWS FOR DEAL OR OTHER SOFT WOOD.

Thickness of wood—	½	¾	1	1¼	1½	1¾	2	2¼	2½	2¾	3in.
Length of screw—	1	1¼	1¾	2¼	2¾	3	4	4	4	5	5
List number of screw—	8	9	10	11	12	13	14	14	14	18	18

For hard wood, the screws would be brass, and two or three numbers of the list earlier in each case.

For 3in. butts about 1½in., No. 9, and for 4in. butts 1½in., No. 12, are commonly used.

In day accounts the numbers are never stated, and often not the lengths. When the lengths are not given, the valuation can be little more than a guess, founded upon the nature of the item for which they are charged. When the lengths are mentioned, the numbers may be adopted from the foregoing table.

When charged in day accounts, the contractor expects to get, and obtains when he can, 3d. per inch *per dozen* for iron screws and 4d. for brass. It must be remembered that the waste of nails and screws on some buildings is considerable; but with good management 5 per cent. ought to cover it.

	Days of a joiner.
The driving of screws per inch per dozen	·024
Add if in hard wood	·010

Best Scotch glue costs 65s. per cwt.; glass paper costs 14s. per ream.

Analysis.—The cumbrous processes of analysis such as follow are illustrations of the methods of obtaining prices; but it will be obvious to the reader that the practised estimator will rarely require them. Reference to priced bills of quantities of past work, records of the cost of particular items in the builders' prime-cost book, his private memoranda, or recollections of similar things will save him the time and trouble of such tedious work.

The constants for labour only, for labour "from bench," and for fixing respectively, have been kept separate, as the fixing of joinery often involves bearers, backings, or plugging, which is more conveniently valued separately, according to the requirements of each case. For each item requiring valuation, the cost will therefore be the value of the constants for labour and fixing plus the value of the material.

Labour and Fixing.—As a preliminary to pricing, it is necessary to settle the value of the fixing only of various kinds of joinery, and of the incidental labours of common occurrence.

Labour Only.—			Days of Carpenter. Per foot run
Chamfers 1in. wide and under,		straight ..	·002
Ditto	ditto	cross-grain	·003
Ditto	ditto	circular ..	·003
Beads 1in. wide and under,		straight ..	.003
Ditto	ditto	cross-grain	·005
Ditto	ditto	circular ..	·006
Staff-beads	ditto	straight ..	·009
Ditto	ditto	cross-grain	·012
Ditto	ditto	circular ..	·015
Chamfers above 1in., and not exceeding 2in. wide		straight ..	·006
Ditto	ditto	cross-grain	·009
Ditto	ditto	circular ..	·009

If stopped, including plain square stops, increase the constant by one-half.

Cutting other than straight, 2in. thick and under......		raking ..	·006
Ditto	ditto	circular ..	·009
Ditto over 2in. thick		raking ..	·030
Ditto	ditto	circular ..	·045
Rounded edges on 2in. and under		straight ..	·006
Ditto	ditto	circular ..	·009
Ditto	ditto	cross-grain	·009
Ditto over 2in. and not exceeding 6in.		straight ..	·018
Ditto	ditto	circular ..	·025
Ditto	ditto	cross-grain	·025
Plough-groove, 2in. girth and under		straight ..	·003
Ditto	ditto	cross-grain	·009
Ditto	ditto	circular ..	·012
Cross-tongued joint, up to 2in. thick....			·015
Tongued angles			·015
Rebate not exceeding 2in. girth			·003
Ditto	....	cross-grain	·009
Ditto	....	circular ..	·012
Moulding, 2in. girth and under,		straight ..	·012
Ditto	....	cross-grain	·018
Ditto	....	circular ..	·024
			Per ft. super.
Moulding over 2in. girth ..		straight ..	·072
Ditto	....	cross-grain	·108
Ditto	....	circular ..	·144

If any of the above are stopped, increase the constant by one-half.

		Per ft. run.
Notching or scribing, 1in. and 1¼in.		·009
Ditto 2in.		·014
Plugging		·008
		Per ft. super.
Planing	straight ..	·010
Ditto	circular ..	·015
Rebating		·048
Ditto	cross-grain	·072
Ditto	circular ..	·095

Fixing Only.—	Days of a Carpenter. Per ft. run.
Fillets	·005
Grounds for skirtings and similar purposes	·005
Ditto framed as to doors and windows ..	·008

When plugged add the constant for plugging in the foregoing list.

	Per ft. run.
Fascias or *skirtings*, exclusive of grounds and backings, 6in. and under	·010
Ditto 6in. to 9in.	·013
Ditto 9in. to 11in.	·015
Ditto in two pieces, 12in. high in all....	·021

Floors Laid and Cleaned Off.—	Per square.
1in. yellow batten, straight joint with splayed headings	·400
1¼in. ditto	·440
1½in. ditto	·485
1in. tongued and grooved, or filistered or rebated with loose tongues	·535
1¼in. ditto	·590
1½in. ditto	·645
Add to either of the foregoing if punched, puttied, and traversed	·250

Skylights, Sashes, and Frames.—	Per ft. super.
Fixing fanlights or skylights	·010
Hanging casements, 1½in. or 2in.	·016
Fixing deal-cased frames and sashes, or casements and frames	·007
Doors.—	
Hanging 1¼in. and 1½in. doors	·008
Ditto 2in. ,, 2¼in. ,,	·010
Ditto folding 1¼in. and 1½in. doors	·016
Ditto ditto 2in. ,, 2½in. ,,	·020

A common price for hanging a door is 1s. 6d. in speculating work. The men will hang them (piece work) at 1s. each. In all cases the fixing of doors involves and includes the fixing of the hinges.

Framings.—	Per ft. super.
Framed partitions	·012
Framed spandrels	·025
Window backs	·016
Thicknesses.—	
Jamb linings	·012
Ditto 6in. wide and under	·020
Window linings	·010
Ditto boards and bearers	·016
Shelves and bearers	·020
W.C. flaps and frames, fixing and hanging	·016
Skylight curbs	·016
Pipe casing and grounds	·030
¾in. matched and beaded boarding, in 4½in. widths per square	·60

Staircases.—	Per ft. super.
Treads and risers and bearers	·045
Wall string	·020
Outer string	·010
	Each.
Housing treads and risers, rounded nosings	·050
Ditto ditto moulded nosings	·060
Housing winders, rounded nosings	·075
Ditto moulded nosings	·090
Housing ends of moulded handrail	·040
	Per ft. run.
Newels	·025
Handrail	·006
Architraves up to 3in. wide, including mitres	·012

Labour on Casements from Bench.—

	Days of Joiner. Per ft. super.
1½in. ovolo moulded casements, single squares	·032
Ditto ditto circular on plan	·095
Ditto ditto circular quick sweep	·127
Ditto, add for small squares	·032
Ditto, semi-heads separately measured and measured square	·095
2in. ovolo moulded casements, single squares	·037
Ditto ditto circular on plan	·111
Ditto ditto circular quick sweep	·147
Ditto, add for small squares	·037
Ditto, semi-heads separately measured and measured square	·111

Subject to the saving remarks as to limit of size, the foregoing constants may be applied to fixed sashes, fanlights, and skylights.

Observe that the words "from Bench" mean that fixing or hanging is not included in the constant.

Labour to Panelled Doors and Framings from Bench.—

			Days of joiner.	
1¼in.	square framed	2-panel	·036	per ft. super.
1¼in.	,,	4 ,,	·042	,,
1¼in.	,,	5 ,,	·045	,,
1¼in.	,,	6 ,,	·048	,,
1½in.	,,	2 ,,	·036	,,
1½in.	,,	4 ,,	·042	,,
1½in.	,,	5 ,,	·045	,,
1½in.	,,	6 ,,	·048	,,
2in.	,,	2 ,,	·042	,,
2in.	,,	4 ,,	·048	,,
2in.	,,	5 ,,	·050	,,
2in.	,,	6 ,,	·053	,,
2¼in.	,,	2 ,,	·049	,,
2¼in.	,,	4 ,,	·054	,,
2¼in.	,,	5 ,,	·057	,,
2¼in.	,,	6 ,,	·059	,,
2½in.	,,	2 ,,	·050	,,
2½in.	,,	4 ,,	·056	,,
2½in.	,,	5 ,,	·059	,,
2½in.	,,	6 ,,	·060	,,

The above constants may be adopted for framings, observing that the distribution of panels is similar.

Labour on Sashes and Frames from Bench.—

	Day of joiner. Per ft. super.
Deal cased frames, and 1½in. sashes, single hung	·066
Ditto ditto double hung	·078
Ditto, circular plan, flat sweep	·117
Ditto ditto quick sweep	·156
Deal-cased frames, and 2in. sashes, single hung	·078
Ditto ditto double hung	·090
Ditto, circular plan, flat sweep	·140
Ditto ditto quick sweep	·185

Labour to Thicknesses from Bench.—

	Day of joiner. Per ft. super.
1in. shelves, wrought both sides, no bearers	·020
1in. window linings, rebated one edge and tongued at angles	·028
1¼in. window boards, with rounded nosings	·016
1in. mortise and mitre-clamped flap and beaded frame	.080
1½in. jamb linings, double rebated and tongued at angles	·045
1¼in. landing, cross-tongued	·025
1¼in. wrought and framed outer-strings	·048
1½in. ditto ditto	·053
1¼in. wrought, cut, and mitred outer-strings	·060
1½in. ditto ditto	·065
1¼in treads, with rounded nosings and 1in. risers, glued, blocked, and bracketed	·060
1¼in. wrought plain wall string	·036
1½in. ditto ditto	·042

Wrought, rebated, and beaded Door-frames, Labour and Fixing.—

	Day of joiner.
12 sectional inches and under	·320
24 ditto ditto	·290
36 ditto ditto	·260

For transomes increase the constant for frames by 10 per cent.

CHIPS.

A hall, dispensing-room, and laboratory have been added to the Pharmaceutical Society's premises in York-place, Edinburgh, from designs by Mr. Hippolyte J. Blanc, A.R.S.A., of that city.

At the first meeting of the newly-elected school board for Eling, Hants, a letter was read from Messrs. Mitchell, Son, and Gutteridge, of Southampton, architects, inclosing their charges against the old board, amounting to £130, and they likewise applied for the post of architects to the present board. Mr. S. K. Pope, also of Southampton, wrote, offering his services as architect to the board in case they decided to appoint an architect, and stating that his charges would be 4 per cent. on the contract. Mr. Gutteridge was present, and stated that his firm's charges would be 5 per cent. The decision of the school board has not yet been made known.

A house for private patients is about to be commenced at Garlands, Carlisle. This is part of a scheme for providing accommodation for paying patients, consisting of a central main administrative building, and a series of houses on either side. An excellent site has been chosen in the asylum grounds. The designs are being prepared by the county architect, Mr. Geo. Dale Oliver, Lowther-street, Carlisle.

Mr. Codrington, R.E., Local Government Board inspector, held an inquiry at the Town Hall, Burton-on-Trent, last week, with regard to an application by the town council to borrow £53,213 for sewage disposal, sewerage works, electric-lighting, new stabling, a refuse destructor, and for furnishing the new town hall. The surveyor gave the details of the work proposed to be done, and then Professor Dewar gave evidence as to his analysis of the Burton sewage, describing the constituents of which it was composed and the manner of dealing with it, showing that by the adoption of the lime process the great nuisance at the farm had been practically abolished.

Mr. Arnold Taylor, Local Government Board inspector, held an inquiry on Friday into an application of the Liverpool City Council for permission to borrow £60,000, for the purpose of reconstructing the public baths at the Pierhead. They were the first buildings of the kind erected in the provinces, having been rebuilt by the corporation in 1825-9, at a cost of £24,500. The structural condition of the premises is now far from satisfactory, and they will be again remodelled from plans by Mr. T. Shelmerdine, the city surveyor. The men's bath will be enlarged from 46ft. by 27ft. to 100ft. by 46ft., and the ladies' bath from 38ft. by 27ft. to 50ft. by 38ft., and 17 private baths will be added, additional land being taken on the north side.

Col. J. O. Hasted, R.E., a Local Government Board inspector, conducted an inquiry at the Bacup Town Hall, on Friday, for sanction to borrow a sum of £18,000 for works of sewerage in the Stacksteads district. Mr. Hyde, the town clerk, said that at present the sewage from the district passed into the Irwell, and the Mersey and Irwell Joint Committee had obtained an order calling upon the council to carry out a system of sewerage within a period expiring in January next. The scheme now proposed would form a connecting-link between the sewerage systems of Bacup and the district under the control of the Haslingden, Rawtenstall, and Bacup Joint Outfall Sewerage Board, the latter authority now being engaged in constructing outfall sewerage works at Ewood Bridge.

Correspondence.

THE R.I.B.A. AND DISTRICT SURVEYORS.

To the Editor of the Building News.

Sir,—On Monday evening last I attended, by invitation, a meeting of the Institute, having reference to the question as to the status of district surveyors, at which a unanimous resolution was adopted requesting the County Council to refrain from making it a condition of their appointment that they should abstain from private practice. It was also suggested that all appointments to the office of district surveyor should be from the ranks of the Institute.

I refrained from disturbing the harmony of this "Mutual Admiration Society" by offering any remarks upon the question under discussion; but it struck me that a very material point was overlooked—viz., that the office of district surveyor exists for the benefit of the public. If it existed for the benefit of architects, and those architects members of the R.I.B.A., the discussion at Conduit-street would have been quite in order, and would have done credit to a trades-union meeting; but seeing that the office exists for the protection of the public, the public, through their representatives, deem it advisable to impose the condition objected to.

The state of affairs existing in some districts when the County Council took office was little short of a scandal and disgrace, and the district surveyors have only themselves to blame that the County Council set about altering the condition of things by making the area of the districts greater, and thereby making it worth a candidate's while to accept the office, and give up his private practice. I do not find, however, that members of the R.I.B.A., although they waxed so eloquent at having to submit to the indignity the London County Council have imposed, have refrained from applying for appointment either to newly-formed districts or accepting an additional area to their own districts on the new conditions, as I find that nearly all appointments made since 1890 have been made to members of the R.I.B.A., and there are other members waiting to embrace the opportunity should it arise. If the Institute had been really in earnest over the matter, they would have called out their members and proclaimed a general strike.

Another point which clearly showed that it was only a trades-union affair was brought out by the opener of the discussion in his statement that he thought that a district surveyor should not practise privately in his own district: not because it was expedient in the public interest, but because, forsooth, he should not compete with his brother architects for work there. But why not? The interests of the public would not suffer, because there is a special clause in the Act of Parliament dealing with such a case. There is every reason why he should, apart from that given by the opener, if he practise at all, and the Act clearly contemplates that he would—otherwise the clause would not be inserted. The whole discussion was very one-sided and hollow, and although it is desirable that the district surveyor should be an architect and a gentleman, these conditions are not unattainable outside the small section of the profession who meet at Conduit-street.—I am, &c.,

244, Camberwell-road. Ellis Marsland.

FIREPROOF CONSTRUCTION.

Sir,—Mr. Banks, writing on the above subject in your last issue, lays claim (by inference) to a principle of construction which did not originate with him. In the "Fawcett" floor patent (which is now nearly seven years old), the principles of *severance* and of the conducting *away* of heat are claimed, and the system has been carried out in its entirety in numerous buildings.

The Fawcett system was recently selected for the floors of the new buildings for the Institution of Civil Engineers (in competition with the "Banks" floor), and from the result it is evident that the Institution and their architect did not think any improvement had been made by Mr. Banks.—We are, &c.,

Mark Fawcett and Co.

50, Queen Anne's Gate, Westminster,
S.W., December 4.

L.C.C. CONTRACTORS v. L.C.C. WORKS DEPARTMENT—A CHALLENGE.

Sir,—We have to-day written the Chairman of the London County Council as per copy below.

The matter being of great importance to the ratepayers of London, we shall be obliged if you will publish same.—We are, &c.,

Reed, Blight, and Co., Ltd.

Albany Buildings, 47, Victoria-street,
Westminster, S.W., Nov. 28.

[copy.]

Sir John Hutton,
Chairman of the London County Council,
Spring-gardens, London, S.W.

Sir,—Our attention has been drawn to some remarks made by Mr. John Burns at a special meeting of the London County Council on Thursday last. Mr. Burns is reported to have said that although the estimates of the Works Department of the L.C.C. had been exceeded in many instances, the Council had the satisfaction of knowing that the works executed by their Works Department were of a better quality than the works executed by the contractors under the old conditions.

The excess of the estimates we do not propose to discuss; but we consider Mr. Burns's statement as to the quality of the work not only misleading to the ratepayers of London, but absolutely devoid of foundation, and calculated to damage ourselves and other contractors.

We challenge proof of this statement, and would suggest that a committee of experts be at once appointed by the Council to verify it, in fairness to the contractors and ratepayers of London.

We give as specimens of the works executed by us the following:—The private lunatic asylum at Claybury, dynamo house and electric light station at Claybury, foundations for the artisans' dwellings at Yabsley-street, Poplar, and the artisans' dwellings known as Beachcroft Buildings, Brook-street, Limehouse, E.

If, in the opinion of the suggested committee of experts, these works are not equal in quality of materials and workmanship to works of a similar nature executed by the Works Department of the L.C.C., we are willing to hand over £50 to any hospital you may name.

We presume that—if you adopt our suggestion—the report of the said committee will be published, and as we consider the matter of great public interest, we are sending a copy of this letter to the Press.—We are, Sir, your obedient servants, Reed, Blight, and Co., Ltd.
(Signed) Per John Reed, Managing Director.

Intercommunication.

QUESTIONS.

[11257.]—**Infectious Hospitals.**—Can some of your readers kindly tell me one of the latest works or authorities on the planning requirements of an infectious diseases hospital?—Inquirer.

[11258.]—**Wall Sinking.**—How can I avoid the sinking of walls on clay ground?—J. M. P.

[11259.]—**Concrete.**—I have seen Portland cement concrete slabs 2ft. 3in. by 1ft. 9in. by 3in. thick, which were made about two years ago, and laid. In three months after, pieces about 9in. superficial, of irregular shapes, burst up. I have seen the same thing occur where floors were laid not as flags, but the material laid on small stones immediately after being mixed, then levelled, and finished off. The concrete in all cases was of the best Portland cement, and clean, hard gravel and sand as ground floors.—Builder.

[11260.]—**Strength of Floor.**—Can anyone oblige by showing method of calculating strength of a floor composed of wood joists 10in. by 2½in. at 18in. centres, and 10ft. clear between the beams? The beams are 40ft. long and of wood, 12in. by 12in., trussed with iron rods to similar beams in floor over.—A. Y. Z.

[11261.]—**Surveyors' Charges.**—In Ryde's scale of surveyors' fees for property taken compulsorily, what work is embraced in the charge?—A. Y. Z.

[11262.]—**Licenses.**—Is it necessary for an architect that is engaged by a private individual, and paid a stated salary annually, to have a valuer's license? Most of the works being paid for by measure and value, such prices being fixed solely by the said architect. Is it necessary for an architect to have a valuer's license for measuring and valuing builder's works for which he has, or has not, prepared the drawings and specifications, as the case may be?—Subscriber, Notts.

REPLIES.

[11247.]—**Architect's Duty.**—I was in hope someone would have replied more fully to the question as to an architect being justified in providing healthy adjuncts ahead of his employer's requirements, as I think it is an important one, seeing architects are frequently upbraided for not being abreast of the times, whereas it is the fault of clients, who will not go to the expense of improvements, and do not see the importance of their introduction until public opinion is so strong as to interfere with the letting of property that is not up to modern requirements; consequently it does not pay for a professional man to be ahead of what is needed of him, entailing, as it does, extra service out of all proportion to his ordinary duty of general supervision, in providing specialities which in many cases would not be appreciated, and in some instances jeopardise the work being proceeded with on account of the total cost exceeding amount proposed to be expended.—Progressionist.

[11253.]—**Ball-room Floors.**—I have made a portable dancing-floor for Lord Burton at the St. Paul's Institute, Burton-on-Trent, which has been used for the past ten years, and has given great satisfaction to many thousands of dancers, as it is used at all balls, on account of its springiness. It is of simple construction, and easily laid down, taken up, and stored away when not in use. The ball-floor is laid on an ordinary floor, and taken up and stored away when not needed for dancing. I shall be pleased to give "A.R.I.B.A." any information he may require, if he will write to—Wm. Gould, Builder, Tutbury.

Legal.

WHAT IS A "LEASE"?

THIS question came up in two cases that arose out of a dispute as to the Stamp Duties properly chargeable upon two documents which the parties sought to describe as "leases," and the Inland Revenue authorities contended were obligations or securities. In the first case, an agreement had been made between the Sweetmeat Automatic Company and the Great Western Railway as to placing a certain number of their machines upon various stations at an annual rental of £3,000. It was proposed to stamp this as a lease at 10s. per cent., which would be £15. But the Inland Revenue authorities argued that it was the only or primary security for the payment of the annuity of £3,000, and so came within the clauses as to a bond, covenant, or instrument given for that purpose, and must be stamped *ad valorem*, with a duty of 2s. 6d. for every £5, or part of £5, of such annuity. This raised the stamp duty payably to £75, and so the company appealed to a Divisional Court. In the other case, a similar point had to be decided. There the agreement was with a telephone company, giving the right to use a certain number of their lines at a *minimum* charge, making altogether a total annual payment of £506. It was proposed to regard this as rent, and stamp the document as a lease with £2 15s.; but the commissioner contended that it was really an instrument for the security of the payment of such an annual sum, and thus came within the same scale, and required to be stamped 2s. 6d. for each £5, or £12 15s.

Both cases were argued together (*Times*, Nov. 24), and in both the Inland Revenue authorities were successful. As to the telephones, the Court considered that the document could not be held to be a lease, as no exclusive possession was given in the wires, while the money was paid not only for the use of the wires, but also for services to be rendered by the Company. In the other case, as to the automatic machines, there was no exclusive right to any given piece or part of any platform, and so there could be no lease in the technical sense of the word as used in the Stamp Act. The result, however satisfactory to the Revenue, will hardly be so to other parties. It has generally been thought that the payment of rent for user of a place or thing in this way would create a lease of an easement, with stamp duties accordingly; but this ruling will greatly add to the expenses of such agreements.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Nosyd.—Contract.—Material.—I think the best plan would be to give notice to determine the contract on grounds stated. The clause you mean applies to loose materials.

C. P.—Right of Way.—User.—Abandonment.—It may be that A. would be held to have abandoned the right of way by non-usage for so long a time. At all events, the lord of the manor is not liable, and A.'s remedy would be against B. But the case is one for legal advice, with deeds and plans.

Contract.—Defective Material.—Deduction.—It will be best to deduct the cost of making good, as suggested, from any money that is payable to the builder. He can, of course, object, and then the amount really due must be settled by arbitration under the contract, or by an action. He cannot be compelled to agree to the deduction, as seems to be supposed.

◆

Col. Hasted, Local Government Board inspector, held an inquiry at the Council Chamber, Rawtenstall, on Tuesday week, relative to the application of the Haslingden, Rawtenstall, and Bacup Outfall Sewerage Board for sanction to borrow £20,000 for the construction of a sewer. Mr. H. E. Cutler, engineer of the scheme, produced and explained the plans.

At a meeting of the Baths Committee, held at Bath on Friday, a new plan for dealing with the Roman bath and remains was submitted by Mr. J. M. Brydon, the architect. It showed the bath itself uncovered while the walls in York-street and on the east side of the bath would be lower than was originally intended. The plan, it was thought, would meet with the approbation of the Society of Antiquaries. The scheme for lengthening the promenade by 10ft. was agreed to. It was agreed that Mr. Brydon should prepare a perspective, and submit it before the matter was considered at a special meeting of the council.

LEGAL INTELLIGENCE.

Church Reseating at Crondall.—An Ecclesiastical Court was held at the Guildhall, Winchester, recently, before Mr. H. C. Gore Browne, M.A., Chancellor of the Diocese, to consider a petition from the vicar and churchwardens of Crondall, praying for the granting of a faculty approving and confirming the erection of a memorial brass on the north wall of the aisle of the parish church, and "certain slight alterations in the seating." The petition was opposed by Mr. J. Lindsay Johnson, a former churchwarden, and by other parishioners, on the ground that extensive and unnecessary alterations in the seating were proposed, including the rearrangement of three-fifths of the seats. The church was restored in 1871 by the late Sir Gilbert Scott. Mr. T. B. Colson, F.R.I.B.A., of the firm of T. Colson and Son, produced a plan of the church. The bench seats had been converted into pews, and the recent alterations had not been an improvement. Indeed, the obscuring from view the beautiful moulded base of a respond pier, of 12th-century work, was, he considered, an act of vandalism that should not be permitted to be perpetrated. Mr. Colson produced sketches showing how the new seat-framing and book-boards had been abutted against, and scribed to, the respond pier base. The Chancellor granted a faculty for the tablet, but adjourned the matter of the reseating till the parishioners could be consulted in vestry as to whether an alteration of the seats were necessary or not. He hoped that the opinion of an ecclesiastical architect would be taken about the reseating.

Re A. Braid and Co.—Under the failure of Alexander Braid, trading as a builder, at 112 and 113, Fore-street, City, under the style of A. Braid and Co., a summary has been issued. The unsecured debts are £6,483, and debts fully secured £71,736, and the debts are estimated at £10,381, subject to realisation. The debtor states that he has since 1889 been engaged in building operations in London, and during the last three years has incurred losses in connection therewith owing to his inability to let the premises; that his failure is attributable chiefly to losses on contracts undertaken by him, to claims against him for compensation for obstruction for light and air, and to law costs. A proposal has been lodged by the debtor for a composition of 7s. 6d. in the pound, payable in cash. The debtor appeared before Mr. Registrar Giffard on Wednesday, when the examination was closed.

The Architect and his Assistant.—The case of Elliot *v.* Clarke, on Saturday, came before Mr. Justice Collins, in the Queen's Bench Division, as a short cause, it being an action brought by Mr. Norman Elliot, of Hounslow, against Mr. Edward Clarke, an architect, formerly carrying on business at Dashwood House in the City, to recover arrears of salary from December, 1893, to the 17th October last, at the rate of 25s. a week. The defence was that the plaintiff left the defendant's employment in February last, when defendant got into financial difficulties, and was obliged to close his office. Mr. Sennhouse, in opening the case, said that when the defendant closed his offices at Dashwood House he told the plaintiff that as he intended opening new offices he need not look for any fresh situation, but continue to stop at home for a short time. This the plaintiff did until October last, always considering himself the defendant's servant. The plaintiff having given evidence in support of counsel's statement, Mr. Watt, on behalf of the defendant, said that the plaintiff left his client's service when he got into monetary difficulties in February last. Between February and August the defendant did not employ the plaintiff at all, but in the latter month, the defendant, having some work on at Edmonton Green, made the plaintiff clerk of the works, the plaintiff telling him that he had nothing to do, and would be glad to come on again. His lordship, in giving judgment, said that he felt compelled to adopt the story told by the defendant. He thought that the relation of clerk and employer ceased at the end of February, and the plaintiff was entitled to one month's wages, on account of the defendant having made a mistake as to the time the engagement ceased, he, at first, contending that it came to an end on January 24. That was clearly a mistake, and on that head there would be judgment for the plaintiff for £5, and another £2 for money expended by plaintiff in railway fares in going to and from London at different times when the defendant wished to see him. Judgment for the plaintiff for £7, but without costs.

Local Authorities and the Rejection of Plans.—Ex Parte Golding—in the Matter of the Swindon and Pendlebury Local Board.—An application was made to Mr. Baron Pollock and Mr. Justice Grantham in the Queen's Bench Division on Wednesday, on the part of a builder, near Manchester, for a mandamus to the Swinton and Pendlebury Local Board to approve of certain plans and sections for the building of certain houses on land of his which he had submitted to them, and which they had rejected without assigning any ground or reason. On November 12 last one Golding delivered to the board plans and sections for 49 cottages which he intended to erect. On November 24 he had a letter from the clerk of the board in these terms:—"I am instructed to return to you the plans and sections for 49 cottages, and to inform you that they are not approved of by the board." There was an affidavit of the applicant that the plans were in accordance with the Public Health Act, 1875, and the bylaws, and this was supported by the testimony of two architects. There was also an affidavit by the applicant that on several occasions he had asked the surveyor and the chairman and another member of the board to give the reason for the rejection of the plans, but had always been met by a refusal; and that on one occasion the surveyor told him that his instructions were not to disclose the reason why the plans had been rejected. On affidavits of these facts, Mr. Poland, Q.C., now moved for a mandamus to the board to make an order and stating their approval of the plans. He said there was already authority for such an application ("The Queen *v.* Newcastle-upon-Tyne"). The local board in such a case had not an arbitrary power of rejection of building plans without any real ground or reason; they could only reject plans on some specific and intelligible ground. And where, as in the present case, they refused to state the grounds and reasons on which they had proceeded, there was no remedy but such an application as the present. The Court granted a rule nisi for a mandamus.

Personal Liability of Receivers and Managers. — Burt, Bolton, and Haywood v. Bull and Ward.—This was an appeal from the judgment of Mr. Justice Mathew in favour of the plaintiffs at the trial of the action without a jury in July last. The action was to recover the balance of the price of timber supplied by the plaintiffs upon the order of the defendants, who were appointed receivers and managers by the Chancery Division in a debenture-holders' action. A company named Joseph Bull, Sons, and Co. (Limited) carried on business as builders and contractors, and the company had issued debentures. In 1892 a debenture-holders' action was brought, and on May 6, 1892, the defendant Bull and one Bird were appointed by the Chancery Division receivers and managers of the business of the company, with power to borrow £5,000. A creditors' petition to wind up the company was presented on May 14, 1892, but this petition stood over, and nothing was done under it. A committee of inspection on behalf of the unsecured creditors had been appointed, and it was arranged that second debentures should be issued to the unsecured creditors for their debts, and that one of the two receivers and managers should be appointed on their behalf. Accordingly the defendant Ward was appointed receiver and manager instead of Bird. The defendants ordered timber from the plaintiffs for the business, the order being signed in the following form:—"For Joseph Bull, Sons, and Co. (Limited), Ed. C. Bull, Robert James Ward, receivers and managers." Mr. Justice Mathew came to the conclusion that the defendants were personally liable, and gave judgment for the plaintiffs. Mr. Farwell, Q.C., for the defendant Bull, contended that the plaintiffs did not supply the timber on the personal liability of the defendants. They looked to the fund of £5,000 for payment, one of the partners in the plantiffs' firm being a member of the committee of inspection, and knowing all the circumstances. A manager appointed by the Court of Chancery was not bound to pledge his personal credit. The Court dismissed the appeal. The Master of the Rolls said that the first question was, what was the position of a person appointed by the Chancery Division receiver and manager of an existing business of, say, a company? He was not the agent of the company to carry on the business, and therefore the company would not be liable upon his contracts. Therefore, a receiver and manager so appointed giving orders for goods under such circumstances must be taken to do so on his own responsibility and to pledge his own credit. That was the position of a receiver and manager so appointed. But the receiver and manager might give an order for goods upon the express terms that he should not be personally liable, and if he chose he could do so. But if no such stipulation was made, and the only fact was that the order was given by him as receiver and manager appointed by the Court, the only inference to be drawn was that the receiver and manager pledged his personal credit, looking for an indemnity to the fund or business. If that were not so, every tradesman dealing with the receiver and manager would have to make inquiries as to the business or the fund. That seemed to have been the view of Sir George Jessel, M.R., in "Sargant v. Read," 1 Ch. D., 600, and of Mr. Justice Chitty in "Taylor v. Neate," 39 Ch. D., 538. The judgment was therefore right. The Lords Justices delivered judgment to the same effect.

Mr. Thomas Nelson MacLean, sculptor, died on Tuesday in last week from tumour on the brain.

Our Office Table.

An interesting feature at the meeting of the Society of Architects on Tuesday next, will be the exhibition of some rare and reference works in architecture. We understand that non-members of the society desirous of inspecting these books, and hearing Mr. Batsford's paper on them, and other works suitable for an architectural library, can obtain tickets of admission on application to the secretary at the offices of the society, at St. James' Hall, Piccadilly, W.

A meeting of the cement trade was held at the London Chamber of Commerce on Friday last, for the purpose of receiving and adopting or otherwise certain recommendations of the special committee which has been appointed to investigate and report upon the extent of the practice of admixtures with Portland cement, and as to the justifiability thereof. The trade, with only one dissentient, adopted the recommendation of the committee, that it was advisable that all manufacturers of Portland cement, who have used any outside material or materials in the manufacture of that article, should at once discontinue the practice. The use, however, of not more than 2 per cent. of gypsum, as practised by the German manufacturers for the purpose of regulating the setting of the cement, is considered optional.

Canon Lonsdale, who has been connected with Lichfield Cathedral for 39 years, gave a lecture in the chapter house of that cathedral on Tuesday, descriptive of the work done internally and externally to the fabric of the cathedral since the reopening in 1861. Canon Lonsdale spoke of the restoration of the west front, a work which occupied seven years, and was completed in 1884. He referred to the numerous memorials which had been placed in the cathedral in recent years, making special mention of the monuments erected to the memory of his father (Bishop Lonsdale), Dean Howard, Archdeacon Moore, and Archdeacon Iles, and to the memorial window and the colours of the 38th Regiment. After touching on the restoration of the great windows in the north and south transepts, he pointed out the improvements effected by the restoration of the central spire, which had now not only been beautified, but placed beyond danger.

The variation of barometric pressure has a very considerable effect on the ventilation of inclosed spaces like closets, cupboards, cellars, which have no large apertures, and for this reason the difference of air pressure is important in a hygenic sense. Professor Shaw says:—"A fall of pressure of 1in. causes the abstraction of 57c.in. of air from every cubic foot of the nearly closed space, and a rise of internal temperature of 1° Fahr. causes the expulsion of 3½c.in. Changes of air are thus effected in wells, cupboards, cases, cellars, cesspools, and the same causes produce an expulsion of air from all soils which are porous, and contain a quantity of air dependent on the barometric pressure." These facts are important to the architect and hygienist. Natural ventilation is, according to this law, continually in operation with every change of pressure and temperature; there is a constant change of inspiration and expiration going on in every closed room and space in a building or in the soil. A fall of pressure in the case of soil underneath a house, will cause the gases in the soil, often noxious, to enter the building, to which cause we probably owe much ill health.

A Roman villa has just been discovered at Darenth, in Kent. Many Roman tiles were noticed on the surface of a field beside the river to the south of the church. Tentative diggings were made, with the result that at about a foot below the surface remains of Roman foundations were met with. Mr. George Payne, of Rochester, was invited to superintend the excavations, which are now proceeding under his direction. The foundations have been opened out of a quadrangular building, with its outer walls made of flint nodules set in mortar, and faced with plaster, the walls measuring usually 2ft. or more in thickness. The inner walls are less substantial, and in some cases were left hollow in the middle, while at the floor level each wall had a plaster moulding, concealing the angle formed by the floor and the wall. The floors of two of the rooms are paved with tesseræ of red brick, still in a good state of preservation. Of the other rooms, one still has its flooring of square red tiles about 8in. in diameter, and in others traces remain. Along the north front is a row of five chambers of various widths, but all of the same length north and south—viz., about 27ft. The largest is nearly square, the next about 18ft. in width, and the three others from 6ft. to 9ft. wide. Beyond these, on the east, is a room about 6ft. square, and other foundations exist in this direction. On the western side of this range of rooms is a large hall, having a width of 17ft., and a length not yet determined. Abutting on the outer wall of this hall is the bath. Very few small antiquities have been found: some fragments of bronze armlets, chains, a so-called hippo-sandal, and a small coin of Tetricus; but broken pottery is found in abundance.

Johannesburg is progressing by leaps and strides as great as those which have marked the rise and development of cities in the United States. Mr. G. S. Burt Andrews, writing to the Society of Architects from the Government Offices at Johannesburg, says:—"To give you some idea of the rapid way in which the town is *still* growing—for the *week* ending 26th October no less than thirty-one sets of plans were submitted to this department for approval, representing a value of about £35,000—the average number of plans sent in *per week* since the commencement of this year is 19·45.

CHIPS.

Mr. Walter Freeth, ex-student of the Central Municipal School of Birmingham, and at present master of the Moseley-road Branch School of Art, has been appointed to the head mastership of the Watford School of Art.

The Perpendicular canopy and altar-tomb that were erected some time since in York Minster, as a memorial to Dr. Thomson, will soon be completed by the addition of the sculptured effigy of the late archbishop, which has been executed by Mr. Thorneycroft, R.A. The unveiling will take place in January next.

Museum Sunday was celebrated on Sunday in London and several of the provincial towns. Altogether, 54 sermons and ten addresses were delivered in support of the objects of the Sunday Society, and eight special art exhibitions and 85 rate-supported museums and galleries were open free to the public.

John M'Dermott, 45, local secretary of the Amalgamated Builders' Labourers' Union, was remanded at Leeds, on Friday, on a charge of embezzling £129, the money of the union. A month ago, prisoner, it is alleged, absconded, sailing from Liverpool in the *Campania* for New York, where he was followed, arrested, and brought back by a Leeds detective.

The local board of Stapleton, near Bristol, have adopted plans by Mr. A. J. Saise, their surveyor, for sewering the Ashley Down district, at an estimated cost of £7,000.

At St. Mary's Church, Hunslet, Archdeacon Bardsley, Vicar of Bradford, unveiled, on Friday, the Leake memorial reredos, which has just been erected at a cost of £500, and also an oak Communion table. The centre panel of the reredos depicts the scene at Emmaus, where Christ broke the bread to His disciples. The designer was the Rev. E. Geldart, vicar of Little Braxted, Witham, and the work was executed by Mr. Malster, late of the firm of Cox, Buckley, and Co., of London. The tiling is by the Leeds Marble Tiling Company.

The Anglesey and Carnarvonshire Infirmary, which has been practically rebuilt from the designs of Mr. P. S. Gregory, Bangor, was reopened on Saturday by Mrs. Davies, wife of the lord-lieutenant of Anglesey.

At the Royal Institution, Mr. Lewis F. Day will deliver, in the spring, three lectures on "Stained Glass Windows and Painted Glass" from the point of view of art and craftsmanship.

On Saturday a dedication service was held at St. Chad's Church, Far Headingly, in connection with the new Home which has been erected in Hollin-road by the Ripon and Wakefield Branch of the Church of England Incorporated Society for Providing Homes for Waifs and Strays. The architect of the home is Mr. W. A. Hobson, of Albion-street, Leeds. In the large hall facing the entrance porch stands a fine old oak chimney-piece, which Mr. E. W. Beckett, M.P., removed from Kirkstall Grange for the purpose of decorating the Home.

At the Exeter Police-court, on Monday, William T. Webber, an apprentice to the carpentering, was summoned by his employers, Messrs. Hems and Son, of Longbrook-street, who applied for an order compelling him to perform his duties according to the indenture of apprenticeship. Evidence having been given to show that the lad was idle, the order applied for was made.

MEETINGS FOR THE ENSUING WEEK.

To-Morrow (Saturday). London and Provincial Association of Builders' Foremen. Half-yearly meeting at the Memorial Hall, Farringdon-street, E.C. 7.30 p.m.

Monday.—Surveyors' Institution. "The Burdens on Real Property and Land," by William Sturge, Past President. 8 p.m.

Tuesday.—Society of Architects. "Rare and Reference Books on Architecture, with Hints on the Formation of an Architectural Library," by Herbert T. Batsford; and "Students' Manuals," by G. A. T. Middleton. 8 p.m.
Institution of Civil Engineers. "Colliery Surface Works," by E. B. Wain. 8 p.m.

Wednesday.—Society of Engineers. Annual Dinner.
Society of Arts. "Manufacture of Salt." 8 p.m.
Sanitary Institute. Discussion on "The Sanitary Aspects of the London Building Act, 1894."
St. Paul's Ecclesiological Society. Meeting for exhibition of objects of Ecclesiological Interest. St. Paul's Chapter House, E.C. 7.30 p.m.

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The Society of Architects.

Founded 1884. Incorporated 1893.

The THIRD ORDINARY MEETING of the Society of Architects for the Session 1894-5 will be held at the Rooms of the Society, at St. James's Hall, Piccadilly, W., on TUESDAY, December 11th, at Eight o'clock p.m., when a Paper will be read by Mr. HERBERT BATSFORD, entitled: "RARE AND REFERENCE BOOKS IN ARCHITECTURE, WITH HINTS ON THE FORMATION OF AN ARCHITECTURAL LIBRARY," when a number of rare and valuable books will be exhibited to the members. A short Paper will also be read by Mr. G. A. T. MIDDLETON, A.R.I.B.A., on "STUDENTS' MANUALS."

ELLIS MARSLAND, Hon. Sec.
A. MONTEFIORE, Sec.

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WATER SUPPLY AND SANITARY MATTERS.

Easingwold.—Mr. G. W. Willcocks, an inspector under the Local Government Board, held an inquiry at the Town-hall, Easingwold, on Friday, the sanitary authority of the rural sanitary district of the Easingwold union having applied to the Local Government Board for sanction to borrow £2,725 for works of sewerage and sewage disposal for the township. Mr. Fairbank, of the firm of Fairbank and Son, C.E., York and Westminster, attended with the plans and estimates, comprising a system of drainage for the whole town. It is proposed to construct a public sewer, commencing at the union workhouse in Oulston-road and ending in Stillington-lane. The outfall works will be in a field adjoining, and filter beds will be constructed.

Lewes.—A Local Government Board inquiry was held here last week by Colonel Walter Mardon Ducat, R.E., *re* the application of the Lewes town council to borrow £2,000 for works of sewerage. The plans were explained by Mr. Thomas William Franks, A.M.I.C.E., the borough surveyor, who afterwards, in company with the town clerk, walked over the ground with the inspector.

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Miss Hull, daughter of an architect and surveyor at Northampton, was presented on Monday with a certificate of the Royal Humane Society and congratulated by the Mayor and ex-Mayor on her courageous conduct in saving another lady, and escape from drowning at Kessingland last August.

Among those elected as Associates at Tuesday's meeting of the Institution of Civil Engineers was Mr. Charles Barry, F.S.A., F.R.I.B.A., Westminster.

The London and Provincial Builders' Foremen's Association's half-yearly meeting takes place on Saturday, Dec. 8, at the Memorial Hall, Farringdon-road, E.C., at 7.30 p.m.

Extensive alterations have lately been made at the premises of the Leicestershire Banking Company, High-street, Melton Mowbray, under the superintendence of Messrs. Goddard, Paget, and Goddard, architects, of Leicester. The contractor was Mr. J. J. Fast, of Melton Mowbray.

The Duke of Norfolk is restoring the ruins of the historic old castle at Clun, Salop, which he recently purchased. His grace now owns 40 acres surrounding the castle, as well as the residence known as Clun Cottage.

A paper on "The Modern Theatre of the Continent" will be read before the Architectural Association by Mr. Edwin O. Sachs, of Waterloo-place, S.W., this (Friday) evening. Among those who have promised to attend, to express their views on the subject, are Sir Augustus Harris, Drury-lane Theatre; Mr. Mulholland, Camberwell Theatre; Mr. John Hollingshead, late Gaiety Theatre; Mr. Graydon, Middlesex Music Hall; Mr. Clement Scott, Mr. Richard Roberts, L.C.C., chairman, and Mr. Leon, L.C.C., member of the Theatres Committee, County Council; Mr. Thomas Blashill, F.S.A., architect to the County Council; Mr. C. J. Phipps, F.S.A., and several officers of the Metropolitan Fire Brigade.

Trade News.

WAGES MOVEMENTS.

Pontypridd.—The master builders of Pontypridd have served notices upon the masons in their employ to terminate the present agreement, the employers wishing to abolish "walking time," and to have the right to import dressed stone into the town.

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CHIPS.

Wednesday last having been the anniversary of the birth, in 1717, of Johann Joachim Winckelmann, the archæologist, Herr Dörpfeld, the Director of the German Archæological College at Athens, delivered an address before a large audience in that city, in which he detailed the sacrifices made by the German Emperor and Government on behalf of the Institute and the researches at Troy and Issarlik, and paid a tribute to the great services of the late Professor Curtius.

The War Department have decided to proceed at once with the erection of a station hospital and accessory buildings at Shorncliffe Camp. The work will be carried out by private contract, a tender having been accepted, and it is understood the cost will amount to nearly £30,000.

To perpetuate the memory of the late Major-General Fitzroy Fremantle, C.B., a tablet of white statuary marble has been erected in the south aisle of Exeter Cathedral. The tablet is the work of Messrs. Harry Hems and Sons, Exeter.

A pulpit erected in St. Andrew's Episcopal Church, Brechin, as a memorial of the late Dean Crabb, was unveiled on Friday. It is octagonal on plan, and consists in the main of Painswick stone, with shafts of Kilkenny marble. The central panel is occupied by a figure of Our Lord as the Good Shepherd, and in side niches are figures of St. Andrew and St. Ninian. Messrs. Ross and Macbeth, of Inverness, were the architects, and Messrs. Harry Hems and Sons, of Exeter, the sculptors.

The monthly report for December of the Amalgamated Society of Carpenters and Joiners, just issued by the secretary, Mr. F. Chandler, states that, notwithstanding the depressed state of affairs in the industrial world, substantial progress has been made, inasmuch as the society have opened during the year over 40 branches, and close with nearly 44,000 members, the increase during the past six years being upwards of 19,000.

At the meeting of the Society of Engineers, held at the town hall, Westminster, on Monday evening, Mr. George A. Goodwin, president, in the chair, a paper was read by Mr. H. B. Ransom on "The Principles and Practice of Hydro-Extraction."

A Local Government Board inquiry was held at the town hall, Birkenhead, on Friday, by Mr. Rienzi Walton, M.Inst.C.E., into an application by the Birkenhead Town Council for sanction to borrow £35,000, of which sum £20,000 was for electric-lighting purposes, £10,000 for works of street improvement and sewerage and for fencing in the Bridge-street depot, and £5,000 for the erection of a fire-station and for the provision of a steam fire-engine and fire appliances. Mr. Shoolbred, electric engineer, and Mr. Richardson, water engineer, explained the schemes.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Bath.—For laying an iron watercourse at Batheaston, for the city council. Mr. W. Fox, waterworks engineer:—

Birth, W. (accepted)	£48	10	0

Battersea.—For Battersea Baths. Mr. Rowland Plumbe, architect:—

Edwards and Medway	£5,445	0	0
Harris and Wardrop	5,443	0	0
Downs	5,350	0	0
Lawrence	5,103	0	0
Marsland	5,055	0	0
Wallis	4,999	0	0
Patman and Fotheringham	4,802	0	0
Dorey and Co.	4,801	0	0
Perry	4,780	0	0
Goodman, W.	4,715	0	0
Holloway Bros.	4,699	0	0
Shepherd, W.	4,696	0	0
Nightingale, B. E.	4,639	0	0
Higgs, H. and F.	4,615	0	0
Whitehead and Co. (accepted)	4,475	0	0

Bermondsey, S.E.—For providing and fixing low-pressure hot-water apparatus in the corridors and classrooms of the boys' and girls' departments of the Alexis-street School, Bermondsey, for the London School Board:—

Fraser, J., and Son	£159	5	0
Cannon, W. G.	154	0	0
May, J. and F.	137	0	0
Gray, J.	132	0	0
Davis, G.	118	0	0
Clarke, J. F., and Sons	113	10	0
Wontner Smith, Gray, and Co., Finsbury-pavement (accepted)	102	16	0

Bermondsey.—For new Baptist chapel, Ilderton-road, Bermondsey, S.E. Mr. Geo. Baines, F.R.I.B.A., architect. Quantities supplied by Messrs. J. E. Goodchild and Son:—

Halliday	£5,634	5	3
Leng	5,173	0	0
Nightingale	5,122	0	0
Greenwood	4,856	0	0
Holloway	4,830	0	0
Richardson, J. O.	4,824	0	0
Scott	4,813	8	2
Cheessman and Sons	4,765	0	0
Balaam	4,760	0	0
Batley, Son, and Holness	4,737	0	0

Brixton, S.W.—For providing and fixing low-pressure hot-water apparatus for warming the new portion of the Hackford-road School (now being enlarged by 364 places), and also for extending the apparatus to the old portion of the school, for the London School Board:—

Jenkins, W., and Sons	£553	0	0
Fraser, J., and Son	544	0	0
Clarke, J. F., and Sons	499	0	0
Wenham and Waters, Ltd.	465	0	0
Ellis, J. C. and J. S., Ltd.	457	10	0
Maguire and Son, Dawson-street, Dublin (accepted)	410	0	0

Cannock.—For the erection of an infant school at Five Ways, and also for enlargements and alterations to the existing boys' and girls' departments, for the School Board. Messrs. Bailey and McConnal, of Walsall, architects:—

Mason, T., Hednesford (accepted)	£4,108	0	0

[Lowest of fourteen tenders, the highest being £5,065.]

Cardiff.—For the girls' intermediate school, The Parade, Cardiff. Mr. Geo. Thomas, F.S.I., architect and surveyor:—

Ashley, F.	£1,170	5	10
Hatherley and Carr, Bristol	1,058	0	0
Davies, D.	1,015	0	0
Shepton, S., and Sons	1,030	0	0
Dunn, C. C.	1,000	0	0
Evans, B.	994	0	0
Knox and Wells	952	0	0
Jones Bros.	890	0	0
Lewis, H., and Sons	853	11	7
Cadwallader and Hockridge	850	0	0
Robins, F. G.	830	0	0
Davies, H. (accepted)	819	17	0

Rest of Cardiff.

Ealing.—For erecting new classrooms, &c., at the girls' school, Ealing-green. Mr. R. Willey, F.R.I.B.A., 33, New Bridge-street, E.C., architect and surveyor:—

Foord and Sons, Brentford	£310	0	0
Jones, A. J.	306	0	0
Down, W.	300	0	0
Penny and Co.	298	0	0
Myring	295	0	0
Nye, T. (accepted)	280	0	0

Rest of Brentford.

Elmswell.—For erection of saw-mills and foundations of covered yard, &c., for Messrs. G. G. Bussey and Co., Peckham. Mr. W. J. Easton, P.A.S.I., 1, Colville-road, W., architect:—

Plummer	£359	19	0
Rice, C., Elmswell*	311	8	0
Andrews	287	0	0
Mulley	270	0	0

* Accepted with some modifications.

East Ham.—For enlarging the High-street schools, for the East Ham school board. Mr. R. L. Curtis, architect:—

Harris, W., North Woolwich	£6,199	15	2
Baxter, J., Plashet-road, Upton	5,944	0	0
Aitken and Green, West Ham	5,877	0	0
Gregar, W., and Sons, Stratford	5,737	0	0
Kirk and Randall, Woolwich	5,595	0	0
Mallinson, W. J., Canning Town	5,587	0	0
Carter, H. J., Grays	5,583	0	0
Earl and Farrow, London, E.	5,535	0	0
White and Sons, Bow	5,500	0	0
Watson, W., Ilford	5,427	0	0
Cooper, R. S., Upton-park	5,412	0	0
Sharp, G. Stratford (accepted)	5,090	0	0

[Architect's estimate, £5,390.]

East Ham.—For building a covered shed for Shrewsbury-road school, for the East Ham school board. Mr. R. L. Curtis, architect:—

Kirk and Randall	£343	0	0
Mallinson	340	0	0
Aitken and Green	335	0	0
White and Son	320	0	0
Gregar and Son	319	0	0
Earl and Farrow	316	0	0
Harris	311	7	10
Baxter	299	0	0
Gibbard and Rons, Stratford	297	0	0
Watson	278	0	0
Cooper, R. (accepted)	254	0	0

[Architect's estimate, £275.]

East Ham.—For building covered shed, Beckton schools, for the East Ham school board. Mr. R. L. Curtis, architect:—

Aitken and Green	£314	8	0
Carter	306	0	0
Kirk and Randall	304	0	0
Mallinson	295	0	0
White and Sons	293	0	0
Harris, W.	279	10	6
Gregar, W., and Son	274	0	0
Earl and Farrow	275	0	0
Baxter, J.	275	0	0
Cooper	252	0	0
Watson	248	0	0
Sharp, G.	238	0	0

[Architect's estimate, £250.]

Glasgow.—For the taking down and re-erection of Glasgow Bridge. Revised tenders:—

	A.			B.		
Young, J.	£112,832	2	6	£116,859	16	6
Paterson, J., & Son	112,167	13	10	114,135	7	8
Brand, C., & Son	103,135	9	0	105,272	13	0
Goldie, J., & Sons	91,896	16	8	93,988	2	2
Morrison & Mason	81,176	5	0	81,176	5	0
Lawson, G., & Son	76,600	0	0	78,000	0	0

[A.—Foreign granite. B.—British granite. The three lowest offers have been submitted to the treasurers to be checked.]

Finedon, Northants.—For the erection of new shoe factory and currying shops, for Mr. J. T. Hawthorne. Messrs. Mosley and Anderson, Goodyear Chambers, Northampton, architects and surveyors. Quantities by architects:—

Dunham and Bass, Kettering	£1,275	0	0
Barlow, A., Kettering	1,219	0	0
Marriott, R., Rushden	1,190	0	0
Martin, H., Northampton	1,174	0	0
Johnson, F., & Son, Earl's Barton	1,137	0	0
Hacksley Bros., Wellingborough	1,127	0	0
Freeman and Sons, Denford	1,112	0	0
Chapman, T., Finedon	1,052	0	0
Benson, F., Finedon (accepted)	990	0	0
Ball, A. J., Latimer	940	0	0

Hednesford.—For alterations to present schools, and erection of new infants' department, at Five Ways, Hednesford, for the Cannock school board. Messrs. Bailey and McConnal, Walsall, architects:—

Davies, A., Hednesford	£5,065	0	0
Kent, T., Cannock	4,920	12	0
Whittome, A. F., Stafford	4,739	0	0
Anderson, W. B., Cannock	4,648	0	0
Dallow, J., Blackheath	4,605	0	0
Lowe, C., & Sons, Burton-on-Trent	4,602	0	0
Linford, C., Cannock	4,575	0	0
Lynex, A., Walsall	4,536	0	0
Goodall, E., Brownhills	4,514	0	0
Hopkins, W., Birmingham	4,489	0	0
Williams, A., Great Wyrley	4,361	15	0
Mallin, J., West Bromwich	4,358	0	0
Guest, J., and Son, Stourbridge	4,225	0	0
Mason, T., Hednesford*	4,108	0	0

* Accepted, subject to the approval of Education Department.

Honor Oak.—For the erection and completion of residences at Honor Oak Park, S.E., for Captain Griffith. Messrs. Weatherall and Green, surveyors:—

Smith, J., and Sons	£3,243	0	0
Horton	2,998	0	0
Richardson, J. O.	2,864	0	0

Kettering, Northants.—For alterations and additions to shoe factory, for Messrs Wilson and Watson. Messrs. Mosley and Anderson, Goodyear Chambers, Northampton, architects and surveyors. Quantities by architects:—

Marriott, Wellingborough	£2,010	0	0
Norris, J.	1,963	10	0
Hacksley Bros., Wellingborough	1,963	0	0
Henson, C. and F.	1,950	0	0
Henson, G. V.	1,930	0	0
Barlow, A.	1,895	0	0
Dunham and Bass	1,845	0	0
Hart, J. W.	1,830	0	0
Clow, W.	1,742	0	0
Wilson, G.	1,740	0	0
Kettering Co-operative Building Society, Ltd. (accepted)	1,701	0	0

[Architect's estimate, £1,780.]

Rest of Kettering.

Ilford.—For constructing a sewage tank for the local board:—

Watson, H., Ilford (accepted)	£570	0	0

Kingswood, Bristol.—For widening the road on Hopewell Hill, for the Kingswood Local Board:—

Rogers (accepted).

Liverpool.—For interior joinery, decoration, &c., in the Mitre Hotel, Church-street, Liverpool. Mr. H. A. Matear, architect:—

Waring, S. J., and Sons (accepted).	£4,320	0	0

London.—For carrying out repairs to the schools of the London School Board in the following groups of the undermentioned divisions on the printed schedule of prices for repairs. In each case the percentage is required by each contractor to be added to the printed schedule of prices:—

(i.) Greenwich—Groups 4 and 6:—

	Group 4.	Group 6.
Mid-Kent Building and Contracting Works, Ltd.	16p.c.	16p.c.
Leney, H.	15 ,,	15 ,,
Oldman, J. and A., New Cross-road.	20 ,,	*10 ,,
Black, A., and Son, Perry Vale	*15 ,,	15 ,,

(ii.) Hackney—Groups 3, 4, and 5:—

	Group 3.	Group 4.	Group 5.
McCormick and Sons	25 per cent.	25 per cent.	25 per cent.
Cruwys, T.	20 ,,	20 ,,	20 ,,
Stevens Bros	20 ,,	20 ,,	20 ,,
Gibb and Co.	17½ ,,	17½ ,,	17½ ,,
White, T., & Son, Bow	*13 ,,	*13 ,,	*13 ,,

* Accepted.

London.—For the supply of fenders and umbrella stands for teachers' rooms and for the various centres, for the London School Board:—

		Fenders.			Umbrella stands.		
Lawrance, J. J.	Per dozen	£22	10	0	£10	14	0*
Pryke and Palmer	,,	13	14	6	11	19	0
Jukes, Coulson, Stokes, and Co.	,,	10	16	0	8	17	0
Bird and Co.	,,	*8	8	0	15	0	0

* Accepted.

London.—For alterations, &c., to 85 and 86, Lower Marsh, S.E., for Messrs. Amies and Sons, boot manufacturers, Stafford. Mr. Robert Willey, F.R.I.B.A., 33, New Bridge-street, E.C., architect and surveyor:—

Carmichael	£425	0	0
Salter	415	0	0
Holliday and Greenwood	346	0	0
Meller (amended and accepted)	242	0	0
For fittings—			
Meller (accepted)	£101	0	0

London, W.—For remodelling 57, Berners-street, W. Mr. Delissa Joseph, F.R.I.B.A., 17 and 18, Basinghall-street, E.C., architect:—

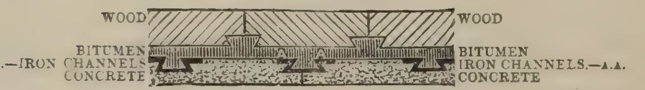
Hanks, H. (accepted)	£1,925	18	0

14 GOLD MEDALS. HIGHEST AWARD, CHICAGO EXHIBITION, 1893, FOR "INGENUITY AND EFFICIENCY" OF EBNER'S FLOORS. 14 GOLD MEDALS.

Ebner's Patent Hydrofuge Wood Block Floors.

Telegraphic Address:
EBNERS, LONDON.

Code: UNICODE.



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ANY WOOD OR DESIGN USED.
JOS. F. EBNER'S PARQUET FLOORS, ANY THICKNESS OR DESIGN.
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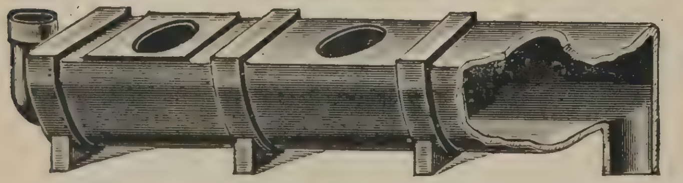
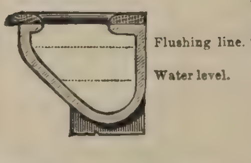
JOS. F. EBNER'S IMPROVED MARBLE TERRAZZO PAVING. ARTISTIC, CHEAP, AND DURABLE.
COMPARISON OF QUALITY AND PRICE INVITED. ESTIMATES FREE.
MANUFACTORY: 150, OLD STREET, ST. LUKE'S, LONDON, E.C.



Section of Trough.



MERRILL'S PATENT TROUGH CLOSET.

Greatest Cleanliness, with least Consumption of Water.

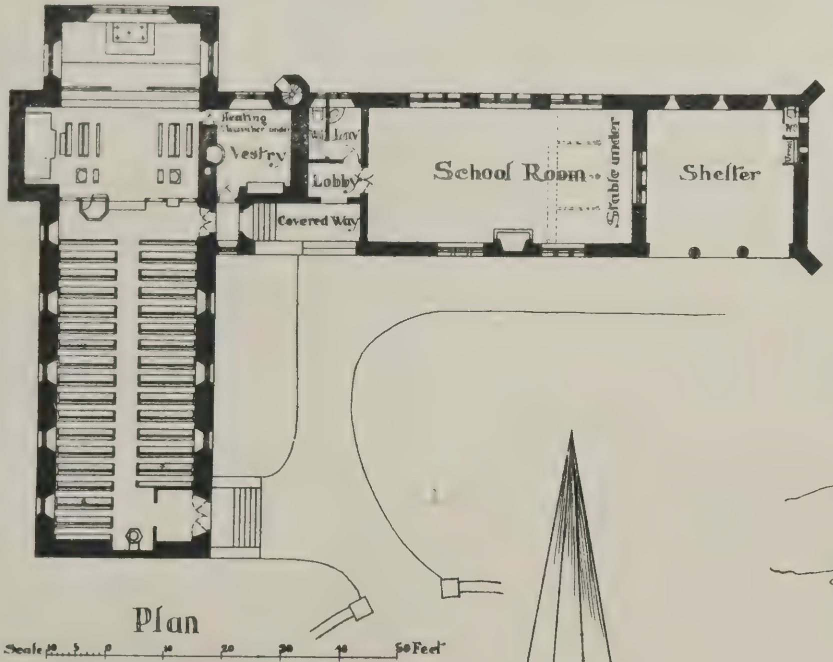
Vide Sheffield Corporation Report on Automatic Flushing Closets.

"The form of trough which undoubtedly seems to us to be most favourable to a good flush is a triangular one, as exemplified in the two examples of the Water Carriage Engineering Co. By adopting this form a minimum quantity of water reaches a maximum amount of surface; or, in other words, with the same volume of water as in the other forms less surface liable to be soiled remains unaffected by the flush."—Report by Mr. G. Alsing, A.M.I.C.E., and Dr. Harvey Littlejohn, Medical Officer of Health.

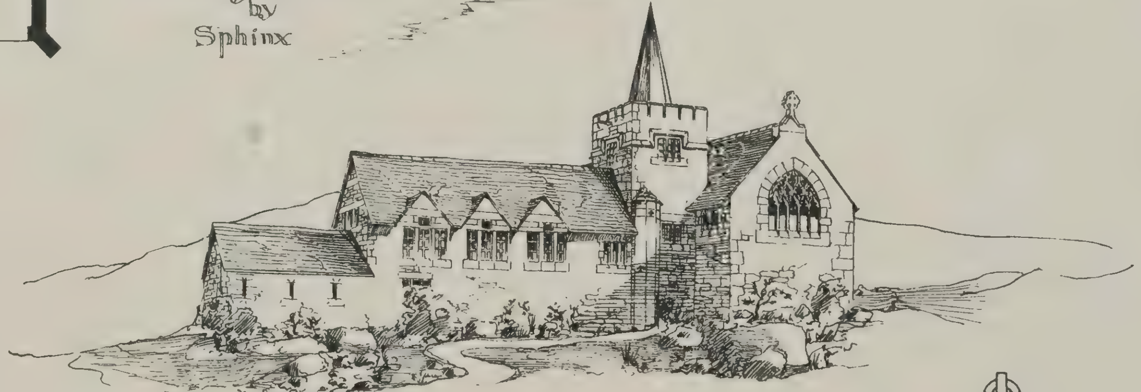
THE WATER CARRIAGE ENGINEERING CO., LIMITED,
MOWBRAY STREET, SHEFFIELD; 11, BERNERS STREET, OXFORD STREET, LONDON.

B. N. D. C.

A Moorland Church
&
Sunday School
by
Sphinx



Plan



Sketch

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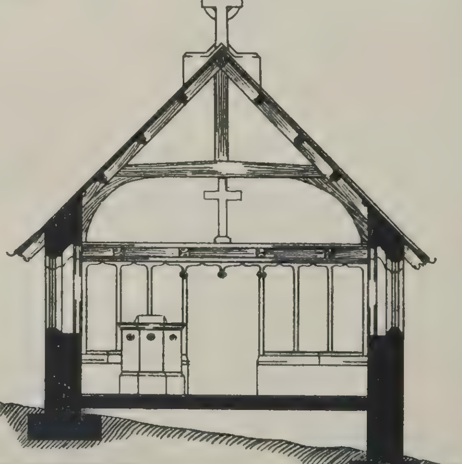
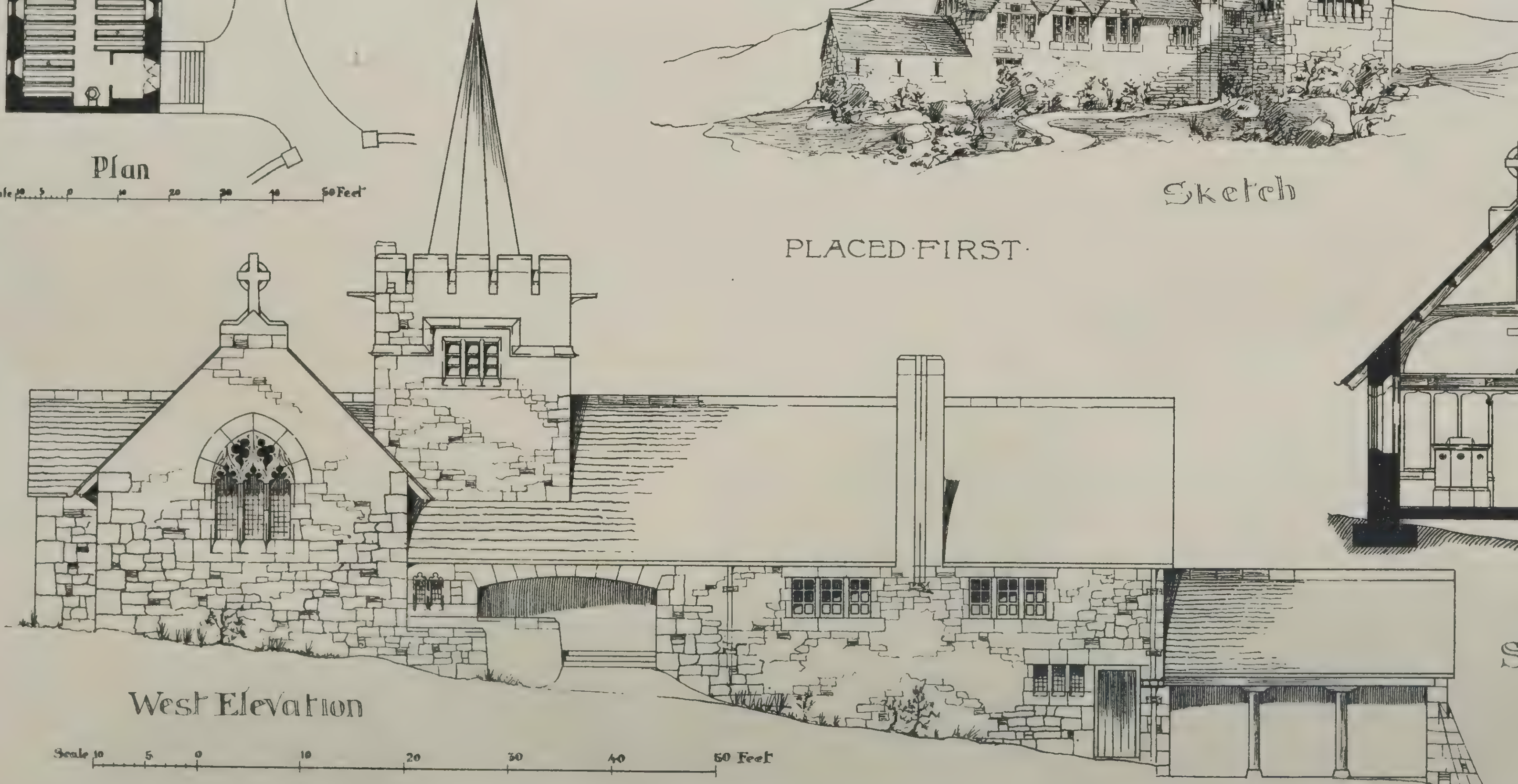


Cross Section



West Elevation

Novr. 1894.

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

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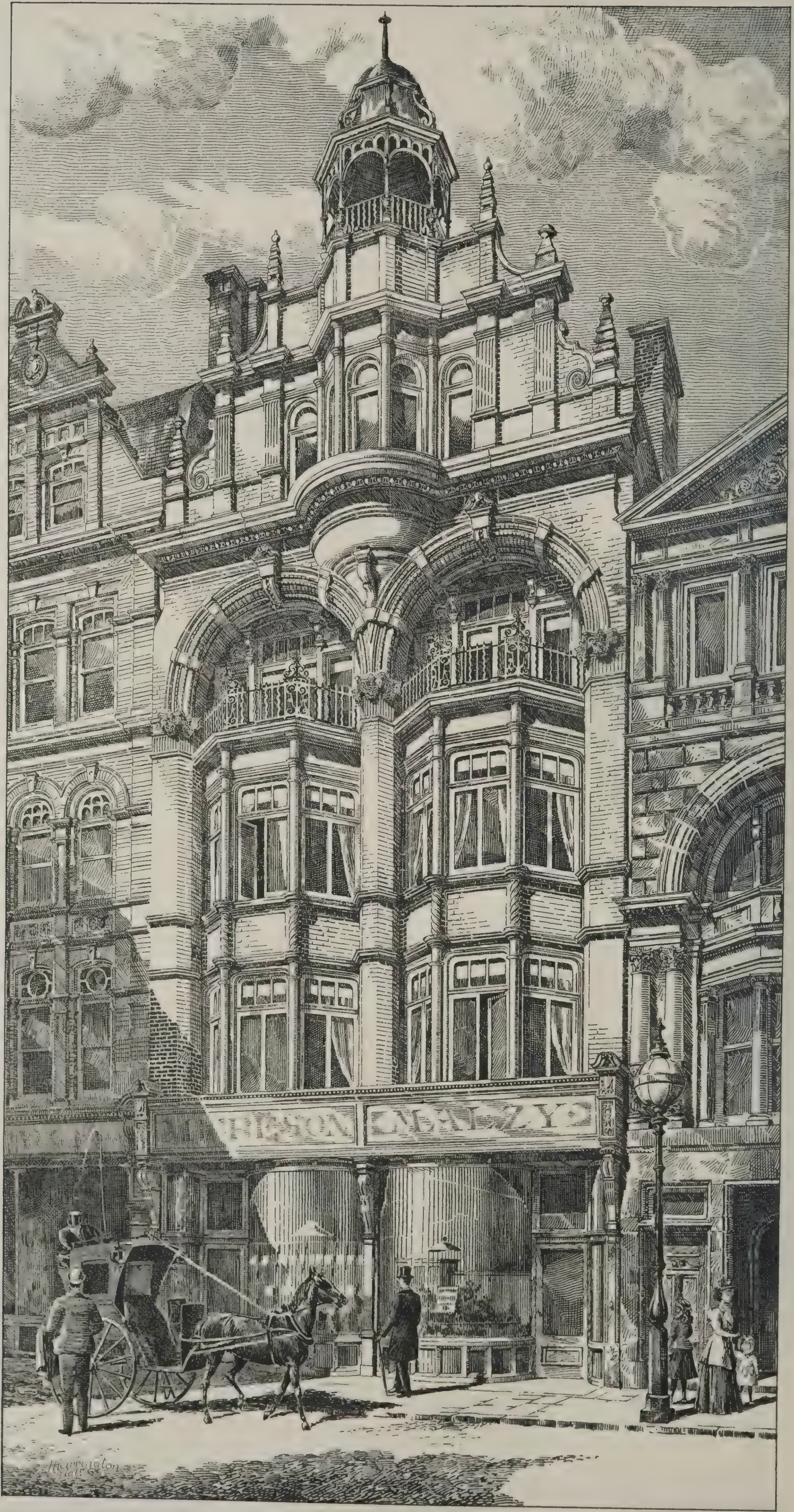
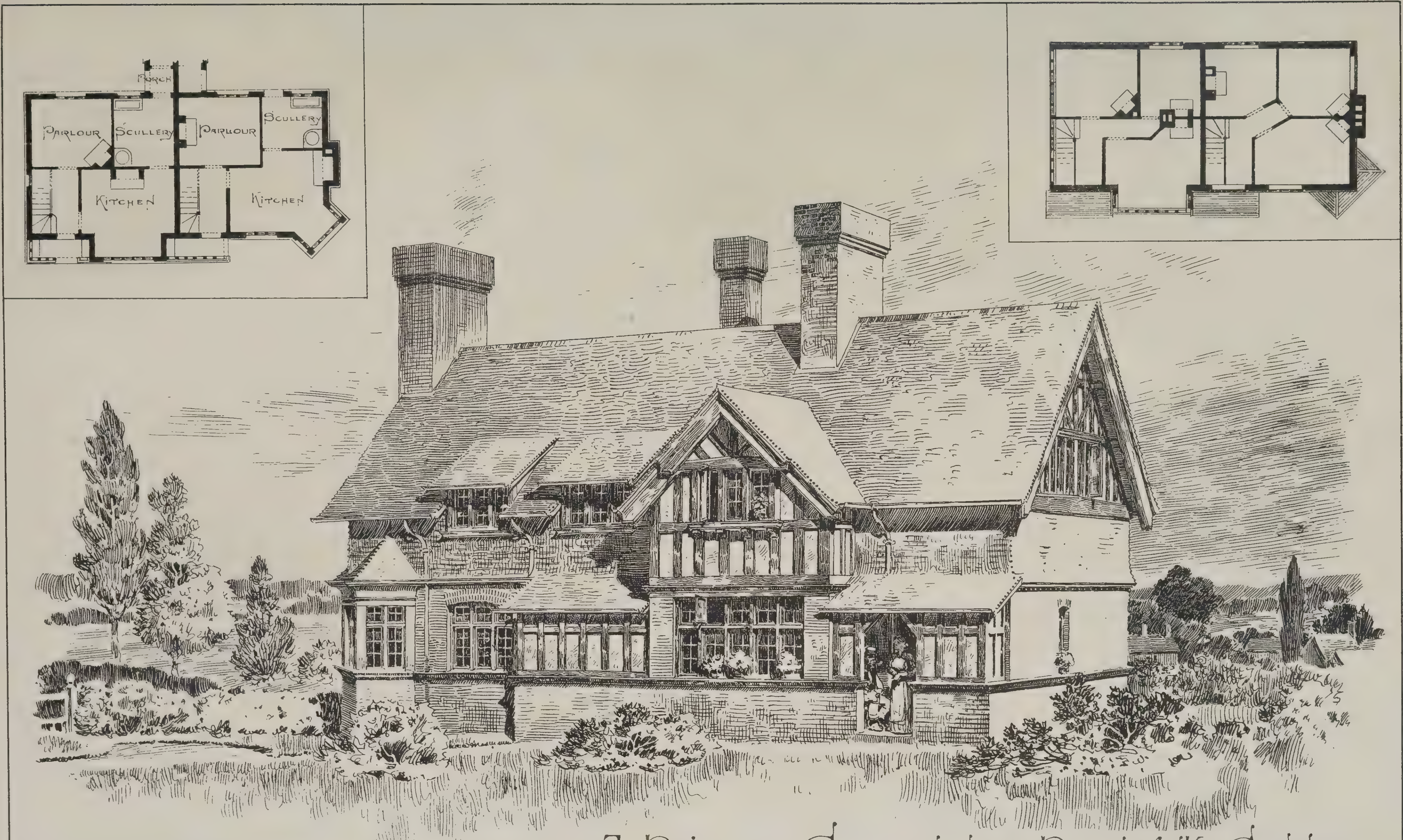


J Akerman Photo lth London

Nº 1ᴬ TOTTENHAM COURT ROAD W.

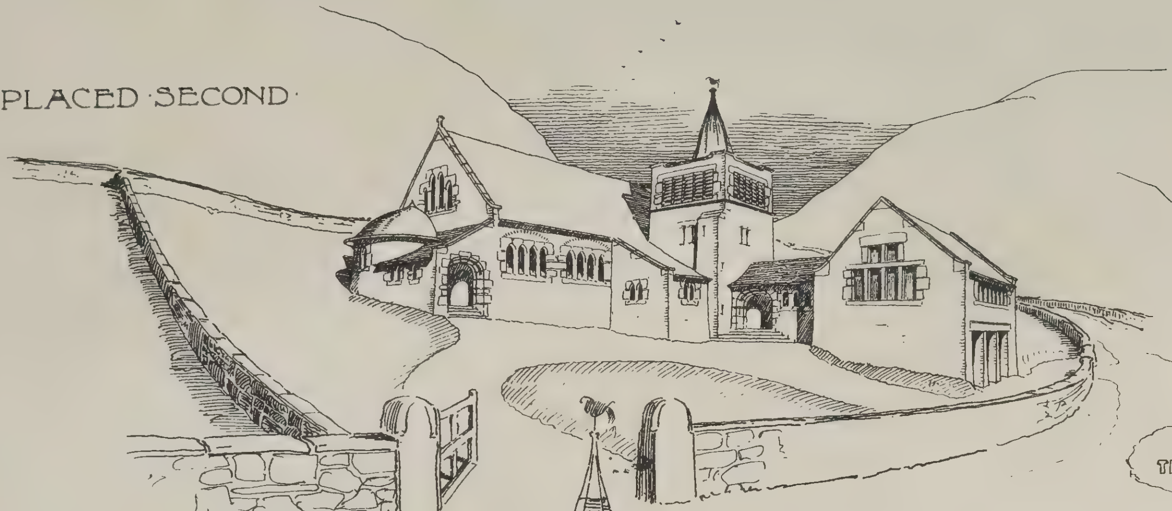


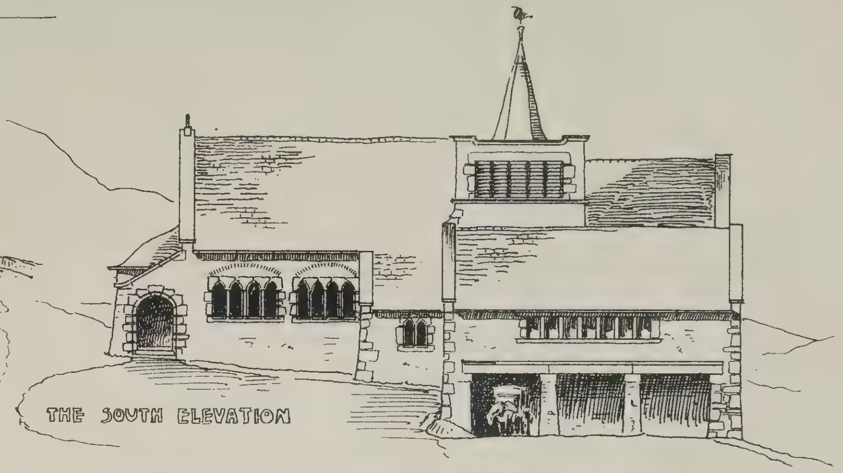
—W. H. HARRISON. ARCHITECT.—

—A PAIR OF COTTAGES AT RUDGWICK—SUSSEX.—

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

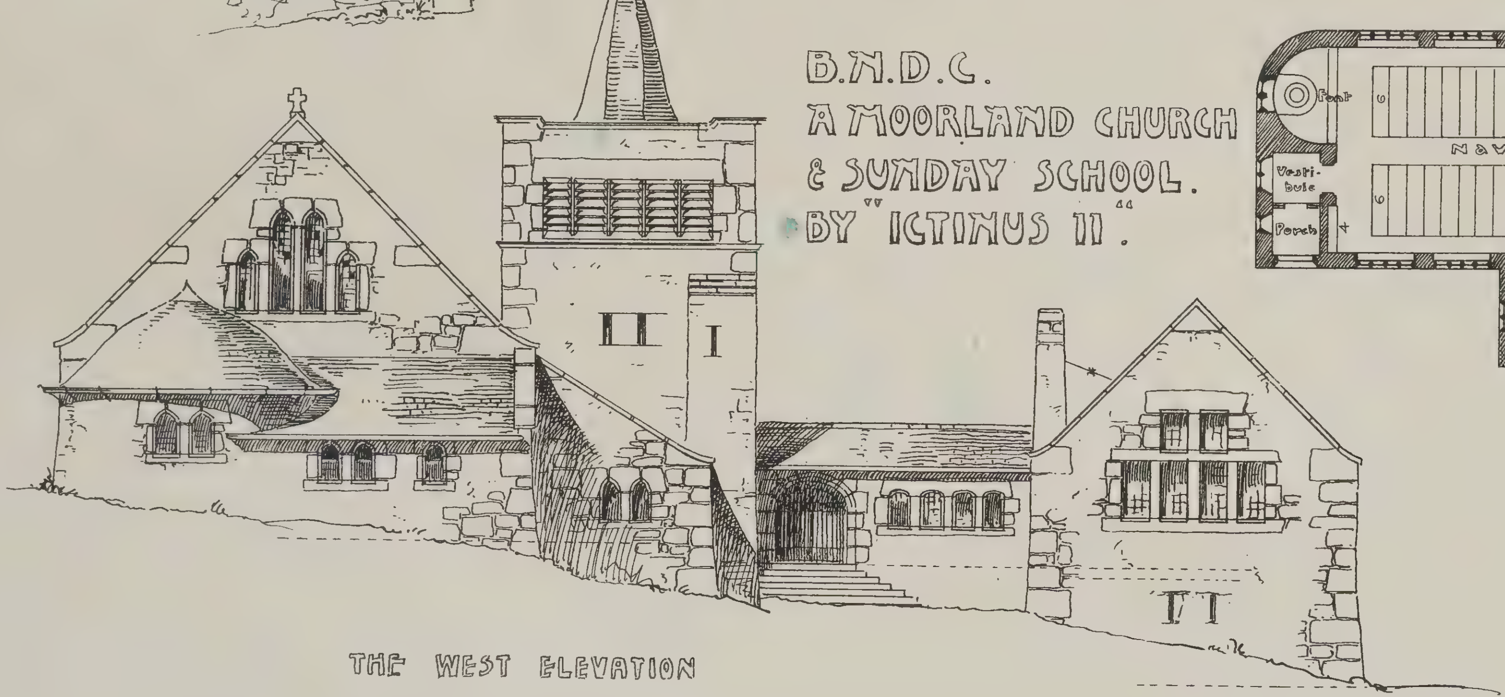
PLACED SECOND.



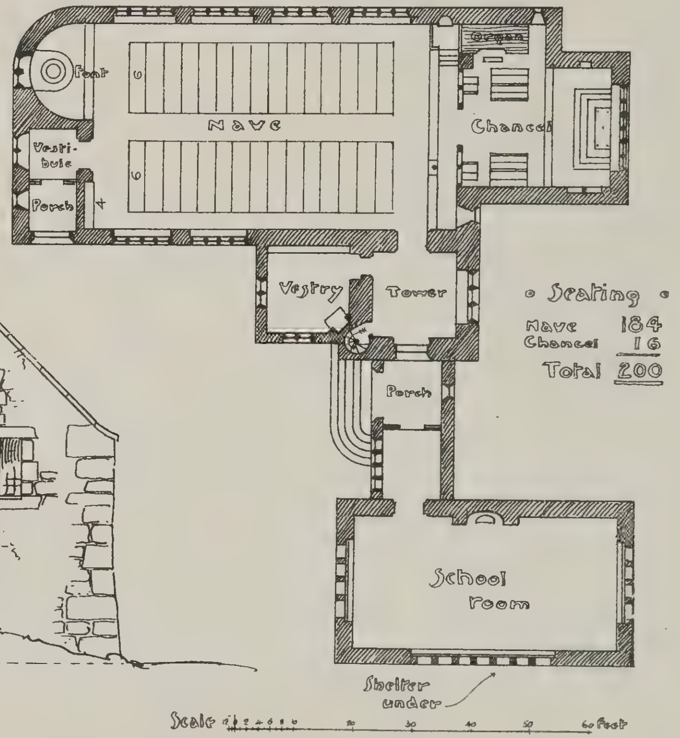


THE SOUTH ELEVATION

B.N.D.C.
A MOORLAND CHURCH & SUNDAY SCHOOL.
BY "ICTINUS II".



THE WEST ELEVATION



∘ Seating ∘

Nave	184
Chancel	16
Total	200

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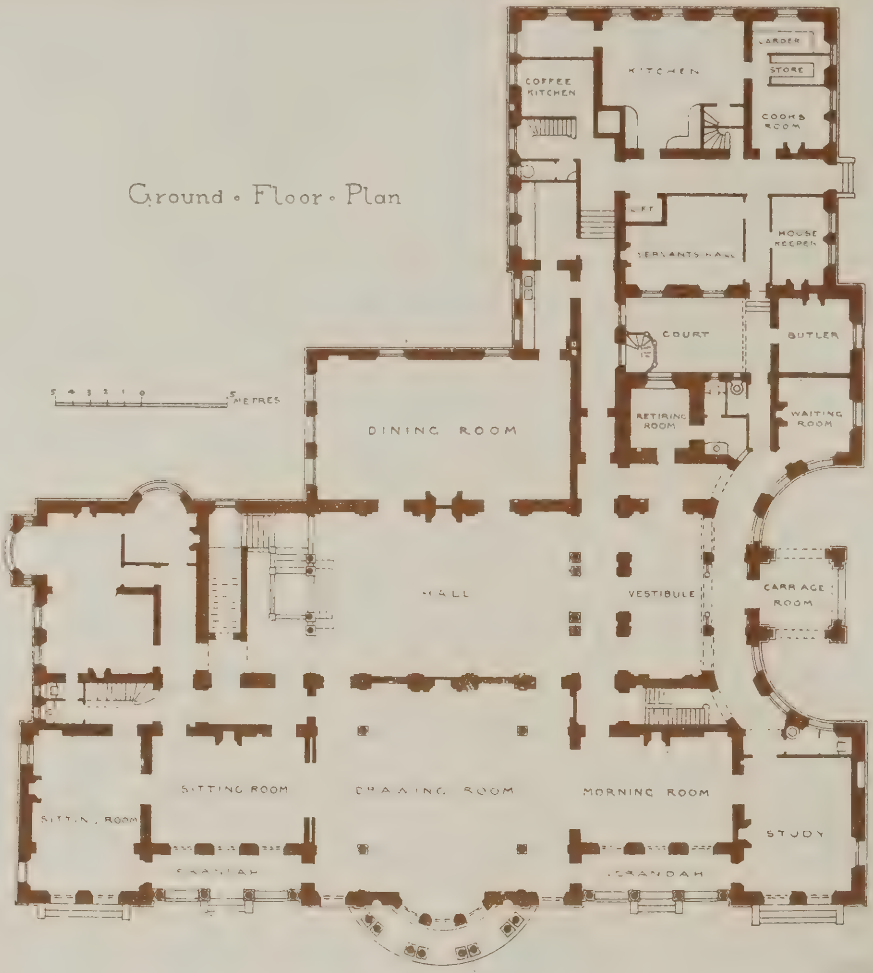
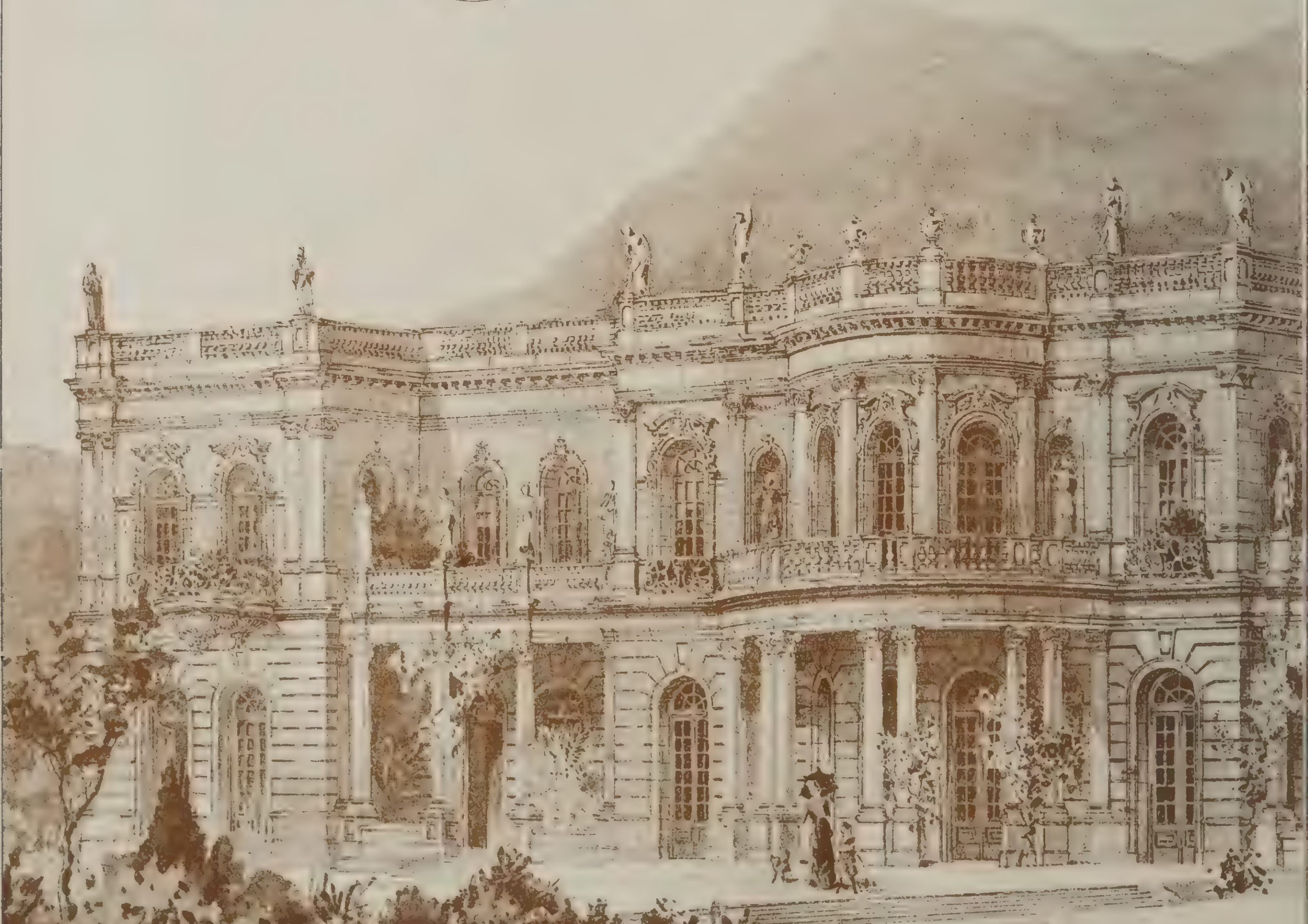
RESIDEN

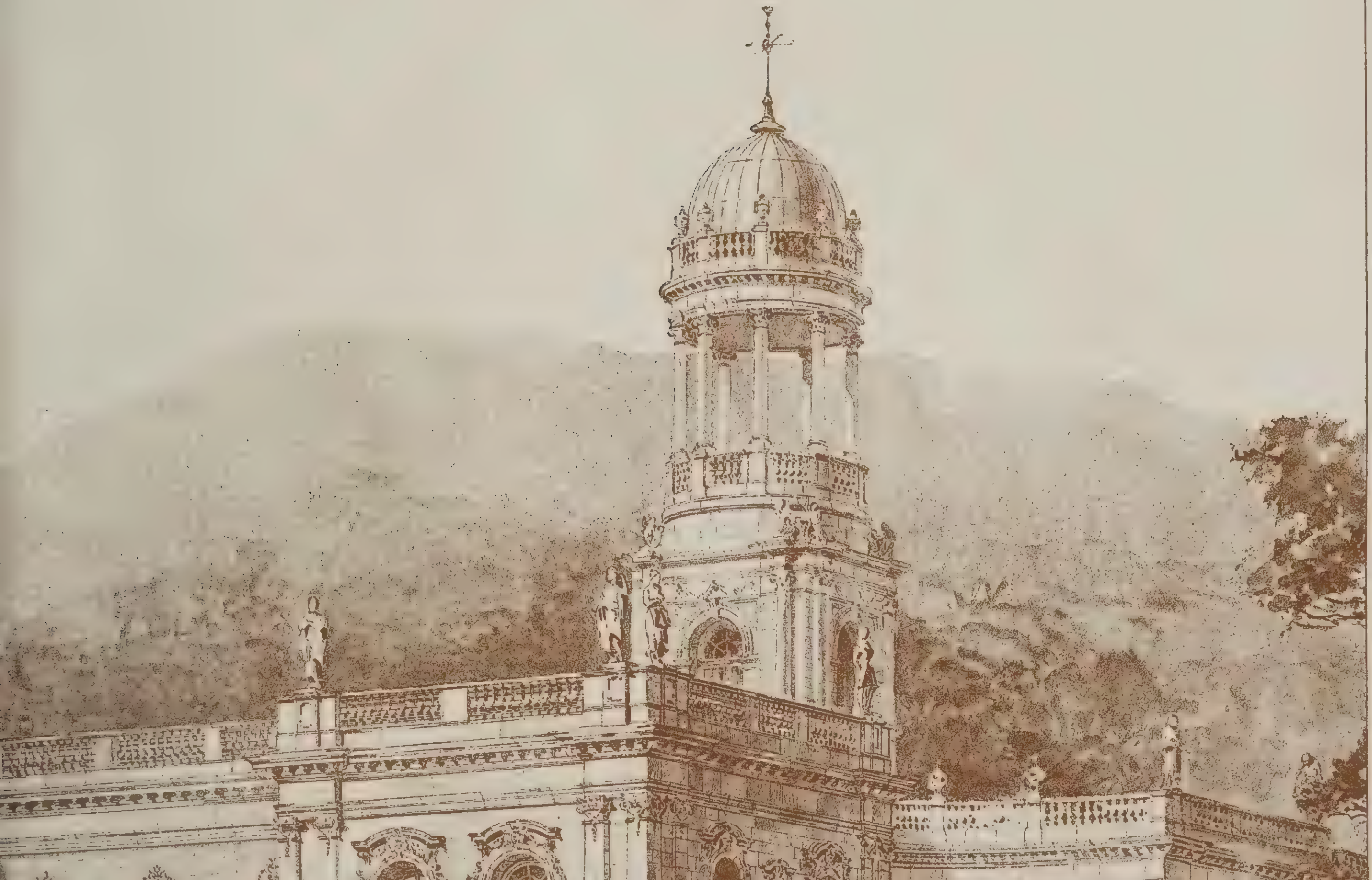


Ground • Floor • Plan



E·FOR THE·R^{T}·HON^{BLE} SIR·E·B·MALET·G·C·B·AT·MONACO· JOHN·GILES·ARCH^{T}

OF MESS^{RS} GILES·GOUGH & TROLLOPE·ARCH^{TS}



"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C

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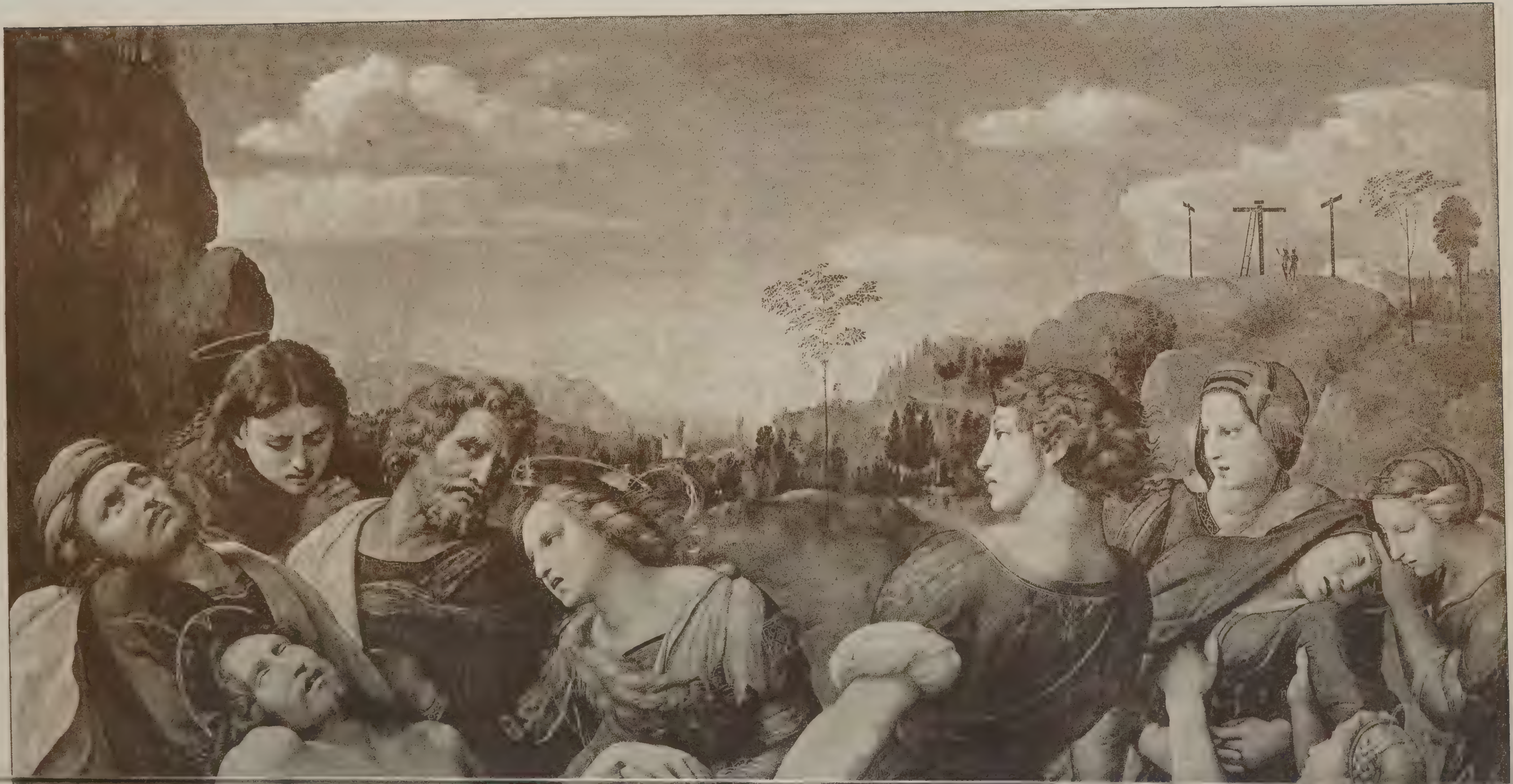

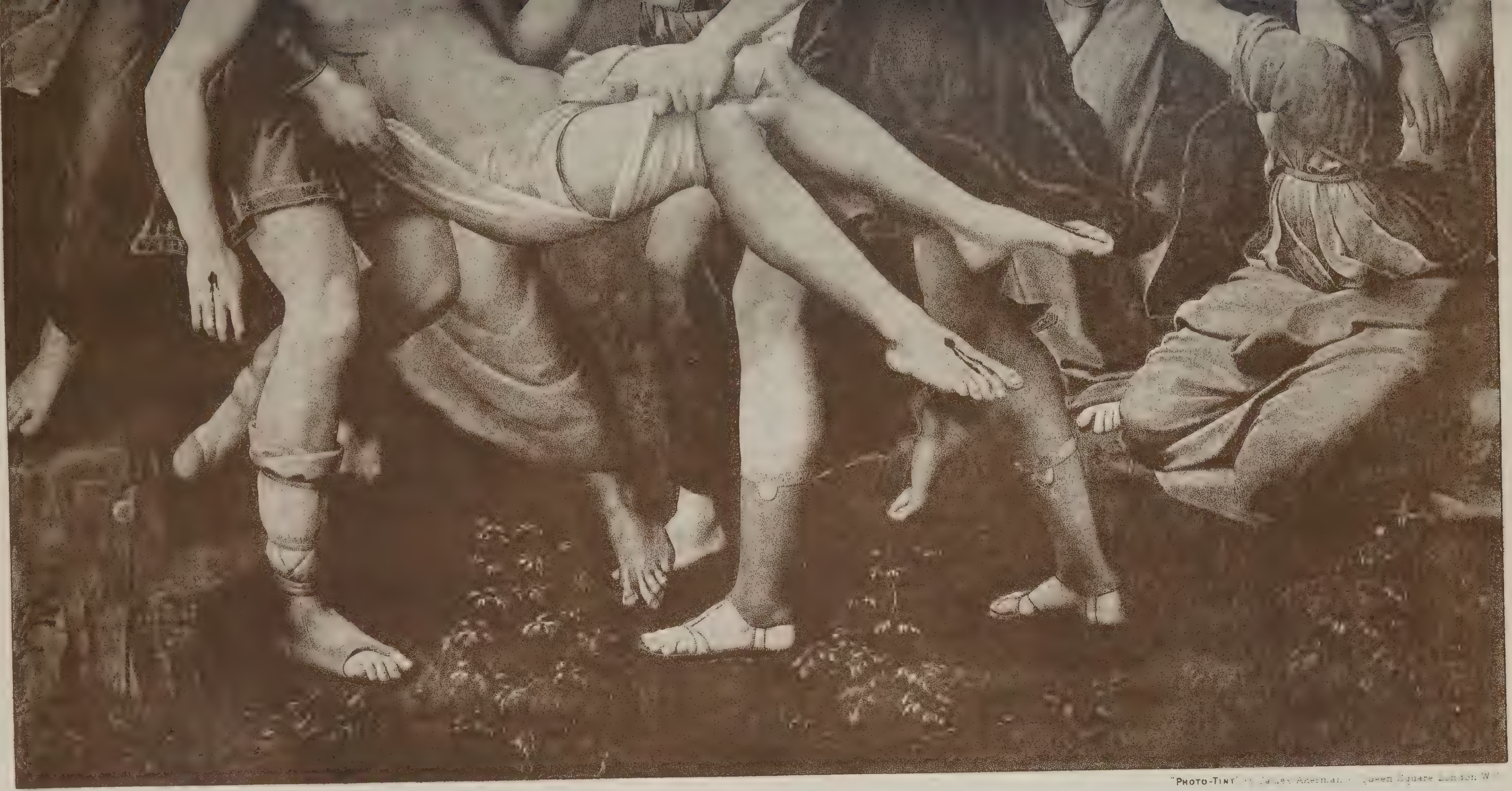

"PHOTO-TINT" by James Akerman, Queen Square London W.

OLD·MASTERS·ON·THE·CONTINENT·N°12·

THE·ENTOMBMENT·(ROME) BY RAFFAELLO·SANZIO·(RAPHAEL) B 1483·D 1520·UMBRIAN·SCHOOL·

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXVII.—No. 2084.

FRIDAY, DECEMBER 14, 1894.

COMPILERS AND COPYISTS.

As there are good copies and bad originals, so we may take it that we can have a compilation of more merit than any work which pretends to be absolutely new. One of the maxims of Rochefoucault is that "the only good copies are those which point out the ridicule of bad originals"; at least, it is possible that the literary as well as architectural eclectic may, by improving on the works of original authors and buildings by correcting their mistakes, attain to a degree of eminence which even the original authors failed to reach. It has been so in literature, and so it has been in architecture. The architects of the Parthenon improved on the Doric temples of Corinth and Ægina; the builders of Salisbury Cathedral improved on the architecture of the preceding periods, if not on what had been done at Lincoln, and perhaps, also, at Lichfield, all three of which churches were being proceeded with at about the same period.

Between a literary and an architectural compilation there is this difference: that in the former the compiler or author puts together truths or facts bearing upon a particular subject—he collects materials to suit his purpose with some connection and meaning; but in the latter he collects, but does not always seek connection or adaptation. It is true we have flippant and loose compilations on various themes, and it is in this sense both kinds of compositions agree. A compiler frames a composition from various authors, but the ordinary architect this way inclined often merely frames a collection, disjointed and scrappy, from various sources, which is a very different thing. We need not carry the analogy between the two sorts of compilers any further, but proceed to show in what way the architectural compilation is more desirable than a poor copy, and how often it may be mistaken for a genuine original. In one sense it will, of course, be said that all architectural design is more or less a compilation of ideas: no man can invent entirely new plans or new external features; they must be developments or growths of older types. Perfectly true, but it is not in this sense we are discussing the question, but in the more ordinary meaning of collecting or piecing together examples of this or that building, Mr. A.'s, Mr. B.'s, and Mr. C.'s work. To very few is given the ability to digest or, so to speak, assimilate in the crucible of their own mind, the elements of architecture—to turn to their own use and embody in their own design the common language of all ages, to extract the principles on which old styles have been based, and apply them to modern wants.

The worst kind of compilation is when a whole part of one building or one design is taken and bodily pieced on to another and totally unrelated design;—when we see the west front of St. Paul's, towers and all, tacked on to a corn exchange or town hall; or a portion of Mr. Norman Shaw's design for a country domestic building filched away from its connection, and made a façade in a street. The bare-faced and impudent prig who quotes whole passages without acknowledgement is scarcely worse than one who steals outright a window, or door, or a tower from a building, and places it in connection with other misquoted features from other edifices. Of course, such work is "making" architecture quickly, like "making" books: it may look all right and imposing enough to minds which have not learned to criticise; but it is not genuine design, and is often less logical than a copy of a good building, which may, at least, be consistent throughout. The force of imitation is often stronger than discrimination. Like those who cannot avoid imitating bad examples, so we find men who take questionable and bad copies of buildings. Thus we see so many travestied copies of pieces taken at random from our buildings. Very often these selections are from the works of second and third-rate men—copies of copies. Like authors who quote from secondhand sources, these architects introduce features which have lost their original significance. Let us make our meaning clearer. A. designs an elevation that is the result of an artistic, thoughtful study of plan for its particular destination—say, a town hall; B. borrows the same features for a city warehouse; C. copies B. for a similar, or other purpose. In this manner we get a series of copies which lose something the farther the original is departed from. What was right in the case of A. cannot be in the case of B. or C. There is no selective or discriminative choice in such cases of compilation. A gable or bay of a house, designed by an artist in "Queen Anne" or the Renaissance, is tacked on a secular building for a commercial purpose; the original, designed for a rural locality, is transported into a street façade. These ludicrous transpositions are intensely aggravating when the author has repeated every detail of the original, even to the mouldings and ornament, and has placed them in juxtaposition with other parts which have no congruity with it. We see these ill-assorted combinations every day: they shock us as much for the want of common sense and discrimination they exhibit as for their lack of congruity and harmony. The building in the street, and the suburban villa, and the new vestry-hall or free library are compilations of this sort, made of scraps lumped together. It is a quick way of designing, and saves hours of study and thought to put together bits of design by Bodley or Pearson, Norman Shaw, George and Peto, Graham Jackson, and other authorities in the styles of the day.

But there is discriminating as well as thoughtless compilation. To give an example. An architect, who is about to design a set of municipal offices, a fever hospital, or public baths, takes down the volumes of his Building News for examples of such a building. He closely studies the plans of several to find out the points which he may have overlooked. He perhaps finds one plan that suits his purpose or the shape of the land, and, without slavishly copying, he appropriates to his purpose those points which appear to suit him best. He refers to another plan and appropriates something from it, and he tries, in short, to adapt to his purpose the features of several. It is this kind of compilation which is very commonly practised among architects both old and young; but they do nothing more reprehensible than hundreds of book or treatise compilers do, who consult a number of authorities in a public library. It is simply reference. The architect who consults a few of the best plans for hints or suggestions is making simply a reference to what has been done, not with the intention of copying, but of seeing what others have done before. And such reference is as justifiable as it is for an expert in the construction of hospitals to refresh his mind by looking over his notes and any drawings or types he may have by him. We should blame any professional man for not equipping himself with the most recent facts or information, and an architect would be equally wrong were he to neglect to furnish his mind by referring to the most approved and recent examples of arrangement. But there are others who are more unscrupulous. They are expert cribs; they do not hesitate to copy line for line a plan which they think suitable, or a portion of one, as a hall or an elevation, and the expertness and cleverness which they exercise is truly often creditable to their faculty for appropriating others' skill. To do them justice, they often show much discrimination and good sense in selecting the best they can for their purpose. And it is this class of compilers who are often so insidious and successful in their profession; they never omit to watch their opportunities for pilfering; they make up a large class of practitioners of the "all round" and business description, who have neither time nor inclination to solve problems or to study architectural detail for themselves. There are prigs whose reliance upon others lead them into pitiable mistakes, as when a man copies a wrong type of plan for a given purpose, or a bad original. These men become either travestiers or downright botchers, such as we find among literary men, and especially playwrights, who make a nonsensical plot or caricature out of two or three other plays. We have also our plagiarists of architecture, caricaturists of architectural features and styles, whose parodies of leading buildings are often ridiculous. Pope says "the proper study of mankind is man," and we may paraphrase the aphorism by saying the proper study of architecture is buildings. Sketching old work is one of the methods which the judicious compiler may safely rely upon. But he should not be content simply to draw old buildings; he should regard them as the solution of problems, and take as much trouble to solve the problems of our own day. Intelligent and discriminative compilation requires a thorough and comprehensive knowledge of all the requirements, ancient as well as modern. The modern compiler is too often satisfied with a superficial choice; he takes a favourite author or artist, without examining the grounds or motives which have induced him to write or design in a certain way. A little more extensive acquaintance with the subject would have led him to go back to the original source, and to have discovered the reasons or principles which his original author took for his guidance. The modern copyist seldom goes behind his original, and therefore he is betrayed into imitating the defects and mannerisms of the author's style. He is apt to copy all the vices as well as strong points, and it is this slavish adherence to the text of the original which makes his work so ludicrous. What was simply a misjudgment on the part of the original author, becomes an unredeemed folly on the part of the plagiarist, submitting him to all the reproaches and lampoonings of successive generations. We see none of this in the old work. Errors of vaulting were corrected by successive architects; the cruder and less perfect forms of details, like the pillar-section and arch-moulds of our Norman Transitional churches, were by degrees amended by the Early English architects; and so it was everywhere, where the true system of growth or compilation was in operation. The competent author of a treatise is not contented till he goes through the various editions of the leading authorities—he never quotes a text from a translation or from a pirated edition; so the architect who is compelled to take his facts from existing buildings ought never to rest satisfied till he has taken the trouble to find out where their authors have unwarily tripped.

THE LONDON BUILDING ACT AND ITS CRITICS.

Exponents of the new London Building Act are beginning to appear. Two classes of commentators are dealing with the subject. First, those who simply annotate the Act as it stands, with notes interpreting certain provisions; and, second, those who are mainly engaged in giving the probable results of the new legislation as it affects building in London, and in criticising the provisions of the Act. From this latter party comes the useful exposition of the Act we gave in our two last issues by Mr. Ellis Marsland, the hon. sec. of the Society of Architects and district surveyor for Camberwell. As we have given lately a pretty full summary of the new Act, it will be unnecessary to go over the ground again. As an Act of consolidation, we have much to be thankful for, though we cannot say that it is perfect. The opponents of the Bill have reason to be satisfied; but others who have been looking for a more complete measure, and for improved hygienic conditions of buildings in the Metropolis, have been rather disappointed.

The paper to which we refer our readers deals mainly with the more important of the variations from the old law. Mr. Marsland points out a few of the sections which are likely to give rise to difficulties in their administration, to some of which we may briefly refer. Alterations or additions to old buildings are dealt with under Section 209. It will be less easy than before for any owner or builder to evade the requirements that are enacted, except in those cases where "necessary repair not affecting the construction of any external or party-wall" are concerned. The definition of "public building" being enlarged so as to include hotels, lodging-houses, homes, and shelters, "where such building extends to more than 250,000c.ft., or has sleeping accommodation for more than 100 persons," it will be often difficult for a district surveyor to determine whether a lodging-house or hotel has passed beyond the limit provided (namely, 100 persons), and must have fire-resisting materials. If the building has only sleeping accommodation for 100 persons, the corridors, passages, and landings and flights of stairs may be simply of wood; but if an additional bed be included, the building construction has to be completely altered. On this nice point a discretion will have to be exercised, and Section 79, which deals with the conversion of buildings or houses into public buildings, appears to confer such a power, for it enacts that in such a conversion the walls, roofs, floors, galleries, and staircases shall be constructed in such a manner as may be approved by the district surveyor, or determined by the Tribunal of Appeal. Obviously, however, there will be questions often arising when a lodging-house for 100 beds is made to accommodate any additional beds, and the district surveyor will have to make periodical visits with the object of finding out this point, and all others where exempted buildings are no longer privileged. Under Part II. various grounds are stated upon which the Council may refuse to sanction any new roads or streets. Some of these appear excellent grounds, and we have always protested against the making of unnecessary roads simply for the purpose of increasing ground-rents.

Mr. Marsland summarises usefully the provisions for open space, light, and air about buildings under Parts V. and VI. The clauses are, no doubt, a little complicated, and have to be studied somewhat carefully. We have three cases stated—first, when the open space is to be provided for a new building in a new road; second, when it is for a new building abutting upon an old road; and thirdly, when the open space is for an old building upon an old road. Besides the 100ft. square to be provided in each case to any habitable basement, an additional space in rear is required of 150sq.ft., and this space may be obtained over the ground story if the latter is not inhabited. This space is to extend laterally, and to a depth in every part of 10ft. at least. This last allowance of 150ft. square appears inadequate, especially so, when it only commences at the ceiling-level of the ground-floor story, or 16ft. above pavement level, a point which is made very clear in Mr. Marsland's diagram we gave last week, which illustrates in a practical manner the effect of the angle described in the Act (Sect. 41), to determine the height of building in relation to the space in the rear. It will be seen by looking at this section that the diagonal lines drawn from the ground story ceiling level 16ft. high will allow a considerable additional height and obstruction to light and air. The exceptional cases noticed in the last part of this section are open to objection, inasmuch as the Council has to be consulted in every case. It would have been wiser, as we have before said, to have adopted the angle of 45° instead of the one introduced, 63½°, which is an angle less intelligible, and which does little to improve the existing state of our buildings.

Another portion of the Act, Section 45, relating to courts within a building, is also open to misunderstanding as to what is intended. In the first place, the clause is not so explicit as it might have been, as, for instance, where it says "that the depth of such court from the eaves or top of parapet to the ceiling of the ground story exceeds the length or breadth of such court, adequate ventilation of such court shall be made and maintained, &c." Why not define the depth more exactly than by saying the "length *or* breadth of such court"? Which is intended? The words "adequate provision" is, as Mr. Marsland observes, vague, and who is to interpret what is adequate ventilation? Again, the clause, which runs, "Provided that a court, of which the greater dimension does not exceed twice the less dimension, shall be held to comply with this section, if a court of the same area, but square in shape, would comply therewith." To say the least, this is a rather involved sentence. Section 74 is important to owners and large tradesmen. It enacts that, in every building exceeding ten squares (1,000sq.ft.), used partly for trade or manufacture and partly as a dwelling, the former part is to be separated from the latter by walls and floors constructed of fire-resisting materials, and all passages, staircases, and approaches to the dwelling are to be constructed throughout of fire-resisting materials. It is not very clear, however, as pointed out, whether, in case the trade part is extended to more than 250,000c.ft.—which extension brings it under the warehouse class—the doorways in the walls of staircases and passages between the two separate parts are to have fire-resisting doors.

The facilities afforded by the new Act in respect of bay windows and oriel projections are such that these structures may now be erected without the sanction of the Council. There are definite rules and limits in Section 73 which have to be complied with, and which will save much time in making applications. Under Section 65, a furnace chimney may be carried up, provided it tapers gradually at the rate of at least 2½in. in 10ft., and that its thickness for 20ft. below the top shall be at least 8½in., increased by half a brick for every additional 20ft. measured downwards; that it has proper footings, which are stated. So also a bay window may be erected beyond the frontage line in a street 40ft. wide, if it does not exceed three stories in height, and does not project more than 3ft. from the main wall of the building, or within the prescribed distance of the centre of roadway, &c. Oriel windows or turrets may also be built under limitations set forth in Section 73. Other facilities are to be found in Part VIII., which deals with the rights of building and adjoining owners. Section 87, in its several clauses, gives specific rules which, if followed, will avoid much trouble and litigation. The diagrams showing inclinations of roof and those illustrating the schedule of thickness of walls in our last issue are instructive.

THE SOCIETY OF ARCHITECTS.

THE third fortnightly meeting of the Society of Architects was held on Tuesday evening at St. James's Hall, Piccadilly, S.W., the President, Mr. E. J. Hamilton, in the chair. Mr. W. H. Bridgman, 67, Fleet-street, Torquay, and Mr. Benjamin R. Tucker, 23, Sisters-avenue, Clapham Common, S.W., were elected as members.

THE LATE MR. H. A. K. GRIBBLE.

Mr. E. J. **Kibblewhite** proposed a vote of condolence with the widow and family of the late Mr. Herbert Gribble, the architect of the Brompton Oratory, whose brilliant career had been terminated by his sudden death on Saturday last at the comparatively early age of 47 years. Having sketched his career, Mr. Kibblewhite referred to Mr. Gribble's great powers of design and excellent draughtsmanship, and observed that he was well known in that room as a member of the Architects' Registration Committee, a movement which had his warm sympathy and support. He had that morning received a letter from Mr. H. Roumieu Gough, their past president, expressing his deep regret at Mr. Gribble's death.

Mr. **Edgar Farman**, in seconding the motion, bore testimony to the valuable aid Mr. Gribble rendered on the Architects' Registration Committee, of which he was a staunch adherent.

Mr. **William Allport** and Mr. W. **Woodward** supported the motion, the latter referring to the grasp of planning, the skilful treatment and richness of detail displayed in the Oratory at Brompton. By his death they had lost a genial and good-natured man, and an able and distinguished architect.

The vote of condolence was passed in silence.

RARE AND REFERENCE BOOKS ON ARCHITECTURE, WITH HINTS ON THE FORMATION OF AN ARCHITECTURAL LIBRARY.

Mr. **Herbert Batsford** read a paper on this subject. The lecture was illustrated by a very large display of rare and sumptuous works on architecture. He observed: I intend to start upon some such—shall I say improbable?—hypothesis as that of an architectural society desirous of forming a good reference library of architectural books, had asked my advice as to which, assuming reasonable means, they should proceed to acquire. I shall enumerate to you most of the books which, in my opinion, should be in such a library, and shall make the briefest possible comments upon some of them. My object will be to speak chiefly of those books which, in my judgment, are essential to the formation of a reference library upon architecture and the closely-allied art of decoration. I must assure you that on this occasion I am representing also my father and brother, of whose wide knowledge and long experience I have had the full advantage. If I were asked to define in general terms what kind of books I thought essential to such a library as we are about to consider, I should reply, All such books as a student might reasonably be expected to consult in his architectural studies, or to which an architect might have occasion to refer in the course of his practice; and first amongst them one would naturally place such works as dictionaries, cyclopædias, general histories, journals, and other serial publications pertaining to or illustrating the subject. Then I think there should be found one, at least, of the most authoritative and important works illustrating each of the various historic styles or periods of architecture in all countries, amongst which I would include important monographs upon some of the most remarkable edifices in the world. Next may be considered a class of works by no means so numerous as it might be—that devoted to public buildings and institutions, such as theatres, hospitals, markets, and other municipal buildings, to which I would add some examples at least of the works of contemporary architects at home and abroad. Beyond these there remains the important subject of practical construction, sanitation, &c., &c. There are, too, a few architectural biographies, and I would recommend any public library to acquire them all, for nothing, I think, could be more inspiriting to a student than to read the memoirs of Pugin, Barry, Scott, and the other great professors of their art. Milizia's "Lives of the Celebrated Architects" up to the end of the 18th century, translated by Mrs. Edward Cresy, should certainly be included amongst these. I will now proceed to lay before you my list of books. First amongst the "special books of reference" I have placed that remarkable work the "Dictionary of Architecture," published by the Architectural Publication Society, and which was completed chiefly under the able and untiring editorship of the late Mr. Wyatt Papworth and the fostering care of Mr. Arthur Cates, who remained true to his post of honorary secretary, from its inception to its completion. Professor Roger Smith, in a recent lecture delivered at the University College on “Discoveries in Architecture,” spoke of it as a book bristling with signposts, calculated to “direct the student in his search of knowledge to the best sources of information.” He said also that “in all the articles the most copious list of references occur,” and that “it is of the greatest use to a student to have sources of information so liberally spread before his view.” After this I need only add that the book contains 2,300 folio pages of text, and some 250 plates, besides other illustrations in the text. I am sure the next book you expect me to mention is “Gwilt’s Encyclopædia of Architecture,” and the mere mention of it will be sufficient. With “Gwilt’s Encyclopædia” I am disposed to bracket Parker’s “Glossary of Terms used (particularly) in Gothic Architecture,” three volumes, 8vo., the illustrations of which are delightfully drawn and engraved. There are two exceedingly good dictionaries which are not, I think, so well known in this country as they deserve to be; they are Bosc’s “Dictionnaire Raisonné d’Architecture,” four volumes, with 4,000 illustrations, and Chabat’s “Dictionnaire des Termes employés dans la Construction,” the most comprehensive dictionary of terms used in construction extant. Amongst “reference books” I should also include the following:—D’Agincourt’s well-known “History of Art by its Monuments,” which has over 3,000 small illustrations, and the English edition of which was edited by Owen Jones; Fergusson’s “History of Architecture,” now in five volumes, which needs no comment of mine; Gailhabaud’s “Monuments Anciens et Modernes,” a work which illustrates, on 400 steel plates, a large number of the principal buildings of all ages, in a clear and correct manner. I almost hesitate to include in this class Viollet-le-Duc’s celebrated books, “Dictionnaire de l’Architecture, Français du X. au XIV. siècle,” “Dictionnaire du Mobilier Français,” for, although they are entitled “Dictionnaires,” they are really something more, and the same may be said of Havard’s “Dictionnaire de l’Ameublement et de la Decoration”; of these I shall have something further to say later on. Some of the finest works ever produced have been devoted to ancient art in Egypt and Western Asia, notably that of Champollion, “Monuments de l’Egypt, et de la Nubie,” four volumes, folio; that known as “Napoleon’s Egypt,” being the result of an expedition sent out by him (Napoleon I.), twenty-one volumes, folio; and that of Von Lepsius, in twelve volumes, the result of a similar expedition aided by the King of Prussia; but the latest important work upon Egypt is that of Prisse d’Avennes, which is confined to architecture and the auxiliary arts, and if either of these large works be necessary in our library I should give preference to it, although, I believe, Egyptologists prefer one or other of the older works. I must just mention here the valuable work, “Monuments of Nineveh,” by the late Sir Austen H. Layard, published in 1849-53, and the more recent French work, “Monuments de Ninève et l’Assyrie,” by Victor Place, three volumes, folio; and the Comte De Vogué’s work in two volumes, entitled “L’Architecture dans la Syrie Centrale.” I am, however, disposed to think that the handy series of volumes produced by those zealous Frenchmen, MM. Perrot and Chipiez, would be as much upon this early period as is required. It is a cause for satisfaction that they have been translated. The English editions are on the table. They deal with the History of Art in Phœnicia, Cyprus, and Asia Minor; Ancient Egypt; Chaldæa and Assyria; Sardinia and Judæa; Persia, Phrygia, and Primitive Greece. Indian architecture, unhappily, has not been illustrated in a manner worthy of the subject. When we look at the grand books published in France on Eastern Art, we can form some idea of the elaborate works which would have been produced had India been a French instead of a British possession. It is true volumes illustrating special surveys have been published; but for an historical view of the subject we must consult Mr. Fergusson’s volume dealing with Indian and Eastern work, and a very interesting volume recently published in France by Monsieur Le Bon, entitled “Monuments de l’Inde,” and I should mention a very useful series of six portfolios of architectural details, drawn by natives under the direction of Colonel Jacob, which was published in 1890. Turning now to Grecian architecture, the first book which it occurs to me to mention is that splendid monument of patient research, Stuart and Revett’s “Antiquities of Athens.” The first volume was published in 1762, and the fourth in 1816, and in 1830 a volume, which can form a supplement to “Stuart and Revett,” was issued, illustrating further antiquities in Greece, the result of a visit there by T. L. Donaldson and Professor Cockerell. Let us pause for a moment to compare the manner of production of, say, the first plate of Stuart’s book with that of the plate of St. Paul’s Cathedral before us. In the first case the drawing has been made, at what expenditure of ability and patience I may well leave you to judge; then the engraving on copper, by an artist of repute, at considerable cost, and taking weeks, perhaps months, to finish; in the other case a photograph has been taken, not, of course, without difficulty; but the actual process occupied but a few seconds of time, and the reproduction, known as “collotype,” is made in a few hours at a fractional cost of the old engraving. But at the time of which we are speaking, it was the fashion to patronise antiquarian and architectural publications, and if you look at the list of subscribers to be found, almost invariably, at the commencement of the books of the period, you will find that a large number of the nobility and members of county families were subscribers for them, although probably few of these subscribers took much heed of them afterwards. Stuart’s “Athens” was quickly followed by the publication of the first volume of the “Ionian Antiquities,” issued by the Dilettanti Society, and it is curious to note that although the Society announce themselves as “some gentlemen who have travelled in Italy,” the only books they published illustrate Greek art. They include the “Antiquities of Ionia,” four volumes, volume four issued so late as 1881; “Unedited Antiquities of Attica”; “Specimens of Ancient Sculpture,” two volumes; Penrose’s “Principles of Athenian Architecture.” All these volumes are beautifully engraved, and a second edition of Mr. Penrose’s work was issued in 1888. It is, however, to be regretted that in their desire to encourage the study of Greek art they did not see their way to issue this work at a price within the reach of many, instead of a very limited few. Other books which I regard as necessary are Cockerell’s “Temples at Ægina and Bassæ,” Wilkin’s “Antiquities of Magna Græca,” and Inwood’s “Erechtheion at Athens.” Considering the importance of Greek Art and the attention now being bestowed upon it, I should advise the acquisition of all these works; but beyond “Stuart and Revett” Penrose is at least an “essential.” Turning now to Roman architecture, I will first mention the works of that marvellous artist Piranesi, who in some twenty-five years published more than thirty folio volumes, containing upwards of 2,500 engravings, illustrating the architectural antiquities of Rome. The force and vigour which he gave to his work has caused him to be known as the “Rembrandt of Architecture.” With migled feelings I would add on the authority of Bryan’s “Dictionary of Painters and Engravers,” that he on two occasions attempted to practise as an architect, but apparently clients were not forthcoming. Some examples of his engravings are on the table. Although I do not propose to overweight our “Library” with any considerable number of his plates, some at least are worthy of a place, both for the subjects they illustrate and the unique quality of the drawing. On ancient Rome the most thoroughly architectural, I was almost saying “practical,” work is Taylor and Cresy’s “Architectural Antiquities of Rome,” a worthy companion to Stuart’s “Antiquities of Athens,” with plates almost equal in beauty (two volumes), published in 1821. Cameron’s “Baths of the Roman” is valuable, as giving illustrations of the Baths of Titus, the ceilings of which inspired Raffaelle in designing the Arabesques of the Loggia at the Vatican. A very valuable work on Roman construction is M. Choisy’s “L’Art de Batir chez les Romains.” The folios by Robert Wood on the “Ruins of Palmyra and Balbec,” and Robert Adam’s folio on the “Palace of the Emperor Diocletian at Spalatro,” all published about the middle of last century, should certainly be added to the library, as they worthily illustrate the remains existing at that time of these examples of Roman splendour, which undoubtedly greatly influenced the Brothers Adam in the design of their many works, most of which are to be found within a mile or so of this hall. On Pompeian architecture and art the most complete work is the very beautiful and elaborate one by “Niccolini,” still in course of publication, although upwards of 80 parts are already issued; this is far too extensive and costly a work to be included in a moderate library; and for architecture, Mazois’ “Les Ruines de Pompeii,” four volumes, folio, published between 1812 and 1838, or Gell and Gaudy’s “Pompeiania,” a copy of which you will find in the room, four volumes, published between 1817 and 1837, or the two folio volumes of drawings, beautifully engraved by W. B. Cooke, with descriptions by Professor Donaldson, published in 1827, may well be substituted. For illustrations of the wonderful painted walls of Pompeii, I place above all Cavaliero d’Amelio’s magnificent series of plates, entitled “Pompei Dipinti Murali Scelti,” recently issued. Of this a copy is on the table. On the authority of the Cavaliero himself I may assure you that the brilliant colours of these plates are absolutely faithful to the originals when first excavated, and before the action of the atmosphere affects them, which it does very rapidly, after their long burial. The following books illustrating the orders and architectural ornaments, both Grecian and Roman, must not be omitted: Normand’s “Parallèle des Ordres de l’Architecture,” an English edition of which, it is interesting to note, was edited by the elder Pugin, and published in 1829. Mauch’s “Architektonischen Ordnungen,” which has been reissued, with a supplement, as late as 1875, Sir William Chambers’ celebrated “Treatise on the Decorative Part of Civil Architecture,” Tatham’s “Etchings of Architectural Ornament,” Vulliamy’s “Examples of Ornamental Sculpture in Architecture,” and Mr. P. Spiers’ “Orders of Architecture,” which is chiefly a selection of plates from “Normand” and “Mauch.” I feel obliged to make a somewhat general grouping of works on Byzantine, Early Christian, Romansque, Saracenic and Mohammedan architecture. Taking the first of these, the authorities are “Texier and Pullan’s Byzantine architecture,” Salzenberg’s elaborate monograph on Saint Sophia at Constantinople, and that very correct and valuable work, “L’Architecture Chretienne,” by Hubsch; this is a careful parallel of the Early Byzantine churches and basilicas. The author is a German, and the book was first published in Germany, but a French edition was also published under the title I have given. Another very valuable work on this period of Art is “L’Art de Bâtir chez les Byzantins,” by M. Choisy, a companion to his work on Roman building, which I have already mentioned in terms of commendation. But above all works on this period of art comes that remarkable monograph, completed only within the last few months, although commenced nearly twenty years ago, on Saint Mark’s at Venice. The publisher, Signor Ongania, in his enthusiasm for the splendid monument, under the shadow of which he spends his days, has issued this most exhaustive work, almost regardless of expense, and, I fear, without commercial benefit. We have here the volume of coloured plates, part of which forms a view of the front upon such a scale as I think no other building has ever been illustrated. These plates and the two portfolios of details, which are also here, will give you some idea of the magnificent manner in which the book has been produced. Surely a publication so worthily illustrating the grandest building of the world should find its way into every public architectural library, although I believe I am correct in saying that it is not to be found in any such library in England. I know it is in some public libraries—notably Liverpool, which can boast of one of the richest collections of architectural books in the country. Then there are Dartein’s work, one of great research, entitled “Etude sur l’Architecture Lombarde,” Mr. T. G. Jackson’s work in three volumes, 8vo., published in 1887, the result of visits to the Dalmatian district, and the fine book by Revoil, three volumes, folio, entitled, “Architecture Romane du Midi de la France.” This has mainly been the source of inspiration for the style introduced into America by the late Henry Hobson Richardson, and since imitated by so many of his followers with a sad lack of his original and vigorous treatment. For Saracenic work I need only mention that of Gally Knight, entitled, “Saracenic and Norman Remains in Sicily,” and a recent work published in America, called “Norman Monuments of Palermo and

Environs." Arabian Art has been splendidly illustrated in Prisse d'Avenne's magnificent work "L'Art Arabe," in three volumes, folio, with a quarto volume of text,—a work which displays in its beautiful plates remarkable examples of the Architecture and subsidiary arts from the twelfth to the eighteenth century. Another beautiful work which is full of detail of Arabian work is that of M. Jules Bourgoin, entitled, "Les Arts Arabes." It is some source of satisfaction that the great monument of "Moorish Art" the "Alhambra Palace" at Grenada, published in two grand volumes in 1842, and which is one of the grandest books illustrating one building ever published in this country, and is mostly the work of an eminent Englishman, the well-known Owen Jones, who with M. Goury went and stayed six months in the Alhambra, during 1834, preparing some of the drawings for this work, and on the death of M. Goury through cholera caught there, returned home, but revisited the Alhambra in 1837, finishing the drawings for the remarkable monograph, a copy of which is here. You will, I am sure, feel that this book has special claims on your attention. Although it will be something of a departure from chronological order, I think it will be a convenient arrangement if I now deal with books illustrating the architecture of our own land and then with those illustrating the different countries of Europe, omitting altogether books dealing with the art of the primitive races of these Islands. I think the place of honour is due to those of John Carter, the pioneer of the Gothic revival. They are entitled "Ancient Sculpture in England," and "Ancient Architecture in England," and were first published in 1780 and 1795 respectively; but the later editions have notes by John Britton, that grand archæologist, who published upwards of fifty volumes devoted to the archæology of his country. I will not weary you with a catalogue of the literature of the Gothic revival, but a few of the books which greatly influenced it must be mentioned in the order in which they appeared, and first must be reckoned the works of John Britton before alluded to. In 1804 he commenced his "Architectural Antiquities of Great Britain," and between 1814 and 1832 he published his celebrated illustrations of fourteen of our English cathedrals—a series of fourteen volumes which still remain the finest of their kind issued in any land. The difficulties he met with in obtaining permission to draw in some of these buildings are recounted with something of bitterness in his autobiography. Britton was ably seconded in his illustrations by the celebrated engraver, Le Keux, whose name is found on so many of the fine engravings of architectural subjects published at this period. With these of Britton's, should be added Wild's illustrations of Lincoln Cathedral which he adopted, and the Durham and Carlisle Cathedrals of that charming draughtsman and archæologist, Robert W. Billings. At the same time that Britton was placing before the public his splendid series of illustrations, that remarkable father of a yet more remarkable son, Pugin, was working upon more strictly architectural lines, and published in 1821 his "Specimens of Gothic Architecture," two volumes, which contains the first exact illustrations of English Gothic. In 1831 he published "Gothic Stone Ornaments," which is beautifully drawn on stone by J. D. Harding, and in the same year commenced his "Examples of Gothic Architecture"; of this the second volume, published about 1835, bears jointly with his own the name of his talented son, Augustus Welby, the architectural genius of the century, of whom Mr. Eastlake wrote, "his name marks an epoch in the history of art which, while art exists at all, can never be forgotten." In 1836 appeared that bitter satire upon the architecture of the day entitled "Contrasts," or a parallel between the noble edifices of the Middle Ages and corresponding buildings of the present, showing the present decay "of taste," the appearance of which made him many enemies, and a few years afterwards he essayed to mollify them by the issue of a small brochure under the title of "An Apology for 'Contrasts,'" which is very scarce indeed. In quick succession followed his "True Principles of Gothic Architecture" and "An Apology for the Revival of Christian Architecture," with, in 1844, his remarkable book, considering the date of its production, the "Glossary of Ecclesiastical Ornament and Costume." I need hardly say that all these works of the Pugins, with others of less importance, which I need not mention, should be included in our library. Proceeding to notice further works upon Ecclesiastical buildings before dealing with those more especially devoted to Domestic, I would mention one which should have found an earlier place. Cottingham's large monograph on Henry VII. Chapel, Westminster, which is of great value for the study of Perpendicular work, notwithstanding the rough production of the drawings by lithography in its early days (1822). Soon after the appearance of the later works by Pugin, came those well-known volumes of the Brandons, "Analysis of Gothic Architecture," two volumes, "Open Timber Roofs of the Middle Ages," in one volume, and "Views and Plans of Parish Churches." Almost simultaneously appeared Mr. Sharpe's magnificent folio, "Architectural Parallels," illustrating the progress of Ecclesiastical architecture in England and Wales through the 12th and 13th centuries, of which Professor Roger Smith says: "Here a certain number of Gothic abbey churches, chiefly those of Yorkshire, are anatomised, compared, and contrasted in the most thorough and interesting manner, and the student cannot do better than turn to it constantly, whilst making his way through Rickman's 'Gothic Architecture.'" A supplement to the "Parallels" was published, giving the mouldings of these Abbey churches, drawn full size. I will here briefly mention the "Seven Periods of English Architecture," the Ornamentation of the Transitional Period, "Mouldings of the Six Periods," which he unhappily left incomplete, and his smaller book, "Window Tracery in England," all excellent books on their subjects. Then close along followed Mr. Colling, who, I am happy to say, is still amongst us, with his beautifully drawn works, "Gothic Ornaments," containing 200 plates of stone carving, with a few examples of Mediæval coloured decoration, and "Details of Gothic Architecture," two volumes, intended to further elucidate such features as were only partially developed in "Brandon's Analysis." These two works of Mr. Colling are, I think, unsurpassed by any illustrating English architecture, both for the amount of work put into them and the correctness and beauty of the drawings, which were mostly made on the spot by the author, from his own measurements. I fear that he has never received the recognition due to him for their production, and I regret to add that he has derived no pecuniary benefit whatever from their publication. In 1857 Messrs. Bowman and Crowther, the Manchester architects, published an important work, "Churches of the Middle Ages," being selected "Specimens of Early and Pointed Structures, with a few of the purest Late Pointed Examples," two folio volumes, giving what may be termed a series of working drawings of examples of church construction in these different periods. To these I must add Wickes' highly artistic, yet correct, drawings, entitled "Spires and Towers of the Churches of England," "Churches of the Nene Valley," the drawings for which were made by Messrs. J. Johnson and W. H. Kersey, under the direction of Mr. Sharpe, by whom the accounts of the churches were written; Mr. James Neale's carefully-drawn monograph of the Abbey Church of St. Alban's before its restoration, and Mr. Gilbert Scott's most valuable "Essay on English Church Architecture" prior to the separation of England from the Roman obedience. Other minor works are: Sir G. Gilbert Scott's "Rise and Development of Mediæval Architecture," Rickman's "Gothic Architecture," Walcott's "Church and Conventional Arrangement," Paley's "Gothic Mouldings" and "Baptismal Fonts," Wollmann's "Examples of Ancient Pulpits," Bury's "Ecclesiastical Woodwork," Bloxam's "Principles of Gothic Architecture," Professor Willis's paper on "The Vaults of the Middle Ages." Turning now to the works illustrating the domestic architecture of our own country, and taking them in chronological order of the periods they illustrate, I must place first, Britton's "Architectural Antiquities of Great Britain," already mentioned; next, Hudson, Turner, and Parker's "Domestic Architecture of the Middle Ages," Mr. F. T. Dollman's "Analysis of Ancient Domestic Architecture," two volumes, containing 160 excellent plates, certainly a unique work, illustrating Domestic buildings down to the 16th century, in a thoroughly practical manner; and Pugin's "Examples," three volumes, already referred to, and which is too well known to need comment. Of half-timbered work some of the best examples are illustrated in Clayton's "Timber Edifices of England," a very scarce folio, and Habershon's "Ancient Half-timbered Houses of England. Nash's "Mansions of England in the Olden Time," needs but a passing mention; it is known to all in its original or smaller edition, and I need only say, get the former if you can. Richardson's "Studies from Old English Mansions," if not so widely known deserves to be so, certainly to the architect, for whom it was more particularly prepared, and to whom it is more useful, as it contains a variety of details of all descriptions. Of a much later production, "Architecture of the Renaissance in England," by Mr. Gotch, I shall not express an opinion; most of you have, doubtless, some knowledge of it. I should add that two lesser works by Richardson, and "Details of Elizabethan Architecture," by Henry Shaw, are worthy of notice, and that, in my opinion, the whole of the volumes of the "Architectural Association Sketch Book" are of the utmost importance in a good architectural library, both on account of the large amount of English work illustrated in them, and for the variety and charm of the draughtsmanship. They contain a large amount of excellent work not illustrated elsewhere, and include valuable details in wood and metal work. For illustrations of the Later Renaissance and Classic Revival in England, the best works are the following:—Inigo Jones's "Designs for Public and Private Buildings," which includes most of his executed works; Clayton's "Large Drawings of the Churches of Sir Christopher Wren," which illustrate them all except his masterpiece, St. Paul's; "Vitruvius Britannicus," started by Colin Campbell, and finished by Woolfe and Gandon, illustrating the public buildings and private mansions designed by Inigo Jones, Sir Christopher Wren, Sir J. Vanbrugh, and other celebrated architects of the time. Gibbs's "Book of Architecture," which includes illustrations of St. Martin's Church, and the "Works in Architecture, Decoration, and Furniture" of those prolific architects the Brothers Adam, of Adelphi fame, a rare work, consisting of beautiful engravings of the most important works carried out by them. The earlier architecture of Scotland is most delightfully illustrated in Billings's "Baronial and Ecclesiastical Antiquities of Scotland, four volumes, which contain 250 engravings. For further illustration MacGibbon and Ross's very voluminous large octavo volumes, on the "Castellated and Domestic Architecture of Scotland," and the Sketch-book of the Edinburgh Architectural Association, should be consulted. Many of the Classic buildings erected in the 18th century will be found in "Vitruvius Scoticus," a bulky volume by William Adam, father of the celebrated brothers just mentioned. I must not be guilty of "one more injustice to Ireland" by omitting to tell you that her ancient architecture has been well illustrated in the comprehensive work, "Notes on Irish Architecture," in two volumes, folio, by the Earl of Dunraven; but I need hardly add the subjects illustrated are rather archæological in their interest. Dealing next with French architecture, and commencing with the Gothic, as I have already dealt with the Romanesque period, we find an Early English authority in John Sell Cotman, whose "Architectural Antiquities of Normandy," two volumes, published in 1822, vividly portrays, in a series of vigorous etchings, the beauties of Norman architecture. These were accompanied by historical notices by Dawson Turner. I may here mention that the elder Pugin published his "Architectural Antiquities of Normany," with beautifully detailed plates, in 1828. A very complete book on this period of architecture, "L'Architecture Normande," by Ruprich-Robert, has been issued. It illustrates in a most thorough manner architectural remains both in Normandy and England. But French Gothic architecture is inseparably associated with the name of M. Viollet-le-Duc, who in 1854 commenced the publication of his famous "Dictionnaire Raisonnée," with its 3,500 illustrations drawn by his own hand. It may be remarked that the publication of this remarkable work came at a time when English architects were turning towards French Gothic, and its influence, together with that of his companion work, the "Dictionnaire du Mobilier," greatly spread that taste for French Mediæval art which held its sway in this country for so many years, only to be followed by the introduction of French Renaissance, for which purpose "Sauvageot," and other works, were already in existence. But

I am anticipating somewhat. Other English books illustrating French Gothic rapidly followed, and led to its general adaptation. Amongst the first of these I must name "Mediæval Architecture of France," by Henry Clutton, published as early as 1853, and Mr. Norman Shaw's "Sketches from the Continent" (1858), illustrating many of the French cathedrals, and the companion work, "Specimens of Mediæval Architecture," by Eden Nesfield, which appeared in 1862. These two works are well known, yet I cannot refrain from quoting Mr. Eastlake's words, that "the skill, the delicacy of touch, the attention to perspective, and the knowledge of detail which they exhibit is worthy of all praise." Then, in 1864, one of the most valuable volumes of masterly geometrical drawings and perspectives, "Specimens of Early French Architecture," by the late Robt. J. Johnson, which was much appreciated, and quickly went out of print. In his preface the author says: "The examples have been selected to display that nobleness, simplicity, and masculine vigour so strikingly characteristic of the period in France, and it is believed that those who are studying Christian architecture will find the results of a laboriously measured series of 'specimens' of the utmost value." In 1865 were published two volumes of photographs of 500 delightful sketches, made by the younger Pugin during his Continental tours between 1836 and 1847. These little sketches, whether representing in a most minute manner some Continental building, or depicting, in a few lines, some detail of stone, wood, or metal, seem to present the object with a force and fulness quite out of proportion with the scale of the drawing. In 1870 William Burges published his "Architectural Drawings," a folio volumes of plates, which represented in a bold manner some striking features of construction and Early French details, mostly of the thirteenth century. This is the last English book devoted to French Gothic, and is in some respects the most remarkable. There is another fine book by M. Jules Gailhabaud, whose name I have already mentioned, in five volumes, entitled "L'Architecture du V. au XVII. siècle, et les Arts qui en Dependent," and much of it is devoted to illustrating the French cathedrals. Two works devoted to French Gothic stonework are Adams' "Receuil de Sculptures Gothiques," and Bandot's "La Sculpture Française;" a beautiful work issued some four years since. I am anxious to draw your attention to a work issued some three years ago by Gelis-Didot et Laffillé, entitled "La Peinture Decorative en France," which gives the most perfect series of reproductions of ecclesiastical mural decorations ever issued, from water-colour drawings specially made. I should like to see a similar work illustrating English examples in so fitting a manner. German Gothic architecture is well illustrated in Förster's "Monuments de l'Architecture," &c., eight volumes, quarto, and I must here speak of two favourite books which give examples of both French and German Gothic; the first is by one of the greatest archæologists we have ever had, T. H. King. The title of the book so well explains its scope that I give it in full: "The Study Book of Mediæval Architecture and Art, being a series of working drawings of the principal monuments of the Middle Ages, whereof the Plans, Sections, and Details are drawn to uniform scales." In the four volumes we have mostly drawings of some hundred different churches, and examples of metal-work, stained glass, &c. The other is "Verdier et Cattois Architecture Civile et Domestique," published in 1857, which contains over one hundred engravings, illustrating many charming examples of Gothic Domestic buildings in Italy and France. For Italian Gothic architecture we must go to Ruskin's "Stones of Venice," and his "Examples of the Architecture of Venice," Street's "Gothic Architecture in North Italy," second edition published in 1874, Dr. Rowand Anderson's "Examples of the Municipal and Street Architecture of France and Italy," Gruner's "Terracotta Architecture of North Italy, which has coloured plates, published in 1867, and "Rohault de Fleury's Toscane au Moyen Age," two volumes, folio, of most delightful drawings in the Mediæval spirit, and was published in Paris in 1873. Spanish Gothic has not been well illustrated in an architectural manner, but we get a comprehensive review of it in Street's "Gothic Architecture in Spain," an octavo, published in 1865. Many exceedingly artistic and picturesque drawings, including illustrations of the cathedrals, are given in "Espana Artistica y Monumental," three volumes, folio, published between 1842 and 1850. Notwithstanding that Spain cannot be regarded as one of the wealthiest of nations, it is refreshing to know that for many years past the Government has contributed towards publishing a suitable record of the Architectural and Art wealth of the country. But for want of support the publication had to be discontinued before the work they had set themselves to do was accomplished. The result of their support is seen in six very large folio volumes, which are on the table, from which you will be able to judge of the grandeur both of the work itself and the monuments it illustrates. We now reach the Renaissance period, and we naturally must in the first place take those books which illustrate the beautiful examples of the land of its birth, and I think I may first name "Palladio's Architecture," the best of the English translations of which is that by Leoni, as it gives a good number of Palladio's pure designs. Then I will remind you of those two remarkable works, the result of years of labour and study, that make us freely translate and paraphrase the celebrated Wren epitaph, and say of the authors, "If you seek a monument of them, look at their works," Letarouilly's "Edifices de Rome Moderne," three volumes, folio, containing 335 engraved plates of measured drawings of the famous palaces and churches. It is said the author devoted thirty years of unceasing labour to this monumental work; still, his energy was far from being exhausted, for he spent the remaining years of his life in preparing drawings for rich monographs in two volumes, on the Vatican and St. Peter's, entitled "Le Vatican et la Basilique de Saint Pierre de Rome." It is much to be regretted that the author did not live to witness the publication of these volumes some 12 years since. You are all, I am sure, aware of the great aid that photography has been to us in representing architecture, and in some recent years the excellent methods of permanent printed productions, showing detail perfectly, have led to many works being published that could not have been otherwise. One of these, entitled "Baudenkmäler Roms," is a volume, I fear, but little known, although it should certainly be found in every library which possesses a copy of Letarouilly's "Rome." It contains 100 photographic plates, consisting of views of façades, &c., and is intended to extra-illustrate Letarouilly's drawings. This combination of photographs and measured drawings should, I think, make a perfect architectural book. There is a magnificent volume of engravings by Volpato, illustrating Raffaelle's Arabesques of the Vatican, a copy of which is here, and will well repay inspection. Herr Schutz's comprehensive series of 330 plates, reproduced from photographs entitled "Die Renaissance in Italien," thoroughly illustrates the Renaissance architecture, sculpture, and ornament of Italy. There remains Nicolai's "Das Ornament der Italienischen Kunst," consisting of 100 phototypes, illustrating the delicate architectural ornament of the 15th century. It is a very fine and useful work. There remains now to be mentioned Cicognara's "Le Fabriche di Venezia," which, in a series of 257 line engravings, illustrates Venetian architecture, chiefly of the Renaissance period; it is regarded as the companion to "Letarouilly," though it is to be regretted that the quality of the drawings are not of equal merit. Signor Ongania has recently given us a charming series of 100 views, reproduced in photogravure, in his "Streets and Canals in Venice," a copy of which is here for your inspection. Other works that cannot be omitted from my list are Gruner's "Fresco Decorations of the Churches and Palaces of Italy," containing 56 minute engravings, which is most valuable for Italian interiors, and has some coloured plates. The same author's "Specimens of Ornamental Art," another large folio issued in 1850, containing 50 plates, mostly in colour, depicting to a large scale various Italian ceilings, decorations, and ornaments. "Architectural art in Italy and Spain" by Waring and Macquoid, large folio, published in 1850, and contains a good collection of Italian Palatial architecture and details. It is interesting to note that they were pioneers in drawing attention to some beauties of the Renaissance architecture of Spain. The next books which call for our attention are those illustrating the Renaissance in France, and a most reliable series of illustrations is to be found in a work no doubt familiar to many of you, Sauvageot's "Palais, Chateaux, et Maisons de France," four volumes, small folio. In its series of nearly 300 engraved plates, the work gives monographs of French Chateaux, illustrating various phases of the later Renaissance. For further details, the library should possess Cesar Daly's "Motifs Historiques d'Architecture et de Sculpture." The first series in two volumes folio, has 200 engraved plates of exterior architectural details and ornaments, and the second series, also in two volumes, contains 250 similar plates, illustrating interior decorations; a few of these plates are printed in colours. But, side by side with these must be placed Victor Petit's splendid series of 100 folio plates, drawn on stone by the author, illustrating the Chateaux of the Loire Valley. Issued in Paris in 1861, it will ever remain one of the best productions of its time. A very interesting work, illustrating the interior decoration and woodwork of the Early Renaissance, is "Rouyer's Decorations Interieures de la Renaissance," published a few years since, and invaluable books to refer to for information and illustrations concerning every branch of French decorative art are Viollet-le-Duc's "Dictionnaire du Mobilier Français," six volumes 8vo, and Havard's "Dictionnaire de l'Ameublement et de Decoration," four volumes 4to. The first of these deals exhaustively with French Gothic art, and the second is rich in its treatment of the later periods. There are various monographs on special Chateaux, notably one on the "Chateau de Blois," illustrated by permanent photographs and coloured plates, and Pfnor's "Palais de Fontainebleau," forming, with its later volume illustrating the rich interior, three volumes folio. The works in Belgian, Dutch, and German Renaissance must now be briefly considered, and here the first place must be given to that surprising testimony of the power of one indefatigable worker to make the art of his country known. I refer to the volumes entitled "Documents Classés de l'Art dans les Pays Bas," published by M. Van Ysendyck, an architect living in Brussels. Here are to be found 700 folio plates, chiefly collotypes, and, as one of his critics truly said, doing for the art of the Low Countries what Viollet le Duc had done for the Mediæval art of France. I suppose that we must say that further credit is due to the author's energy in issuing his work without the aid of a publisher. Yet, even with this extraordinary series of illustrations, we cannot dispense with Prout's "Sketches in Flanders and Germany," fifty beautiful drawings most delicately reproduced by lithography, and Louis Haghe's three folios of sketches in Belgium and Germany, also reproduced by lithography, which works picturesquely and vividly bring before us the quaint architectural beauties, both exterior and interior, to be found in these countries. Then there is a capital collection of 300 phototypes known to many of you, I think, entitled Fritsch's "Denkmäler Deutscher Baukunst." These well illustrate the architecture in the old towns of Germany. The last book to mention is "La Renaissance en Belgique et en Hollande." It comprises nearly 500 lithographed drawings, chiefly of architectural details, and is most suggestive, and well supplements Fritsch's volumes, which depict but views and façades. The buildings of the Spanish Renaissance are illustrated in the Government publication I have previously spoken of, in Sir M. Digby Wyatt's volume of clever impressionist sketches entitled "An Architect's Notebook in Spain," and in Mr. A. N. Prentice's recent volume, "Renaissance Architecture and Ornament in Spain," for which, I am pleased to say, the author has received his meed of praise. As I have already mentioned the principal authorities on the interior decoration of the various historic periods, there remain but few others for me to particularise on this and some special arts as applied to architecture. For examples of historic ornament, our library must possess Owen Jones's "Grammar of Ornament," the original folio edition of which was published in 1856, and a smaller edition, the plates being reduced, in 1865. To this may well be added the two series of Racinet's "L'Ornament Polychrome," which gives some 3,500 fresh examples. I would certainly include Cesar Daly's "Decorations Interieures Peintes," two vols. folio. The examples shown in this book are all printed in colours, and are copies of decorations which were carried out in Paris about fifteen years since; no work has ever appeared which sets before us, so truthfully and artistically, complete schemes of colour decorations. The books on furniture and woodwork which I would put on our library shelves in addition to those previously mentioned are Marshall's "Specimens of Antique Carved Furniture and Woodwork"; Small's "Scottish Woodwork of the 16th and 17th Centuries"; Shaw's "Specimens of Ancient Furniture," and, for the late styles, Heaton's "Furniture and Decoration in England during the 18th century,"—a work which gives 200 selected plates of reproductions from the scarce works by Sheraton, Hepplewhite, Chippendale, the Brothers Adam, Pergolesi, and others. Copies of the original books can be added later if the library is so disposed. The volumes which I should place in the library on constructive metal-work are Mr. Starkie Gardner's little handbook—and I hope to see a more important work from him on this art to which he is so devoted—Heftner Alteneck's two volumes on the metal-work of the Middle Ages and Renaissance, entitled "Eisenwerke Ornamentische der Schmiedekunst des Mittelalters und der Renaissance," and D. J. Ebbett's "Decorative Wrought Ironwork of the 17th and 18th Centuries." For examples of monuments from the Celtic times to the 18th century, we need only have Brindley and Weatherley's "Ancient Sepulchral Monuments," which has 600 specimens selected from all authorities, and to help us in the designing of stained glass we need place in the library Winston's "Hints on Glass Painting," two volumes, octavo, published in 1867, Diver's "Works of Early Masters," two volumes, folio, containing many coloured plates of Belgian, Dutch, and English examples, and above all Mr. Westlake's most painstaking and scholarly work on the "History of Design in Stained Glass," the fourth and concluding volume of which has just appeared. Now I think you will agree with me that, with few exceptions, we do not want to study Continental architecture except for suggestions of construction and planning. The books which I consider worth a place in our library are Daly's "L'Architecture privée au XIX. siècle," first and second series, in six volumes folio, containing 450 engraved plates, exhibiting the principal mansions, hotels, shops, restaurants, &c., erected in Paris and the suburbs during the reign of Napoleon III., and under the control of Baron Haussmann, a latter book in four volumes, folio, by M. Narjoux, entitled "Paris elevé par la Ville," the seventy-eight monographs in which describe town halls, markets, schools, hospitals, workhouses, abattoirs, morgues, &c.; then the elaborate monograph illustrating M. Garnier's magnificent building, the new "Opera House at Paris," in two volumes, large folio and quarto text, and the equally extravagantly produced works on the Opera House and the Palace of Justice at Vienna. But when we come to consider modern architecture in England we have to confess that there is no book illustrating it—something to be deplored when we know the admirable work which has been designed by our leading architects, and the value of it for study by all. Mr. Mountford, in the course of his recent interesting address to the Architectural Association, said: "The one and only way to learn how to design is by the constant study of existing work. I say existing work advisedly, because it is my belief that the study of modern work is as necessary, and more useful, perhaps, than that of old work. Of course, we must study old work—that goes without saying; but by all means study modern buildings as well." For illustrations of this modern work we have to turn to the architectural journals. You know them well; but let me just mention them, and the year of their first publication:—The *Builder* was commenced in 1843, the *Building News* in 1854, the *Architect* in 1869, and the *British Architect* in 1874; and with sets of these journals should be included a set of the *Transactions* of the Royal Institute of British Architects, the later volumes of which are splendidly produced. In these five sets we shall not only find modern work illustrated, but to quote Professor Roger Smith's words, "papers on, and illustrations of, almost every subject that you can think of. In the course of years all sorts of architectural topics come up in the public press and before the professional societies, and if you hunt through the indexes of these publications when you are seeking for information which eludes you in books, you will often be rewarded." To make the library complete must be added, when they can be met with, sets of the sketch-books issued by private societies, all illustrating examples of ancient architecture, and many interesting details of wood and metal work. The chief of these are the "Architectural Association Sketch-Book," of which, since 1867, 24 volumes have been issued, containing over 1,700 plates; the "Spring-gardens Sketch-Book," commenced in 1866 at the suggestion of Sir G. Gilbert Scott and Mr. J. T. Micklethwaite, and finished in 1891, the result being eight large folio volumes, containing nearly 600 plates, naturally mostly illustrating Gothic work. Not more than 72 copies of any volume were published. Then there is the "Abbey-square Sketch-Book," initiated by Mr. John Douglas, at Chester, and of which three volumes have appeared; and, lastly, the "Edinburgh Architectural Association Sketch-Book," of which five volumes have been issued. As I understand that Mr. Middleton is going to read a short paper on "Students' Manuals," I will not read out the list I have prepared, and to which I have added a few books on public buildings and institutions, and a few special branches of practice.

Historical Works, most of which have not been Previously Mentioned.—Gwilt's "Encyclopædia of Architecture"; Fergusson's "History of Ancient and Mediæval Architecture"; Fergusson's "History of the Modern Styles"; Fergusson's "History of Indian and Eastern Architecture"; Roger Smith's "Classic Architecture"; Roger Smith's "Gothic and Renaissance Architecture"; Rosengarten's "Architectural Styles." The handbooks on Gothic Architecture I have already detailed.

Architectural Drawing and Perspective.—Spier's "Architectural Drawing"; Cassagne's "Practical Perspective," translated by G. Murray Wilson; Professor Ware's "Modern Perspective," 2 vols.

Practical Construction.—"Notes on Building Construction," 4 vols.; Mitchell's "Elementary Building Construction"; Mitchell's "Advanced Building Construction"; Wray's "Instruction on Construction"; Viollet-le-Duc's "Lectures on Architecture," 2 vols.; Newland's "Carpenter's and Joiner's Assistant"; Tredgold's "Elementary Principles of Carpentry," by Hurst; Baker's "Masonry Construction"; Stock's "Shoring and Underpinning"; Middleton's "Stresses and Thrusts"; Timmin's "Iron Roofs."

House Planning.—Kerr's "English Gentleman's House"; Stevenson's "House Architecture," 2 vols.

Professional Practice. — Professor Banister Fletcher's textbooks on "The London Building Act, 1894," "Dilapidations," "Arbitrations," "Valuations and Compensations," and "Light and Air"; Hurst's "Architectural Surveyors' Handbook"; Kerr's "Consulting Architect"; E. Marsland's "Rules and Regulations Affecting Building Operations in the Administrative County of London"; *Transactions* of the Institution of Surveyors from commencement in 1868 to date, and also the "Professional Notes" of this Institution, commenced in 1886, and still being published.

Sanitation, Warming, and Ventilation. — De Chaumont's "Habitation in Relation to Health"; Hellyer's "The Plumber and Sanitary Houses"; Middleton's "House Drainage"; Galton's "Healthy Dwellings"; Billing's "Warming and Ventilation"; Hood's "Warming Buildings," by F. Dye.

Specifications, Quantities, Estimating, &c.—Leaning's "Specifications"; Rogers' "Specifications for Practical Architecture"; Professor Banister Fletcher's "Quantities"; Leaning's "Quantity Surveying"; Stephenson's "Estimating"; Stephenson's "Repairs: How to Measure and Value Them."

BOOKS ON PUBLIC BUILDINGS AND INSTITUTIONS AND A FEW SPECIAL BRANCHES OF PRACTICE.

Public Baths, &c.—Allsop's "Public Baths and Wash-houses."

Farm Buildings.—Clarke's "Farm Buildings"; Denton's "Farm Homesteads of England"; Stephens's "The Book of Farm Buildings."

Hospitals, Asylums, &c.—Burdett's "Hospitals and Asylums of the World," 5 vols.; Burdett's "Cottage Hospitals"; Galton's "A Few Points on Hospital Construction"; Mouatt and Snell's "Hospital Construction and Management."

Landscape Gardening.—Blomfield's "The Formal Garden in England"; Kemp's "How to Lay Out a Garden"; Repton's "Landscape Gardening," by Loudon.

Schools. — Robins's "Technical School and College Buildings"; Robson's "School Architecture."

Theatres.—Contant, "Parallèle des Principaux Théâtres Modernes de l'Europe"; Daly et Davioud, "Théâtres de la Place du Chatelet"; Garnier, "Nouvel Opera de Paris"; Gosset, "Traité de la Construction des Théâtres"; Magne, "Le Théâtre du Vaudeville, Paris"; Vander Null et Von Siccardsburg: "The New Opera House at Vienna."

There are many points which I have not been able to touch upon, and the subject has not been treated as it deserves, partly on account of want of time on my part in preparing my notes, due to the very limited leisure I have been able to allow myself, and, further, owing to the short period given me in which to present my paper to you. But I trust I have shown you that upon the history of architecture a noble series of volumes exists, and although many of the authors mentioned are foreign, I think we, as Englishmen, may justly pride ourselves, not only for the part our countrymen have played in forming the history of art, but especially so for the valuable works they have produced illustrating the architecture of the past, especially of their own land.

Mr. E. J. Kibblewhite proposed that a very hearty vote of thanks be given to Mr. Batsford for his most comprehensive and interesting paper. He might suggest that in such a library of an architectural society as had been sketched, one would like to find not simply books on purely architectural subjects, but works written by architects on other subjects, novels, and poems. There were many such—besides Mr. Hall Caine's magnificent creations, and it always seemed to him that in all such one could distinctly trace the influence and benefit of the architectural training and instincts of the authors. Such volumes as Viollet-le-Duc's "Habitations of Man," Professor Kerr's strange novel, entitled "An Ambassador Extraordinary," and Mr. J. T. Bottle's great poem "Brian Boru," ought not to be missing from such shelves. It should be regarded as a duty by such societies as theirs to undertake the publication of monographs on architectural subjects, which, although of the highest value to students and the profession, were not likely to be directly remunerative to the author. He might mention that the Building News had many years before in some measure thus co-operated with Mr. James K. Colling in the publication of his great work on "Art Foliage," which, he thought, was fully worthy to rank with his other works mentioned by Mr. Batsford, and it was to be regretted that his labours had never recompensed their most able author. None of them would fail to recognise the great services which Messrs. Batsford had rendered to the architectural profession during the last fifty years, and as one who had been in the habit of walking into Batsford's for some 33 years, he could testify to the discriminating knowledge which members of the firm possessed of all architectural literature, which had been abundantly manifested in the excellent paper to which they had listened that evening with so much interest and pleasure, and for which they would accord the lecturer their hearty thanks. They were also indebted to Mr. Batsford for displaying such a rich and varied assortment of choice illustrated folios on the tables surrounding the room.

Mr. G. A. T. Middleton, in seconding the vote of thanks, remarked that Mr. Batsford had given them a wide survey of the principal books on architecture published in England, France, and Germany. It was evident that such works were not now supported by patrons in this country to the same extent as a century ago, and it was to be regretted that such undertakings were almost always unremunerative—indeed, it was a relief to him that Mr. A. N. Prentice's experience was an exception to this general rule. The publication of books of this class needed to be subsidised, and one way in which it could be accomplished would be by getting each of the great public libraries to take a subscription copy.

Mr. Woodward supported the vote of thanks, and expressed the wish that some wealthy man would provide the Society with just such a library as Mr. Batsford had described. One of the most interesting books exhibited was Pugin's "Contrasts," which would well repay study at the present day. He should like to see a similar "Parallel between the Edifices of the XIVth and XVth centuries" at Oxford, and those erected during the last few years by so-called distinguished architects. Certainly the draughtsmanship of the profession was not improving, and some wretched designs were submitted in a recent competition for a branch free library in Hampstead by two well-known men. Indeed, he took his son with him to see these drawings at the Hampstead Vestry Hall; but withdrew as quickly as possible, lest they should corrupt the boy's architectural morals. Mr. Batsford had omitted from his list several works which he thought would have been included—such as Pugin and Butler's "Public Buildings of London," and John Pennethorne's "Geometry and Optics of Ancient Architecture." They were greatly indebted to Mr. Batsford for contributing so valuable a paper, which would become a textbook on the subject.

Mr. J. Henry Quinn, chief librarian at the Chelsea Public Library, mentioned that at that institution a point had been made of providing as many architectural works as possible.

The President mentioned that Mr. G. A. T. Middleton had prepared a short paper on "Students' Manuals"; but on account of the lateness of the hour, he wished it to be taken as read; it would duly appear in the Society's *Transactions*. He then put the vote of thanks, which was cordially passed.

On the motion of Mr. Edgar Farman, seconded by Mr. Sidney Marsland, a vote of thanks was awarded Mr. Middleton.

Mr. Batsford briefly acknowledged the motion, and remarked that he had not mentioned Pennethorne's work, as, in his experience, it was neither inquired for, nor referred to, at the present day.

THE AWARDS AT THE ROYAL ACADEMY SCHOOLS.

Sir Fredc. Leighton, P.R.A., delivered a short speech to the assembled students and their friends on Monday evening last at Burlington House, when the annual prizes were presented to the successful candidates. The general character of the work exhibited, he said, an extremely high and commendable standard of excellence, though the studies from the life hardly reached the level of merit which previous years had witnessed. Part of the President's address was devoted to the class of design directed more particularly to the decoration of public buildings, and he dwelt upon the high importance of such work, because of its immense potentialities for public utility in this, or indeed, we presume, any other country. He said that several extremely careful and pretty designs had been sent in for the subject set for the prize in this class—viz., "The Vintage." Indeed, some of the compositions were almost more rightly described as pictures, and these works had suggested to him one or two points to which he wished to draw their attention. The first was the absolute necessity of aiming at a broad and dignified and monumental simplicity, such as should characterise that class of work and distinguish it from other branches, such as easel painting. He also wished to point out the importance of bestowing as much care as they possibly could on the supplementary, the accompanying, study, of a fragment of their design, because those designs were sent in in order that they might test the capacity of the student to carry out the work on a larger scale than in the design.

The first prize of £40 was awarded in this class to Miss Hilda Koe. We can but remark upon the lack of the charm of colour, and the absence of the true decorative spirit which the chosen design illustrates, though perhaps on the whole it may be considered the best of the series of designs in this competition. They all display a singularly-marked deficiency of proper tuition, and not one of the contributions has realised the essential limitations peculiar to the suitable treatment of a flat surface considered as the adjunct to an architectural effect adequately subordinated to the conventional restrictions dictated by the strictly decorative idea. The prize scheme is sketchily shown in a rather grimy blending of purple and green, which would absorb the light too much for most positions in actuality, and the composition, considered as a whole, is too disconnected and full of lines. No. 129, on the other hand, though well massed and broadly managed, is somewhat too crowded with figures. They are well drawn, however, and group cleverly, somewhat after the style of Sir John Gilbert in the matter of colour. The leopard's skin, for example, on the central girl is particularly well suggested. The lumpy drapery and strange angularity of the composition figured 127 spoils it as an attempt at design, and the long ungainly arms of the figures are singularly unfortunate, while the crudity of the yellow employed must be admitted. Still, the author of this scheme has adhered to a general breadth of handling and a sense of the value of unity of scale, both in colour and in form, which ought not to be passed over without commendation. All the cartoons contributed are very poor, and we can hardly see wherein the President finds so much for congratulation. In the Architectural Room, so to speak, undoubtedly the best thing is Mr. Percy Edward Newton's design for a public library to cost £20,000. He has been awarded the Royal Academy Travelling Studentship, value £60. Only two competed for the prize, and there could be no question whatever as to the choice, for the second plan is very indifferent, and its treatment architecturally may be described as an ill-considered rendering of the Georgian style, devoid of any sense for proportion, and wanting in a knowledge of detail. Mr. Newton's prize design, on the other hand, has a freshness about it, and exhibits a study of good work, both old as well as new. The breadth and value of wall space is well realised, with two segmental oriel bays marking the first floor in an unobtrusive manner. The central entrance archway is hardly so successful, and the scroll-like ends of its hood-mould form an unsatisfactory base for the two niches containing statues on either side of the opening. The figure frieze over is crude in draughtsmanship, and, generally speaking, the drawings themselves are not very good. The plan is excellent, and the rooms are well lighted. The reference library, situate on the first floor, has a flat domical ceiling and lantern light, with massive columns bearing Ionic caps supporting the ceiling in a monumental fashion. Galleries divide the height of the apartment and increase the book space. In the rooms below, the bookcases recall some to be seen at Cambridge. The commissioners' room is panelled, and has a good fireplace, with a well-designed overmantel enriched with inlay. The figure corbels below the main cornice of the facade are crude and clumsy.

Six sets of measured drawings were sent in for the Royal Academy Silver Medal, the subject being the Banqueting Hall at Kensington Gardens, now known as the Orangery, a long room, with two antechambers, one at either end, and a terrace in front. The 1st medal is taken by Mr. George Weald, and the 2nd medal is given to Mr. Pieter Rodeck. The chosen set of drawings are careful, but spiritless, delineations, with the brick jointings lined-in in a hard, cold way, rendering the bnilding more bald than it actually is. The selection for the second prize deservedly demands a protest, for the drawings are shockingly poor, inky in drawing, and laboured in style with the ornament and caps incorrectly shown. No. 191 is a far better set of drawings, though the sheets are somewhat dirty, and the more ornate parts of the enrichments are avoided. The essential portions and mouldings are all set forth in detail, with dimensions and jointings accurately noted in a way which shows a thoroughness entirely wanting in the prize sheets. The Architectural School work is rather better than usual on the whole, though Mr. H. S. Morris wins £25 for a poor design for an entrance hall. The reason for the choice is not obvious, seeing that No. 195's design for a school of arms seems to be a much more creditable performance.

The following is the official list of the awards:—Landscape painting—a moorland—Creswick prize (£30), Percy William Gibbs. Painting of a figure from the life (open to male students only)—silver medal, 1st, Percy William Gibbs; silver medal, 2nd, Owen Baxter Morgan. Painting of a head from the life—silver medal, 1st, Edith Lydia Clink; silver medal, 2nd, Isabel C. Pyke-Nott. Painting of a draped figure (open to female students only)—silver medal, 1st, Emily Florence Watters; silver medal, 2nd, Katherine Mary Willis. Cartoon of a draped figure—a draped figure of the goddess Ceres—silver medal and prize (£25), Rose Livesay. Design in monochrome for a figure picture—Shadrach, Meshach, and Abednego in the fiery furnace (Daniel iii. 21)—Armitage prizes, 1st (£30) and bronze medal, Victor John Robertson; 2nd (£10), George Radolph Aylmer. Design for the decoration of a portion of a public building—a vintage—prize (£40), Hilda Koe. Set of six drawings of a figure from the life (open to male students only)—1st prize (£50) and silver medal, not awarded; 2nd (£25), Shirley Charles L. Slocombe, disqualified owing to having received the same prize before; 3rd (£15), Charles Augustus Büchel, disqualified owing to having received the same prize before; 4th (£10), Owen Baxter Morgan. Drawing of a head from the life—silver medal, 1st, Morris Bernstein; silver medal, 2nd, Gerard R. T. Leigh Hunt, disqualified owing to having received the same prize before. Drawing of a statue or group—silver medal, 1st, not awarded; silver medal, 2nd, Allan D. Davidson. Perspective drawing in outline (open to painters and sculptors only)—the small cloisters of Westminster Abbey—silver medal, no competition. Model of a design—the Fates—1st prize (£30), Francis Derwent Wood; 2nd (£10), Frederick Thomas. Set of three models of a figure from the life (open to male students only)—1st prize (£50) and silver medal, Henry Poole; 2nd (£20), William Willis. Model of a bust from the life (open to female student only)—silver medal, 1st, not awarded; silver medal, 2nd, Emily Florence Watters. Model of a design containing figure and ornament—grape gathering, the vine to be treated decoratively—silver medal, not awarded. Model of a statue or group—silver medal, 1st, Hibbert Charles Binney; silver medal, 2nd, Margaret C. T. G. Thurlow. Design in architecture—a public library in town—travelling studentship (£60), Percy Edward Newton. Set of architectural drawings—the banqueting hall, now called the Orangery, Kensington-gardens—silver medal, 1st, George Weald; silver medal, 2nd, Pieter Rodeck. Set of architectural designs (upper school)—prize (£25), Henry Seton Morris. Set of drawings of an architectural design (lower school)—prize (£10), Cecil Claude Brewer. Plan of a building—a Government school of art for a large manufacturing town—prize (£10), Ernest Tatham Richmond. Original composition in ornament—silver medal, no competition. Perspective drawing in outline (open to architects only). Hanover Chapel exterior—silver medal, George J. J. Lacy. The Landseer scholarships in painting and sculpture of £40 a year each, tenable for two years, have been awarded—in painting, to Shirley C. L. Slocombe and Percy William Gibbs; in sculpture, to Henry Poole and Robert Edward C. F. Glassby.

THE INCIDENCE OF TAXATION ON REAL PROPERTY AND LAND.

At the ordinary general meeting of the Surveyors' Institution, held on Monday evening last, a discussion took place on two papers dealing, from somewhat different points of view, with the above subject. The first, entitled "The Incidence of Taxation on Land," was read by Mr. A. D. Clarke at the meeting of November 26th; the other, by Mr. W. Sturge, was read at the meeting under notice, and the discussion on both ensued.

In his paper, Mr. Clarke traced the history of the incidence of taxation on real and personal property down from the days of "danegelt," "carucage," and "scutage," to the recent Finance Act, and showed that while the earlier taxes were levied on real property and "movables" alike, the latter had, owing to difficulty of collection and frequency of evasion, succeeded in slipping gradually out of taxation; so that when it was said that the present imposition of new taxes on real property was only the bringing of it into line with personalty, the case was wilfully or ignorantly misstated, for real property already bore burdens from which personalty had been relieved. The many steps by which the present state of things had been reached were detailed by Mr. Clarke at length, but in too minute detail to be summed up in the short space at our command. It is enough to say that Mr. Clarke's history seemed to fully bear out his theory that land bore much more than the share of the burden which it was originally intended should be placed upon it. He contended that land-tax was no more an hereditary burden on land, as had been argued, than were the ordinary obligations of occupation hereditary. He showed by calculations that if two persons inherit each, say, £6,000, the one buying and stocking a farm of 200 acres with his share, and the other investing his in the Funds, the former, entering on a risky and by no means always prosperous occupation, will pay some £30 in taxes on an income of probably about £275, or 11 per cent.; while the latter, on a certain income of £165 per annum, would only pay 44s., or about 1¼ per cent. on his income. Thus, the man who invests in land the capital now so much needed to keep it in cultivation is taxed eight times as heavily as the stockholder or tradesman, while all enjoy the same

State protection and the same local services, provided out of a common fund to which they contribute in such unequal proportions. The popular idea was to attract persons to the land, and the State, by means of special legislation, was endeavouring to assist this object; but no one need be surprised, in the face of the fiscal anomalies which the author had pointed out, at the reluctance of the investor to place his capital in land, or of the working man to take advantage of legislation by acquiring the ownership of such heavily-burdened property. There was also much reason to believe that the unequal pressure of the burden had tended much towards the decay and disappearance of the old race of yeoman owners. Under present industrial conditions, Mr. Clarke contended, the land of the country, placed in competition with that of the whole world, might fairly be considered as raw material, which in every other case the State had long since ceased to tax direct, or at least as the plant or machinery used in the production of manufactured articles; but even where such machinery was held to be taxable, the proportion of burden it bore in comparison with the value of the output was infinitesimally smaller than that which was placed upon the land.

Mr. Sturge, in his paper on "The Burdens on Real Property and Land," after dealing, as Mr. Clarke had done, with the general history of the land-tax and similar imposts, proceeded to deal with the tithe-rent charge. He was old enough, he said, to remember the practical working of the old tithe system before the passing of the Commutation Act, and he believed that at present, under the much less cumbrous system, the average burden imposed by the tithe-rent charge was something like 3s. 6d. in the pound on the rental value of mixed agricultural land. The earliest record we had of any provision for the maintenance of the poor was that, in very early times, one-fourth of the tithe was devoted to the relief of the poor; but in process of time this practice came to an end, and the whole tithe was appropriated to ecclesiastical uses. Various Acts for the relief of the poor were passed, culminating in the well-known Act 43 of Elizabeth, which was the foundation of all rating to the present day. The effect of subsequent Acts was such that the poor-rates rose from £600,000 at the beginning of the 18th century to 3 millions at its close, and to over 6¼ millions in 1834, or 8s. 9d. per head of the population. What the rates in the pound were during those years it was not easy to ascertain, as, so far as he knew, there was no record of the total assessment of property until 1843. Mr. Sturge proceeded to criticise, adversely, the dictum of the present Chancellor of the Exchequer that, at a man's death, his whole property passes to the State, and can only pass to his heirs and assigns by a grant from the State, which had an anterior title to what it might consider its share. He showed that this argument was utterly fallacious, and asked, if it were true, how and by what deed or document was the title conferred on the heirs. Proceeding to deal with the "Finance Act, 1894," Mr. Sturge showed that it placed new and very heavy burdens on the land, which was ill-prepared at the present time to bear them. The new estate duty, ranging as it did from 1 per cent. on property up to £500 in estimated value to 8 per cent. where the value was one million or over, would impose, taking the average expectation of life of a person succeding to be 25 years, a tax equal to an income-tax for life varying from 1s. in the pound on an estate producing £400 a year to 2s. 9d. in the pound on an estate producing £80,000 a year. The tables were calculated on the average life of a lineal successor; but in the case of a collateral relation, for instance, the charges would fall still more heavily on the annual income of the heir. The effect, Mr. Sturge said, in conclusion, of these new imposts cannot fail to be felt throughout the whole community. British agriculture has to compete in almost every direction with the whole world, with no advantage over that of other countries except the cost of freight, and every fresh burden laid upon the land cannot but tend further to cripple our greatest wealth-producing industry.

In the course of the discussion upon the two papers, which followed, there seemed to be a consensus of opinion that land, already unfairly taxed in proportion to personal property, was by the new Finance Act still further unjustly and unwisely burdened.

Mr. E. P. Squarey commented on the fact that while some years ago it was customary to value an annuity arising from land at some 27 to 33 years' purchase, it was now worth no more than from 20 to 25 years' purchase, while Consols were worth some 37 years' annuity, and this in face of the fact that the value of land could hardly fall lower, while in 11 years Consols must depreciate.

Mr. F. K. Munton was struck by the fact that two members of the Institution had considered the question of so important a nature as to simultaneously deal with it in a paper.

Sir Richard Paget thought it very significant that a body of men such as that then assembled, dealing with and interested in land, should be unanimous in condemning its unfair taxation.

Mr. J. F. L. Rolleston, as representing landed interests in the Midlands, regarded the Finance Act as the last straw which would strain the landowner's already overburdened back to breaking point; and similar views were expressed by Mr. J. M. Brown, Mr. E. J. Castle, Q.C., Mr. Howard Martin, and Mr. W. Mathews.

A vote of thanks having been unanimously accorded to the authors, the discussion was adjourned.

COMPETITIONS

Bristol.—For the erection of a public library for St. Philip's district, on a site north of Holy Trinity Vicarage, the city council received sixteen sets of plans and designs from architects practising in Bristol. At Wednesday's meeting of the city council, the library committee reported that they had selected those submitted by Mr. W. V. Gough, who estimated the cost of carrying them out at £4,350, the limit of expenditure named to competitors being £4,500. The committee's recommendation was approved, and Mr. Gough's plans were adopted.

Coventry.—The city council, at their last meeting, adopted the instructions to competitors proposed by the assessor, Mr. Charles Barry, F.S.A., for the designs to be invited for municipal buildings. All architects practising in Coventry, and certain others outside its boundaries, are to be asked to compete. An attempt was made to bind the council to a limit of cost for the buildings, but this was rejected by 23 votes to 5.

Stockport.—The competition for the new workhouse has resulted in an unexpected development, the proposal to invite architects to compete having been abandoned, and the suggested assessor elected as architect for the intended new building. The reports in the three local journals are not very clear on the point—doubtless the reporters did not know the purport of the technical expressions relating to architects' remuneration, and possibly the speakers were not too explicit; but the selected architect is said to have offered to carry out the work at a commission of 4¼ per cent. It seems that at Monday's meeting of the Stockport Board of Guardians, the Rev. P. H. Moore moved that the resolution of the guardians deciding to offer premiums of £50 to each of the unsuccessful competitors in the plans competition for the new workhouse scheme be rescinded; and also that the resolution of the board deciding that a professional assessor be sought to assist in the erection of the new workhouse be rescinded. Mr. Rowcroft protested that such a course would be grossly unfair, as 33 architects had applied for particulars in response to the board's advertisement; but the motion was carried by 14 votes to 8. The Rev. P. H. Moore then proposed a second resolution, which he said also came from the sub-committee. It was that the board appoint Mr. W. H. Ward, of Birmingham, to act on behalf of the guardians as sole architect in the erection of the new workhouse. There were 33 candidates for the post of architect, and a letter was read from Mr. W. H. Ward, offering to act as assessor. Correspondence had taken place between Mr. Ward and the board, and it was clear that if they engaged Mr. Ward instead of going upon the other system, considerable saving would be effected. For one thing, there would be the saving of the premiums of £50 to each unsuccessful competitor, £250 in all. Then there would be the assessor's fee, another £150. Then there was to have been the ¾ per cent. commission on the actual cost. If they went to a figure as high as £90,000, this item would amount to £675. Then there was a commission of 1½ per cent. for preparation of quantities, which would mean about £1,350, making a total outlay of £2,275, which would be saved if the proposal of the sub-committee were accepted by the board. Mr. Ward was not merely a critic of other men's work, but a man who knew how to carry out the required works himself. In Mr. Ward they had a man of eminence who had done grand work himself, and he did not think they could do better for the ratepayers than by appointing Mr. Ward. The clerk then read a lengthy correspondence which had taken place with Mr. Ward, also a number of testimonials which had been sent from the Bradford, Sheffield, and Birmingham boards of guardians, and from the mayor of Birmingham, and other people. All the letters were couched in remarkably eulogistic terms, and stating that if engaged on however large contracts, the final cost rarely exceeded the original estimate put forward by Mr. Ward, and that the plans he prepared always met with the approval of the Local Government Board. Mr. Rowcroft repeated his previous remarks about the appointment being an unjust one if it was made. Mr. Lees said the motion brought forward from the sub-committee was a most unfair one, and held that the policy which dictated it was a most unsound one. He was certain that it would not be received favourably by the ratepayers. In spending a large sum of money, probably amounting to £100,000, they must obtain the best possible information from the professional circle to which Mr. Ward belonged. How were they to utilise their judgement in the matter if they simply stood aside and allowed one individual to do what he liked in the preparing of plans and estimates? He might be one of the best architects in the kingdom for that special purpose, but surely there were others who were as well qualified. Mr. Williamson said the question was, Would they get the best plans from a competition? They had tried it once, and even the best ones selected were disapproved by the Local Government Board. The commission which Mr. Ward asked for was a low one, and his appointment would be the most expeditious and cheapest plan. The motion was carried, after further discussion, by 18 votes to 4.

Sutton, Surrey.—Thirty-seven sets of designs have been received in the competition now pending for the new public offices and technical institute about to be erected on a corner site in the High-street, facing the Baptist Chapel, and next Throwley-road. Part of the scheme will include a public swimming-bath. The intended outlay is limited to £8,000. The drawings were received at the end of last month, and they will be on view after the award has been made. £50 is the amount of the first premium, and £20 is the value of the second prize, both designs to become the absolute property of the Board.

CHIPS.

A memorial is to be erected in Winchester Cathedral in honour of Sir Gerald Portal, of Uganda fame. Mr. Storey, of Rome, has been commissioned to execute the work.

General Hutchinson made on Friday, on behalf of the Board of Trade, a final inspection of the Forfar and Brechin Railway, which has been constructed for the Caledonian Company, under the direction of Mr. Thomas Barr as principal engineer.

It is definitely announced that the western portion of the Lancashire, Derbyshire, and East Coast Railway has been abandoned because the subscriptions did not justify the directors in proceeding with this expensive scheme. The western end was that part of the line running across Derbyshire, Cheshire, Lancashire, and connecting Macclesfield, Warrington, Knutsford, and Liverpool.

A new turret clock showing time on four illuminated dials has been made and erected in the tower of the Southport Infirmary by Messrs. Wm. Potts and Sons, of Leeds and Newcastle-on-Tyne, the donor being Councillor W. Austerfield, J.P.

At Manchester, on Tuesday, the statue of the late Oliver Heywood was unveiled in Albert-square by the Lord Mayor. The commission has been carried out by Mr. A. Bruce Joy, who was also the sculptor of the John Bright statue in the same square, and, as in that case, the figure is of white Sicilian marble and the pedestal of granite. The foundations and arrangements for the fixing of the statue have been carried out by Messrs. J. and H. Patteson, of Manchester, under the direction of the city surveyor. The cost has been £2,700.

The jubilee of the restoration of St. Mary's parish church, Stafford, under the direction of the late Sir Gilbert Scott, will be celebrated on Sunday and Tuesday next. It has been decided in commemoration of the event to provide in the chancel six bays of canopied choir screens, as originally proposed by Sir Gilbert, and these are being carried out by Mr. Bridgeman, of Lichfield.

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ILLUSTRATIONS.

"SIMON THE CYRENIAN FORCED TO CARRY THE CROSS."—NEW MARKET HALL AND PUBLIC OFFICES, GOOLE.—ADDITIONS TO "IVANHOE," REIGATE.—ST. MARGARET'S CHURCH, CLEY-NEXT-THE-SEA, NORFOLK.—ILLUSTRATIONS OF FOREIGN THEATRES.

Our Illustrations.

SIMON THE CYRENIAN IS FORCED TO CARRY THE CROSS AFTER JESUS.

The above is from the *Via Crucis*, by N. H. J. Westlake, F.S.A., at the Dominican Priory, Haverstock Hill. It is the subject of the fifth station of the Way of the Cross as now used, and it is treated in a manner which illustrates the meditation on this particular station. The Gospels state that Simon was *forced* to carry the Cross (St. Matthew xxvii. 32): "And going out they found a man of Cyrene named Simon, and him they *forced* to take up His Cross." The meditation in the prayers said at this station has the passage, which shows its object: "I will not refuse the Cross as the Cyrenian did—I accept it, I embrace it." Simon, therefore, illustrates the conduct of those who do not of their own free will and goodness of disposition suffer for justice's sake, or to aid their fellow-creatures, or for the love of the Great Sufferer, but those who have the grace even to be forced. Perhaps much the larger number of all classes who carry a cross are of the Cyrenian type. The composition has been elongated and somewhat altered in treatment in the picture itself at the Priory, our illustration being only from the first study. It is painted on panel in a rich soft tone of colour on a gold background, and the pictures have been all conserved under glass to protect them from the staining influence of London smoke and the dangerous element of the condensed breath of a large congregation, one of the most subtle and dangerous destroyers of delicate work. There are fourteen subjects in the whole *Via Crucis*, in the painting of which Mr. Westlake has some reputation. He did the first series ever done in England many years ago at St. Francis', Notting Hill, and he has recently painted those at Maynooth College Chapel, which each measure 12ft. by 8ft. We gave an illustration of one of these on Sept. 25th, 1891, and on Jan. 20th, 1888, an illustration of the chapel itself was given in our pages.

NEW MARKET HALL AND PUBLIC OFFICES, GOOLE. (SELECTED DESIGN.)

In this recent competition there were about forty competitors, and this design was chosen, and obtained the premium of £100. We illustrate its ground plan and two main elevations. The two façades are occupied by shops, with three archway entrances to the market-hall situate to the rear. The offices entrance is placed in the centre of the front facing Boothferry-street, of which we give the elevation. The public offices on the first floor comprise a board-room, 40ft. by 20ft., clerks' offices and waiting-rooms, surveyors', inspectors', and gas and water offices; suitable lavatories are provided. The staircases are of stone, and the passages are fireproof; lifts communicate the various stories. The second floor is devoted to four suites of offices, with private and general rooms, and one set with three offices. The caretaker's rooms form part of this floor. All the buildings are heated with hot water. The architect is Mr. W. J. Tennant, of Pontefract.

"IVANHOE," REIGATE.

This illustration shows an addition to "Ivanhoe," Reigate, for Mr. James Powell. The ground floor is one large ball-room, with a recessed fireplace at one end; above it are a series of bedrooms. The walls are built of concrete, faced with the local Reigate stone, the dressings being of Monk's Park stone. Messrs. Holloway Bros., of Queen's-road, Battersea, carried out the work, from the designs of Messrs. Read and Macdonald, architects.

CHURCH OF ST. MARGARET, CLEY-NEXT-THE-SEA, NORFOLK.

This church, of which we furnish a set of geometrical drawings as well as a perspective view, is one of several magnificent churches in the Cromer and Lynn district of Norfolk, which, although well deserving inspection, are hardly so well known as might be expected. This church at present consists of chancel, clerestoried nave, north and south aisles, north and south transepts (of the former of which only fragments of walling remain, while the latter may be described as a ruin), north, south, and western porches (the latter also a ruin), and a small square tower at the western end of the north aisle. The church was evidently founded in the 13th century, as appears by the tower and chancel, both of which are Early English in style; but considerable alterations were made in the Decorated period, when the nave and aisles were pulled down and rebuilt, and, in all probability, the transepts added. At an even later date the aisles were remodelled into the Perpendicular style when the porches were built, so that the building in reality exhibits the three principal styles of English Gothic architecture. Its present condition, however, affords but traces of what must have been its pristine beauty, the tower requiring considerable renovation, while the nave—a most beautiful example of the Decorated style—has, both externally and internally, been sadly neglected. The shapes and arrangements of the windows of the clerestory are specially interesting, and very unusual. Over the piers to the arches on the south side of the nave are allegorical figures richly carved in stone, and still bearing traces of colour, while on the north side canopied brackets (also at one time coloured) contained statues, long since demolished. The font is a good example of 15th-century, and the pulpit of Jacobean, work. The latter is dated 1611. The present roof is a hideous arrangement of deal painted yellow, erected some thirty years since, which is shown on the section to be removed and replaced by one in oak, as near an approach to the original as can well be imagined, taking into consideration the fact that nothing remains as a guide. This roof is similar to those of neighbouring churches. The roofs to both north and south aisles are Mediæval, presenting remains of good 15th-century carpentry (fortunately affording traces of what the nave roof must have been while existing). The windows to both aisles are Perpendicular, undoubtedly replacing the Decorated. The chancel seems rather small in proportion to the size of the nave, and is entered by a rather low arch, which has been cut away to allow room for the apex of the cross over the rood. Part of the rood stair and the hooks and staples for the screen remain, but there is, unhappily, not a vestige of the latter. Six old miserere stalls still exist. The north and south transepts are shown in their restored state, as also their roofs; the nave and chancel roof to be releaded, and a new wooden spire to the tower, covered with shingles, as suggested. We are indebted to the diocesan surveyor, Mr. Herbert J. Green, of Norwich, for the drawings of this church. We gave a sketch of the porch in the Building News for September 6, 1889.

FOREIGN THEATRES.

For description and further sketches see paper on "The Modern Theatre of the Continent," by Mr. Edwin O. Sachs, on page 839.

* * *

A new board school is approaching completion at Stafford. Mr. Nicholas Joyce, of that town, is the architect, Mr. Jervis the builder, and Mr. Pebworth the clerk of works.

The catacombs of Syracuse, in Sicily, form a great subterranean town, with numberless tombs cut out of solid rock. Dead of all ages, from those of the Greek invasion to those of last year, are there interred.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Carlisle Architectural, Engineering, and Surveying Association.—A meeting of the above association was held in the Town-hall, Carlisle, on Monday, Dec. 10, when a paper was read by Mr. Edwin B. Newton, city surveyor's office, Carlisle, on "Gauging the Flow of Water." The lecturer commenced by giving a brief summary of the history of the science of hydraulics, mentioning the earliest experimentalists and the results they arrived at. He then gave comparisons of the various formulæ in use at the present day, referring especially to those by Darcy and Rutter, pointing out the shortcomings of all, and expressing the view that to obtain a correct formula capable of universal application what was needed was accurate and careful observations of actual flow, and notes made of the various atmospheric and natural conditions prevailing at the time the experiments were made. He then described the various forms of current meters, and detailed the operations necessary in gauging the flow of a river by means of floats, &c. The lecturer then explained the methods of gauging water by means of weirs of various shapes, and gave as his opinion that rectangular weirs were best for moderate flows. The several formulæ for calculating the discharge over weirs were explained. The lecture was illustrated by diagrams and various instruments kindly lent by the city surveyor of Carlisle, Mr. W. Howard-Smith.

Sheffield Society of Architects and Surveyors.—The monthly meeting was held on Tuesday evening, the 11th inst. A lecture on "Wentworth House: Historical, Descriptive, and Illustrative, with Practical Observations on some Materials used in the Building," was given by Mr. William Dickie. The lecturer referred to the early ancestry of the Fitzwilliam family, and carefully traced the history of Wentworth Woodhouse from the middle of the 16th century to the present time.

CHIPS.

The parish church of St. Luke, Farnworth, Lancs., is undergoing restoration at a cost of £4,000, and will also be provided with a new organ as a special gift. The architects are Messrs. Paley, Austin, and Paley, of Lancaster.

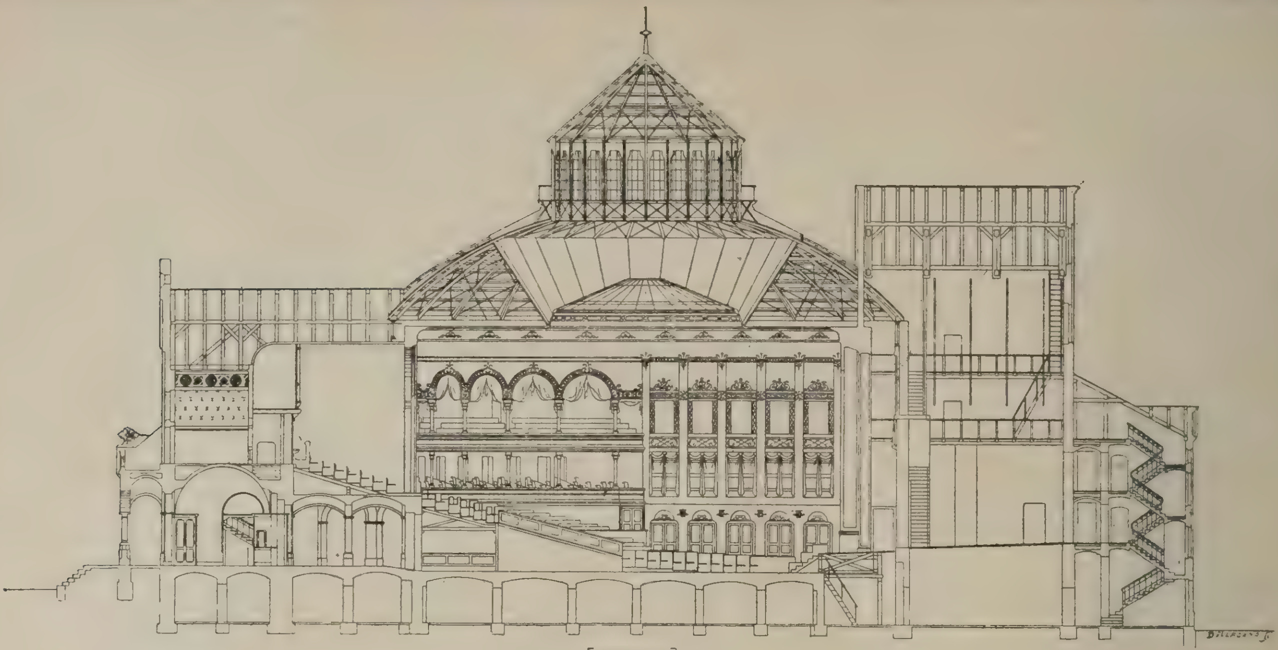
The governors of Christ's Hospital have come to a final decision to adopt the Horsham site for the new school. We illustrated the selected design for the buildings, that by Messrs. Aston Webb and Ingress Bell, in our issues of June 22 and 29 and July 6 and 13 last.

Major-General Phipps Carey, an inspector of the Local Government Board, held an inquiry at Shipley, Yorks, on Friday, as to an application by the Shipley Local Board for powers to borrow £55,000 for sewage-disposal works and refuse destructors. Mr. John S. Rhodes, clerk to the board, explained that the board proposed to collect the sewage of Windhill and Shipley into two trunk sewers—one by Bradford Beck and the other by the river Aire—and convey it to a site at Dockfield for treatment. The two engineers, Mr. Woodhead and Mr. Paterson, explained the scheme.

A piece of ground in St. George's-road, Truro, formerly known as Culver's Close, which Alderman Heard has purchased and laid out as public gardens, was formally handed over to the citizens on Friday. The land has been laid out under the direction of Mr. John Mitchinson, and is divided into flower-beds, terraces, and grass plots, intercepted by curved paths.

The annual general meeting of the Cardiff Master Builders' Association was held at the Angel Hotel on Wednesday week, the vice-president, Mr. F. S. Lock, being in the chair. The election of officers for the ensuing year took place, with the following result:—President, Mr. Alderman D. Jones; vice-president, Mr. F. S. Lock; hon. treasurer, Mr. W. Geen; hon. auditors, Messrs. L. Purnell and J. E. Turner; hon. secretary, Mr. W. M. Shepherd.

The pair of fountains and one pair of the vases on columns, which were presented some time ago for the Hanley Park, are now erected on the terrace in the Cauldon grounds. They are all in bronzed iron, manufactured by the Coalbrookdale Company, except the stone bases. The fountains are each about 8ft. high, including the stone bases and plinths, the latter being 10ft. in diameter. One is surmounted by a water-carrier figure, and the other by a kneeling boy. The fountains are placed upon carved stone bases and plinths, executed by Messrs. R. and W. Burt, of Stoke. The two laurel vases, on columns already erected, are nearly 6ft. in height. There are two more pairs of vases and columns, of other two designs, being prepared at Coalbrookdale.



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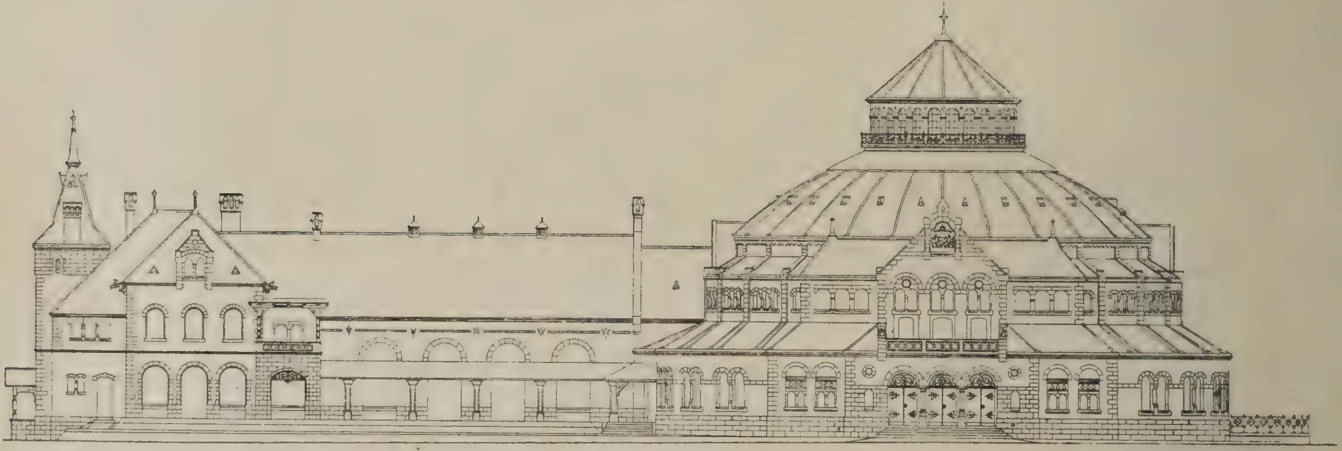
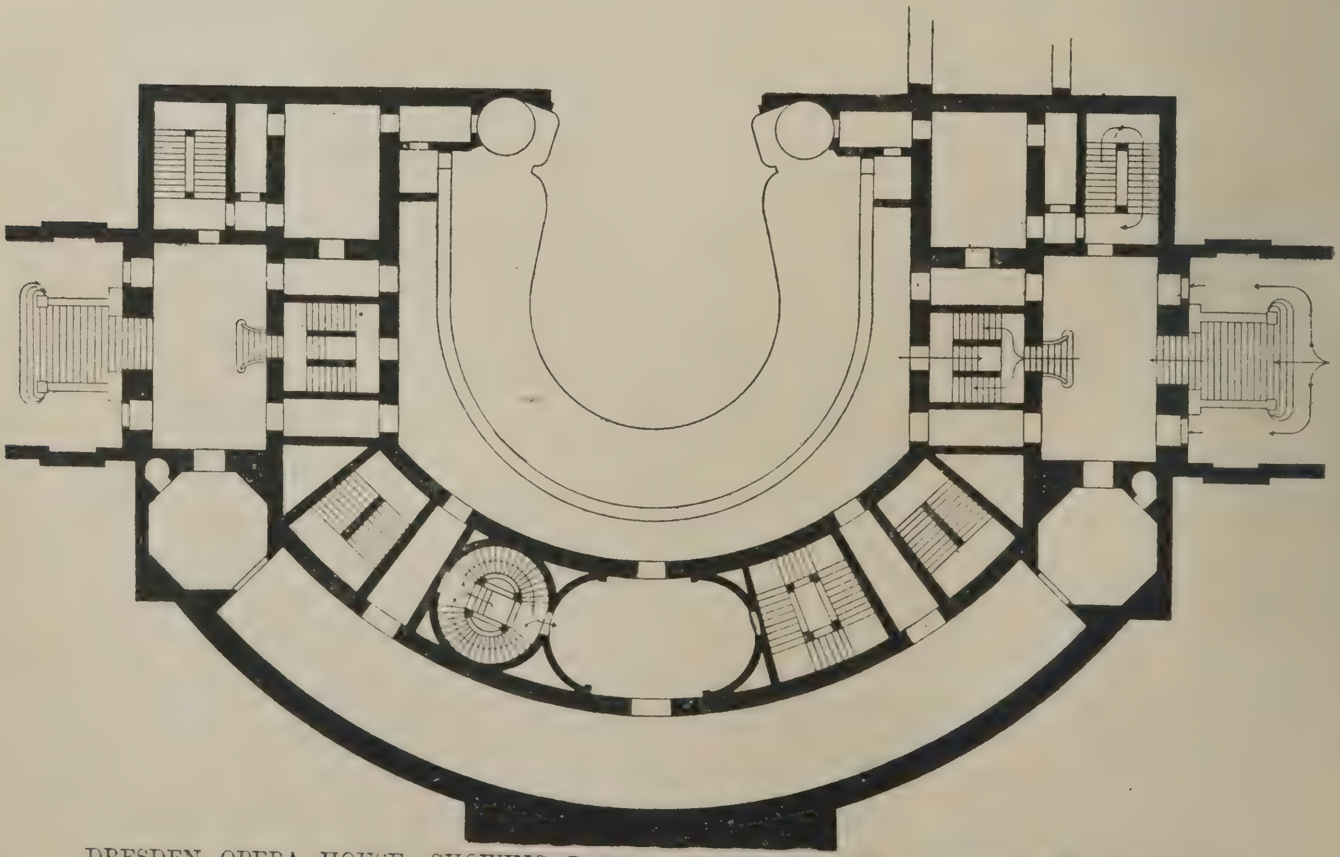
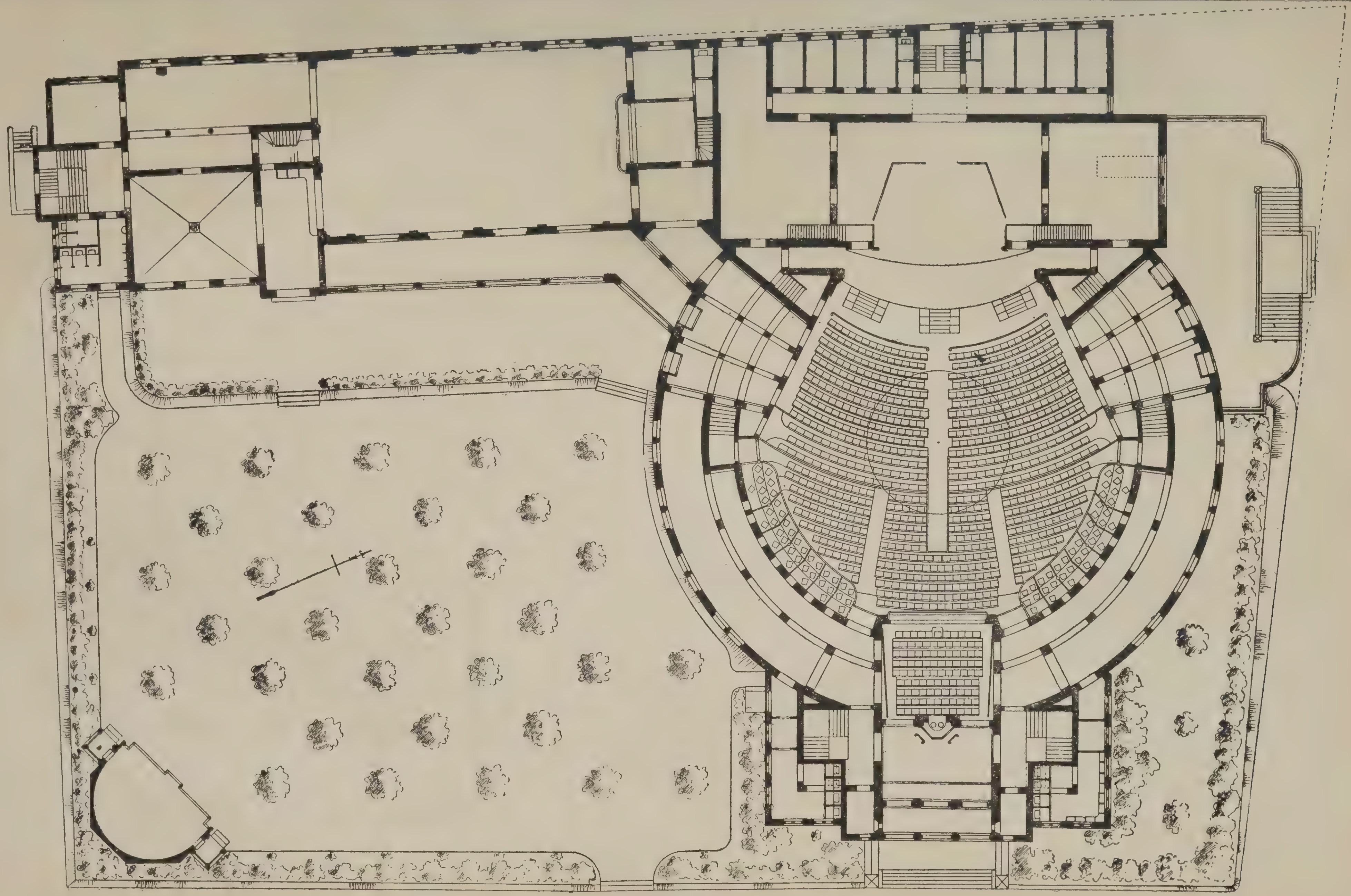


[ELEVATION.]

WORMS PEOPLE'S THEATRE.—*Architect:* Otto March, of Berlin.



DRESDEN OPERA HOUSE, SHOWING RADIAL STAIRCASE AND CURVED FOYER SCHEME.



[GROUND PLAN.]

WORMS PEOPLE'S THEATRE.—*Architect:* OTTO MARCH, OF BERLIN.

WAYSIDE NOTES.

Who'll swallow the Leek? It *is* a mouthful this time! Send in the guineas, and get ready for the magnificent opportunity offered to architects by the Leek Improvement Commissioners next March. Three premiums of £50, £25, and £10 offered for the three best designs for new covered markets, *all three premiated designs to become the property of the Commissioners*, who reserve the right to appoint their own architect. That is to say, in all probability, for the small sum of £175, the Commissioners hope to get the best ideas of the profession, and to "convey" them with the aid of their own man-of-all-work. In the absence of any guarantee to the contrary, and in default of the appointment of a professional referee, I am going to spend my guinea in Christmas crackers, and I wish something a trifle more startling may explode a little consideration into the minds of these very wide-awake gentlemen at Leek before the festive season closes.

I hear that the new wing of the General Post Office is expected to be ready for occupation by the end of next March. The building is now in the hands of the Office of Works, who are busy preparing the place with furniture and fittings for the staff of the secretary's office and that of the accountant and receiver-general's department, who are to migrate there from their present premises in Newgate-street. The Telegraph department will absorb the whole of the vacated quarters, and even this enlargement will give barely sufficient accommodation for the operators, so great has been the development in recent years of this branch of the Post-Office service.

From a report on sewer ventilation just issued by the city surveyor of Hereford, it is evident that the best and cheapest mode of sewer ventilation is by connection with tall chimneys where that is possible. In the instance where this was effected at Hereford the first cost was only £12 12s., the annual after cost nil, and the average extracting capacity 4,468c.ft. per hour; while with ventilators, extractors, and destructors the first cost varied from £20 3s. 8d. to £38 1s. 9d., and with one system there was an annual after cost of £29 16s. The average extracting capacity of ventilators and extractors varied from 267c.ft. to 2,291c.ft. per hour. Unfortunately, high chimneys are not always available; but in view of the objections to most extractors and ventilators, and the high annual after-cost of same, it is doubtful whether, after all, it would not be cheaper for sanitary authorities to build them, than to rely on gas-lamp destructors and ventilators.

The German Kaiser has the ill-luck to rub raw many people—among them Herr Wallott, the well-known architect of the new House of Parliament at Berlin. As will be remembered, the Emperor crossed the name of Herr Wallot off the list of those who were proposed at the last Exhibition for the gold medal, which Madame Vilma Parlaghy, the painter, received. This and some other occurrences of the kind were the subject of a group of humorous plastic representations at a banquet given to Herr Wallott by the Berlin Union of Architects. There was a model of the new House of Parliament. The foundation was built of black bread, the pillars of sausages, the cellars of Swiss cheese, and the ornaments of confectionery. The dome consisted of a real cheese dish-cover. The Germania on the top was a smart lady's maid, whose horse was led by a lackey. The whole was called "The Acme of Taste." The Emperor, as will be remembered, called the new Parliament House the acme of bad taste. A sort of automatic machine was also shown, with the inscription: "On throwing the great gold medal into the slot, the song 'An Ihr' ('To her') is played." The "her" evidently means Madame Parlaghy. The model of a lustre (called in Germany "crown-lighter") hung from the ceiling, and was in the form of an old crinoline. A "prize fresco for the Parliament Hall of the Reichstag" treated of the latest occurrences. President von Levetzow is shown receiving a kick from Herr Singer, and Herr von Manteuffel wringing his hands over it. Militarism was represented by a musketeer, who is flogging the representatives of other classes of the population. At the entrance to the banquet-hall there hung from a cord a great gold medal which a lady painter tries to grasp. In the speeches the feeling prevailing was expressed more seriously. Herr Wallot especially spoke impressively of his regret that he was forced to hasten the building. The chairman of the Union of Berlin Architects presented Herr Paul Wallot with a laurel wreath with the words: "The New House of Parliament, on which in invisible letters the golden inscription stands, 'To the German People,' is a triumph of German art."

The panic at the Belfast schoolroom shows the usual carelessness and neglect exhibited in conducting such entertainments within premises unfit, and not built for, the reception of a public audience. The continuance of the practice of giving entertainments in schoolrooms and halls which are not licensed or certified by the authorities as fit for the purpose is surprising, and, to say the least, not legal. In almost every district these illegal performances are given nightly, especially at this time of year, and the greatest offenders in this matter are a class of people to whom one would naturally look to uphold the law. We refer to the clergy and officers of churches and chapels, who organise these entertainments in connection with the various sections of their work. It is quite true that there are some schoolrooms in and around London where the parson holds a license for music, &c.; but the number is indeed small compared with the many without. The fatal panic at Belfast is commented upon in a leader in the *Standard*, which states that the real lesson to be learned is that a crowd of children should never be left to take care of themselves. In our humble opinion the real lesson to be learned is that entertainments of this kind should never be illegally given in unlicensed premises where the ordinary measures of safety are not insisted upon by the authorities. The simple provision of a few oil-lamps would have saved the lives of the little ones lost at Belfast, and had the premises been under the authorities no doubt they would have insisted—as all English and Continental authorities do—that all places of public entertainment should be provided with two distinct means of lighting the exit-doors, passages, and staircases. Again, the position of the gas-meters must have been a faulty one, or there could have been no possibility of tampering with them.

Mr. Edwin O. Sachs, in the two lectures delivered by him last week—one at the Society of Arts, and the other at the Association—emphasised the necessity of teaching people, when children, to leave a building on the follow-my-leader lines as a training in after-life against losing their heads in cases of panic and alarm. This teaching of Mr. Sach's should receive the attention of the School Board.

Mr. Batsford's paper on "Architectural Books," read at the Society of Architects on Tuesday, was a most valuable contribution to architectural bibliography. I heartily recommend every student to buy an extra copy of to-day's Building News, or to get the number of the Society of Architects' *Transactions* containing it, and to keep it carefully as a reference-list. Few young architects can afford to buy all the books—even at Batsford's, where bargains tempt some of us oft-times; but all young architects should borrow them, and read them somehow. It is something to be proud of, moreover, that no art can boast a more able and unselfish set of literary contributors than English architects, most of whom have worked, at great personal loss, for the benefit of their fellow students, whose debt of gratitude is a very real one.

The gifted architect of that magnificent Renaissance Church, the Brompton Oratory, has passed away at a prematurely early age before the completion of his great work; but it is some consolation to know that it will be finished entirely on the lines of his design. Few architects of this generation will have left their mark more indelibly on the ecclesiastical art of the century than Herbert Gribble, who died last Saturday. In many respects differing from the other great Catholic architect of the age, Augustus Welby Pugin, there was this in common with the two: their utterly unselfish devotion to their art, and the complete absence of the least taint of the commercialism that has marred some careers. More years ago than I care to remember I predicted to Herbert Gribble himself the career that was before him, and long afterwards—partly in reference to my prognostications, and partly to the first success of his student days—the winning of our "Sketch Book" Prize for his remarkably able drawing of Westminster Abbey, he used in familiar conversation playfully to style himself "The Child of the Building News." There were few men that I have known more thoroughly deserving of the success he gained, and few who will be more regretted. "R.I.P."

London's County Hall is still to be built, the County Council having resolved, at its last weekly meeting, that in the mean time the present offices at Spring-gardens must suffice, with whatever additional accommodation is necessary and can be acquired in the neighbourhood. This decision was based upon a report by the Establishment Committee, in which it was stated that full inquiry had proved the unsuitability of any portion of the Liberator buildings on the Victoria Embankment. Lord Monkswell, at whose suggestion the inquiry was undertaken, complained of bias on the part of the committee; and Mr. Fardell, in moving for a further and fuller report, to be prepared in conjunction with the Official Receiver, declared that if it had not been for Lord Rosebery's powerful opposition a year ago, when a similar scheme was discussed, the Council would either have erected a new hall at Westminster, or have removed to more suitable offices. Having adopted neither of these alternatives, Colonel Hughes suggested that probably the Council was delaying until the House of Lords was available for use as a sufficiently stately and dignified County Hall; but if not, he thought they should await the result of the Unification Report, when they might probably capture the Mansion House. Mr. Fardell's amendment was lost, and the Council finally agreed that it was undesirable to take any steps for the acquisition of the Liberator buildings.

CHIPS.

Mr. Joseph Mears, builder and contractor, of Kensington, died very suddenly on Friday at his residence in Earl's Court-road. He was in his 53rd year.

The city council of Chester on Wednesday sanctioned a plan for the widening and improvement of St. Werburgh-street. The buildings on one side of the street have been purchased by the corporation, and these are to be pulled down for the purpose of widening the street. The effect will be that a much better view of the cathedral will be obtainable from the main street, and the approach to the cathedral will be greatly improved.

The Conway and Colwyn Bay water committee have received a report from Mr. Fenwick, the arbitrator in the dispute between Mr. Jones and the board, announcing his award as to the value of easements upon property in the Conway Valley, the amount being over £700.

The corporation of Bristol have acquired, for the citizens, the Museum and its valuable collections, the sum of over £2,870 having been given by the residuary legatees of the late Sir Charles Wathen to enable the transfer to be made. The building has remained in an unfinished state since it was opened twenty years ago; but it is now being decorated from the original drawings prepared by the architect, the late Mr. Foster, under the direction of Mr. W. V. Gough, of Bristol.

Mr. J. Passmore Edwards has promised the Shoreditch Library Commissioners a contribution of £1,000 towards the erection of their second library in Pitfield-street, as soon as they are ready to have the foundation-stone laid. This offer will bring up Mr. Edwards's donations to the Shoreditch libraries to £5,250 and 1,000 books.

The peal of bells in the church at Gillingham, Dorset, has been restored and rehung by Messrs. Blackbourne and Greenleaf, Salisbury, at a cost of £150; it is now proposed to augment the peal by adding first and second bells, at an expenditure of £125.

At a meeting on Friday of the baths committee of the Bath city council, Mr. J. M. Brydon, architect of the Pump Room extension, showed the perspective view of the Roman bath with the water left uncovered and the colonnade over the *scholæ*, as decided by the committee a fortnight previously. Mr. Lewis moved the recommendation of the plans for adoption by the council, saying he had contended for Major Davis's plans as long as he could, believing them to be best, but he acknowledged himself beaten, and there was a point at which opposition became faction. The motion was carried by 11 to 1, six members not voting. The Local Government Board having already given their sanction to the scheme, the last obstacle towards carrying out the extension in accordance with Mr. Brydon's plans, selected in the recent noteworthy competition, is now overcome.

THE MODERN THEATRE OF THE CONTINENT.

By Edwin O. Sachs.

At the fortnightly meeting of the Architectural Association, on Friday night, Mr. Edwin O. Sachs read a paper entitled "The Modern Theatre of the Continent," illustrated by a large collection of valuable drawings, which had been brought together with much trouble and great expense. Among the drawings we noticed some from Russia and Sweden, besides a large number from countries less remote. Among the former, Prof. Schroeter's set, showing the proposed Imperial Opera House at St. Petersburg, were greatly admired, and some curiosities from Tiflis in the Caucasus, Nischni-Novgorod in the Urals, and Irkutsch in Siberia excited general interest.[*] Having referred to the lecture by Mr. Ernest A. E. Woodrow on "The Requirements of a London Theatre," read before the Association in March, 1892 (fully reported in the Building News for March 25, 1892), the author said he proposed to treat chiefly on buildings where the financial aspect as a rule played only a minor part for all concerned. Thus, at Halle, the competition conditions required a building for £21,000; the architect's estimate on receiving the commission figured at £25,000, and the actual cost was £39,000. Herr Seeling, of Berlin, was the happy architect. He proposed to restrict attention to the countries in which the theatre matters were treated on German lines—those of Northern and Central Europe—and to the theatres erected within the last twenty years. It was common to hear the greater size and the elaboration of the Continental theatre ascribed to the advantage of "State aid"; but it was by no means the important factor it was represented to be over here. The number of National or Government theatres was comparatively very small. The majority of the theatres were the outcome of municipal efforts, the results of voluntary subscriptions and guarantee funds, or of the liberality of royalty. Continental theatres could be classified as follows:—I., Court theatres; II., National and Government theatres; III., municipal or district theatres; IV., subscription theatres, with or without Court, Government, or municipal subsidy; V., private theatres, with or without Court, Government, or municipal subsidy. The private theatre alone was intended to be a money-making concern, which would amuse or educate its patrons according to the local requirements. The others were built without any mercenary motive, either (1) for the satisfaction of luxury, (2) for educational purposes, or (3) for recreative purposes; or for a realisation of any two of these intentions, and even all three in exceptional cases. The Court theatres were essentially the luxury of royalty, originated and kept up at their expense. The public visited these playhouses on sufferance to enjoy the exhibition at a smaller outlay than would be their lot if the institution were run on commercial lines. All officials were admitted on the free list. The Government institutions, which were paid for out of the taxes, were practically only open to a limited number of the wealthy and cultured, as the few occasions on which the doors were thrown open to all comers were rare indeed. The municipal theatre was generally intended for educational and recreative purposes, and outside the actual outlay for the building, the ratepayers, as a rule, only had to make up the small difference between the actual expenditure for the maintenance and management and the amount received for admission. The favourite mode of management was to put the building and fittings at the disposal of a good manager, and to allow him a small subsidy conditionally that a fixed approved scale of admission and booking charges was not exceeded, rules being laid down as to the state in which the building was to be kept. The municipal theatre was the public assembly-hall of the town, in the fullest sense of the word. The subscription theatre was run on similar lines to the municipal institution, with the great difference that its existence was primarily due to a desire on the part of the cultured and moneyed to obtain the luxury of a good play; but their contributions might also be partly considered as a gift to the locality. The municipality often gave substantial help, partly perhaps in the form of a good site, and partly in a subsidy towards keeping the building in repair. The latest outcome of the subscription theatre was one built and run on democratic lines for the education and recreation of the working classes. The private theatre abroad was managed on precisely the same principles as our own. The lecturer dealt at some length with the different classes of entertainments given in the theatres of the Continent, showing that the constant change of bill which characterised the performances necessitated plenty of storage accommodation and a more roomy stage than we were accustomed to, while actors, managers, engineers, and the lighting department all wanted more space. He asked the indulgence of the audience, as he proposed to venture on some laudatory comments on the architecture shown in the modern Continental theatre, and that in a room where sweeping condemnation and pessimism for everything done by modern architects seemed to be considered attractive. In particular he must protest against Mr. Beresford Pite's recent attack on the Paris Opera House as an "abortion." Mr. Sachs pointed out that English theatres, as a rule, simply required architects who were clever planners, good constructionists, and business men. It was a minor consideration if the architect possessed art feeling, if he had an art ghost, or simply relied on some fibrous plaster manufacture for his so-called art. If anything, it was more important that he should have the talents and facilities of a financial agent or company promoter. Continental theatre architects attached the greatest importance to the art side of the profession. They were allowed to have ghosts; but these phantoms only belonged to the species that revelled in specifications, sanitation, warming and ventilation, stresses and strains. He had to be conversant with the *art* of planning, but was not necessarily an expert in the details of stage machinery or electric lighting. The modern Continental theatre demanded a maximum amount of real beauty, including the most careful blending of architecture, sculpture, and painting, and this where all the practical requirements were generally against the realisation of perfection, and where the requirements were more complicated, numerous, and essentially technical than in any other class of work. The architects of Continental theatres had ranked among the foremost men in the profession. Thus the late Gottfried Semper in Germany, Baron Hasenauer in Austria, Von Ibyl in Hungary, Basile in Italy, and among those still living, Garnier of Paris, Anderberg of Stockholm, Schroeter of St. Petersburg, Messrs. Fellner and Helmer and Seeling of Berlin, might be named. Possibly the audience could not hear in some parts of the beautiful Hofburg Theatre at Vienna, or they might complain of the heavy interior decoration of the Opera House at Buda Pesth; but taken as a whole, there were few buildings, old or new, that could be said to surpass the great Continental theatre of to-day. In their architectural variation and adaptation they showed an immense amount of originality and true art. He would ask whether Messrs. Semper and Hasenauer's "Hofburg" theatre was not very near perfection, and full of originality?

THE BUILDING.

General.—Taken generally, Continental theatres were oblong in plan; in some cases the front was rounded, showing the outline of the auditorium, and in some instances there were wings on either side of the main block. The audience were always above street-level, and the building was always distinctly divided into two parts: the so-called front and back of the house. As the modern Continental stage required great height, the grouping of the block generally showed this part of the building taken up separately to the prominent feature. There was seldom any attempt nowadays to put the whole of the building under the one roof. Continental theatres all showed symmetrical planning and ample dimensions, and there were few that appeared structurally badly built. The buildings had all been put up under watchful permanent authorities, who were guided by well-considered regulations, and have ample powers. They had nearly all been erected by men who had a horror of running the risk of a repetition of the Ring Theatre fire at Vienna. Architects had but seldom opposed safety legislation, or tried to avoid its requirements. The so-called front of the house was generally palatial in feeling, whilst the back had a utilitarian look about it. The lecturer regarded many of the municipal and subscription theatres as too palatial and too luxurious for their intended audiences. As to site, there were few modern theatres abroad that did not stand perfectly isolated; but an audience would be well cared for if only two sides of the block faced thoroughfares. Symmetrical planning was, the lecturer held, the first necessity for a theatre that was intended to be a safe one. The positions of all passages and staircases on outside walls was the second essential, and the possibility of approach to every part of the building from outside was the third. Now, all this was only possible where at least two sides of the block were perfectly free. To have the front of the site as well as the two sides free was, of course, a great advantage; but to have the main front, one side, and the back open would be far worse than to have only the two sides free. The chief advantages of planning a theatre in an open space were the greater facilities for the distribution of crowds and easier manœuvring for the fire-brigade.

Front of the House.—Dealing with approaches, entrances, and exits, the author showed that great care was taken on the Continent to facilitate the approach of the audience. Those who arrived by carriage would nearly always enter the building under cover, while those coming on foot had numerous advances from at least two sides of the building. Great care was taken to avoid draughts by having double or even treble sets of swing doors. Excepting in the grandest houses, all playgoers had to pass the main vestibule, where the box-office is situate, and this also applied to the visitors who took the comparatively few unnumbered seats. The symmetrical planning of the Continent allowed for the nominal division of the building into the "right" and "left," as seen when facing the stage. Tickets were issued for the right and left of the auditorium, and all passages and staircases were labelled on that principle. All passages and staircases could be used freely, and this, besides facilitating the finding of seats, taught the audience the nearest exits. The London system of allowing only one approach to each tier, whatever the number of exits might be, was radically wrong as far as the safety of the audience was concerned, although fewer ticket-collectors were thus required. On the Continent, though, all staircases and passages were approached from the main vestibule, and all had separate exits leading direct into the open without passing the vestibule. Clear planning was favoured abroad as distinct from intricate and tricky planning, and this even at the cost of much valuable space. Passing on to consider the passages, Mr. Sachs remarked that one of the chief features of Continental planning were the broad passages and corridors, and the fact that, with few exceptions, these passages ran round the two sides and back of the auditorium. The Continental theatre-goer had usually to take off his wraps before taking his seat, and it was a favourite plan to provide long counters off the passages, behind which there was ample storage room. These counters were so recessed as not to obstruct the passages. For cloak-room tickets, the plan of allowing a bin for each seat, and then giving the bins the same numbers as the seats, had been found very practical. The ladies were by no means so particular abroad as to their retiring rooms as in this country, and there was no objection to their being in a conspicuous position. The placing of lavatories off main passages, which we should consider faulty, was also *en règle* abroad. The passages generally had direct light, and were well ventilated. In regard to staircases, the grand staircase, the great feature of the old Continental theatre, was gradually disappearing abroad, and where found, its *raison d'être* was generally partly lost through their being quite sufficient staircase accommodation provided independent of its existence. The grand staircase was recognised as dangerous for the rapid exit of the crowd, as its pretensions and architectural treatment necessitated arranging it in broad flights. Flights of

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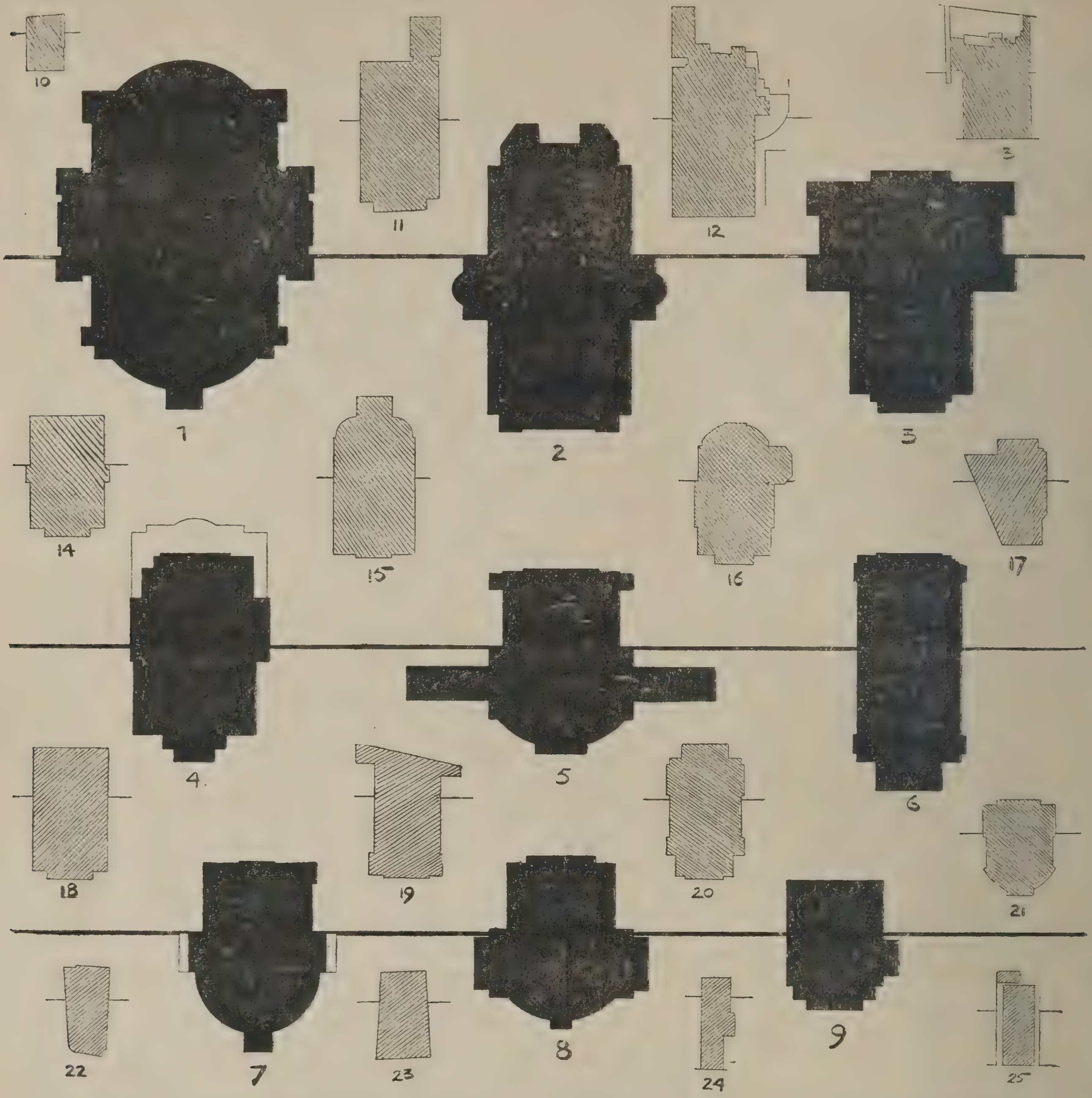
[*] The illustrations on view included the actual working drawings of the late Hon. Correspondents of the Institute, Baron Hasenauer, Gottfried Semper, and Von Ibyl, who are respectively the architects of the Hofburg Theatre at Vienna, and the Dresden and Buda-Pesth Opera Houses. Russia was well represented by some finely-coloured drawings by Professor Schroeter, the Czar's theatre architect. The People's Theatre at Worms, which was one of the features of the evening, was illustrated by large sheets in body-colour. Drawings of the following theatres were exhibited:—Amsterdam, Municipal Theatre, Springer; Berlin, Lessing Theatre, Von der Hude; Berlin, New Theatre, Seeling; Brussels, Flemish Theatre, Baes; Dresden, Court Opera House, Semper; Buda-Pesth, National Opera House, Von Ibyl; Halle, Municipal Theatre, Seeling; Leibach, Municipal Theatre, Hrásky; Rotterdam, Subscription Theatre, Verheul; Schwerin, Court Theatre, Daniel; Stockholm, National Theatre, Anderberg; Vienna, Court Theatre, Hasenauer; Worms, People's Theatre, March; St. Petersburg Opera House, and Nischni-Novgorod, Rybinsk, Tiflis, and Irkutsk (Siberia) Theatres, all by Professor Schroeter.

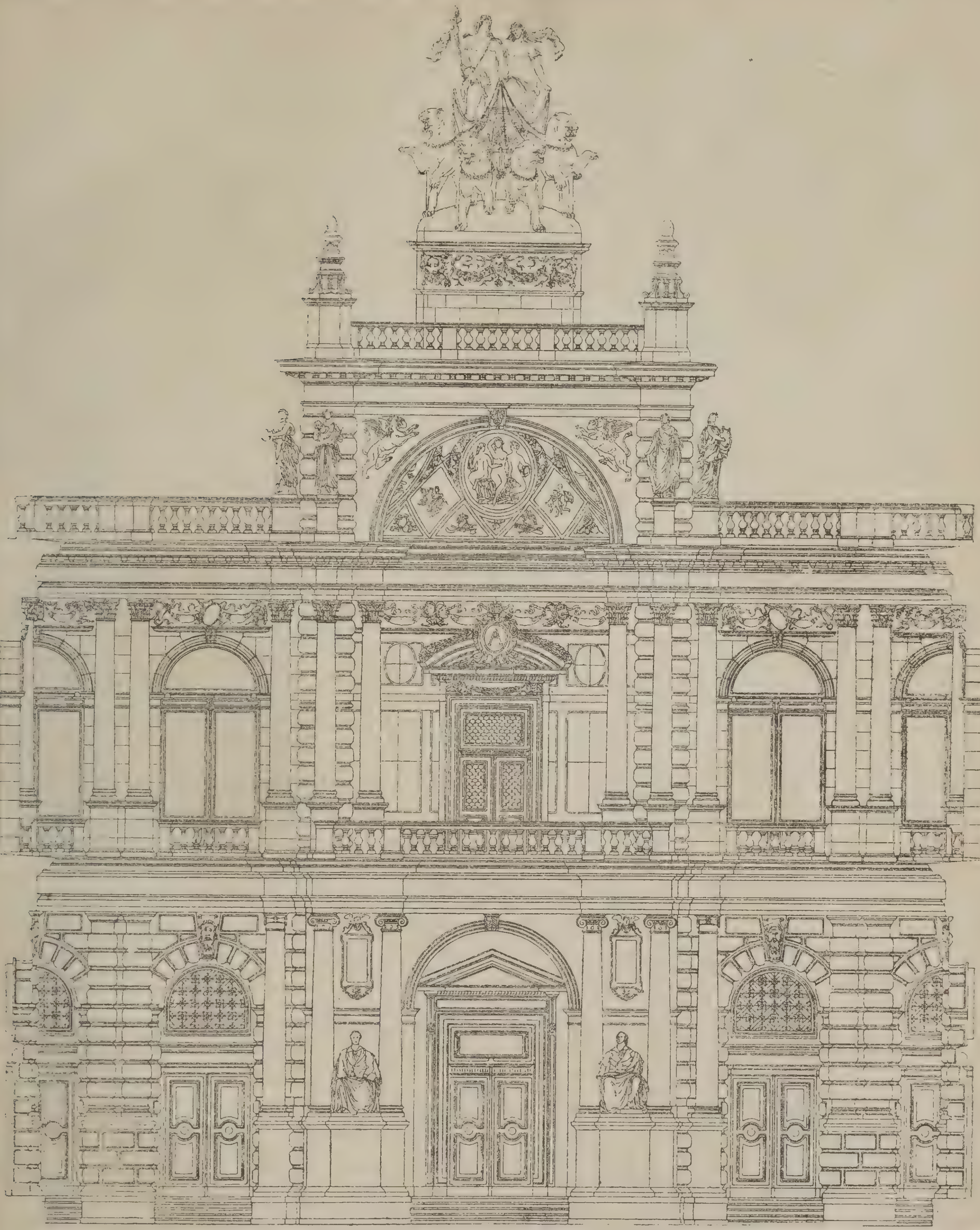


BLOCK PLANS OF MODERN CONTINENTAL THEATRES, DRAWN TO A UNIFORM SCALE.

Blacked-in Plans.—1, St. Petersburg Court Opera House; 2, Paris National Opera House; 3, Vienna Court Opera House; 4, Stockholm National Opera House; 5, Vienna Court Theatre; 6, Buda-Pesth Court Opera House; 7, Odessa Municipal Theatre; 8, Dresden Court Theatre; 9, Amsterdam Municipal Theatre.

Hatched-in Plans.—10, Royal Court Theatre, London; 11, Covent Garden, London; 12, Drury Lane, London; 13, Alhambra, London; 14, Fiume Municipal Theatre; 15, Buda-Pesth People's Theatre; 16, Halle Municipal Theatre; 17, Lyric Theatre, London; 18, Zurich Municipal Theatre; 19, Berlin "New" Theatre; 20, Berlin Lessing Theatre; 21, Laibach Municipal Theatre; 22, Savoy Theatre, London; 23, Shaftesbury Theatre, London; 24, Terry's Theatre, London; 25, Trafalgar Theatre, London.

staircases which allowed more than four persons to ascend abreast were dangerous on account of stumbles. There was the makeshift of a light iron railing running up the centre of a broad flight, but those bars spoiled the design of any staircase. At Copenhagen these were demanded by the regulations, and the effect was always atrocious. The modern Continental architect had three systems of staircase arrangement—the "central," the "radial," and the "corner" plan. The first allowed of a grand central staircase, generally without direct light, or at the most a top light. On either side of this grand staircase the minor flights were grouped. The Stockholm Theatre and the Frankfort Opera House were examples of this system. The radial plan allowed of the arrangement of the staircases in a row, concentric with the back wall of the auditorium. The staircases to the first tier were then generally on either flank, and were frequently treated as minor grand staircases. The Dresden Opera House and the Odessa Municipal Theatre were examples of two varieties of this system, one with direct lighting and the other without. The Lessing Theatre at Berlin was an example of the former system: there was no grand staircase, and the stairs leading to the best seats only showed a slightly superior architectural treatment. From an architectural standpoint, the disappearance of the grand staircase was to be regretted. The radial system of staircases was gaining ground already, and was the best for the quick distribution of the audience. Dealing next with the foyer, or crush room, the author remarked that this was perhaps the most important feature of the modern Continental theatre. We find, Mr. Sachs added, what I will call the "hall" foyer, the "group of rooms" foyer, and the "promenade" foyer. The first is generally a spacious rectangular hall, situated over the main vestibule. It serves as the assembly room for the patrons of the better seats who stand about and chat during the long *entr'actes* allowed abroad. The hall is, generally speaking, used for receptions, and fequently also for concerts. No concert would, however, be given at the same time as the performance on the stage, for the staircase and passage accommodation would not be sufficient. Where there are groups of rooms the smaller ones are, as a rule, provided with chairs and lounges arranged drawing-room fashion, while the larger one is used as a kind of miniature promenade. Foyers, arranged on these lines, cannot well be used for concerts, but small receptions can, of course, be held in them. The Schwern theatre affords an example of the large "hall" foyer, while the Buda-Pesth opera-house shows a set of crush-rooms. The "promenade" foyer is the most satisfactory one; it best fulfils the requirements of those who wish to easily stretch their limbs and meet their friends between the acts. A stroll will refresh the playgoer, but must not be a monotonous one. The long narrow foyers of the Paris or Vienna opera-houses are already very satisfactory; but the curved promenades of the Dresden Opera House, the Vienna Hofburg Theatre, or the Odessa Theatre stand first. The curved foyer goes hand in hand with the radial staircase system already spoken of. Most of the curved foyers



DRESDEN OPERA HOUSE.—CENTRAL FEATURE OF FRONT ELEVATION.

Architects: Gottfried Semper and Manfred Semper.

have a roomy lobby at either end, where one can step aside for conversation. The foyers abroad nearly all have balconies or terraces connected with them, and these are much used in the summer. Doors from the foyers generally lead directly on to them, and the absence of any lobby is unfortunate. In Court theatres there is often a small central balcony or open loggia, and it is necessary to have some suitable, prominent point from which any demonstration outside the building can be duly acknowledged. The bar in connection with the crush room is generally only a kind of provisional table at the end of the room, around which a few tables and chairs are arranged.

As to the modern auditorium abroad, its principal feature is the absence of any boxes in our sense. The balcony has almost become universal, and though there are nominally boxes which allow parties of four, six, or more persons to form a group for themselves, they are not shut off pigeon-hole fashion as formerly. The ante-room for the box is also fast disappearing. The only boxes, in our sense, are generally the large open ones on either side of the proscenium opening in the general proscenium frame. The other so-called boxes are simply formed by dividing up the balconies with low partitions, and giving each division its own door. A compromise arrangement will be found in Semper's work The partition between his boxes is carried up, but is so cut away as to prevent the disadvantages of the pigeon-hole system without completely destroying all privacy. In a Court theatre, the large boxes on either side of the proscenium already referred to would be reserved for royalty, but the Court would also have a large open central box on the first tier. The side boxes are used for private visits, and the central box on State occasions only. These grand Court boxes are frequently most curious mechanical contrivances, which can be enlarged or made smaller at will. They are generally cut through two tiers, and are covered with a baldacchino. The auditorium is frequently turned into a ball-room abroad by putting in a temporary parquet floor on tressels level with the first tier. At times this floor is even extended right over the stage, which is then decorated as a kind of bower. Small Courts give their balls at the theatre if the palaces do not afford sufficient accommodation. Very few architects have been able to design an auditorium so that the temporary floor does not make it appear an architectural monstrosity. When speaking of the arrangement of the auditorium abroad, Mr. Sachs pointed out the ample seating and gangway accommodation provided, and the great care now taken to give every two or three rows of seats its own door. Herr Seeling shows the best example of safe seating in his Halle Theatre. Referring to the construction of the auditorium, he would only point out that there is no such excellent cantilever work abroad as is to be found in our Palace of Varieties. The latest development of iron and steel construction abroad shows the surrounding wall of the auditorium entirely built up of girders and plates; this is on account of the large number of flues and ducts that have to be found room for in Continental theatres. The Hofburg Theatre at Vienna affords an example of this system. Of course, if an auditorium of this construction. ever does get well alight, it means the immediate collapse of the whole structure. As to the architectural treatment of the auditorium, the ceilings are no longer designed so as to appear to be resting on nothing, but are visibly carried, preferably by Kariatides. The heavy columns in the French theatres are things of the past. The decorator and upholsterer are no longer permitted to use the stereotyped red and gold. Blues and rich yellows are finding favour in the upholstery, and white, picked out with gold, for the walls and cornices. The ceilings are kept quite light, preferably white, picked out to match the upholstery. As to the furniture, the tip-up seat with a small side-arm has become almost universal. It is well padded in the better parts of the house, but bent wood is a favourite for the cheaper seats. As the buildings abroad are only licensed to hold a certain number of seats, and this condition is very stringently enforced, benches which can be crowded are of no use to the manager, even in the cheap parts of his building. Hats and coats are mostly left outside, so that no provision need be made for these. The numbering of seats is always in plain block letters, odd and even numbers being allotted to the left and right of the house respectively.

The Orchestra.—The dimensions and position of the orchestra, of course, vary greatly, according to circumstances. A small house, Mr. Sachs, for instance, noticed had a string orchestra stowed away behind a grille in one of the upper boxes at the side of the proscenium. These upper boxes are generally almost valueless to the manager, and hidden music is very fascinating. The grille should be of bamboo, for iron gratings would change the sound of the music. We generally, however, find the orchestra abroad in its usual place, just in front of the stage, though generally sunk deeper into the floor than in England. Wagner always made a point of having a sunk orchestra for his operas, and he built one on these lines in his Bayreuth Theatre. What is desirable for Wagner's music does not, however, hold good for a light opera by Strauss or Sullivan, and hence the new invention abroad of a movable orchestral floor regulated by hydraulics. The first movable floor was completed last month at the new Wiesbaden Theatre. The idea is very good, and there is little doubt that it will soon be introduced in all theatres which have a great variety of programmes. Most orchestral wells abroad can of course, be made larger or smaller to suit special requirements—an extra row of stalls is either put in or left out. Great care is taken to provide good exits for the orchestra, and no connection between the stage, mezzanine, and orchestra well is allowed.

Safety.—Passing from the "front" of the house, Mr. Sachs said a few words as to the safety of life in theatres. To his mind, life is of major importance, and the building of minor consideration, and this especially held good in this country, where losses by fire count for nothing. Where life is the only consideration, perfect means of exit in case of panic comes first, and then the reduction of the risk of panic caused by fire by good lighting and warming appliances, cleanliness, careful stage management, slow-combustion stage plant, and perhaps the isolation of the building. As long as the staircases are well planned, they can be of wood. Fire-extinguishing apparatus is almost superfluous. If the property is to be saved, the building must be divided into a number of "risks," both horizontally and vertically. It should be built of slow-combustion materials, should have its own well-manned fire-extinguishing appliances, and not be too far from organised outside help. Whatever care is taken to save the audience, it will not count for much if they cannot keep their heads; and, likewise, whatever is done for the building, it is minimal compared to the advantages of the manager and his employés being practical men who are cool in all emergencies. One stage-carpenter's pluck and smartness, his cap and coat, have saved hundreds of lives that must have been lost had there been a panic in one of our mouse-traps.

Stage.—The most remarkable features of the Continental stage, according to Mr. Sachs, are the appliances. Stage mechanism is being treated as a science. Capable, scientifically-trained engineers replace the stage carpenter of old. The only wood to be found nowadays on or about the stage is generally in the stage door, and here hard oak or teak is used. But the reform is a *bonâ fide* one—not merely an adaptation of the old stage to suit modern requirements. The monstrosity of rows of "flies" and footlights which throw their glare upwards on the actor's chin instead of downwards on to his forehead are gradually being done away with, and the streak of limelight that used to follow the actor about will soon be forgotten. Mr. Sachs's arguments were here illustrated by some clever sketches of Prof. Herkomer, R.A. There are two systems of mise-en-scène: one requiring a close imitation of nature, the other attempting the simplest indication of general surroundings. For the imitation of nature, the so-called "horizon," the careful grouping, and the rational method of lighting are as essential as the scene-painter's handiwork. For the indication of surroundings, all attempts at perspective should be avoided. A well-painted background and monochrome drapery, instead of "flies," will suffice. The skill of the first-class engineer will only be required where the possible imitation of nature is needed, and with hydraulics at his disposal he will be able to supply any want of the artist, and this without any cumbersome crowding of the stage with all manner of platforms and supports. The system of the Vienna Asphaleia Company, the first attempt at entire reform of modern stage appliances, is gradually being improved upon. The great reformers of the modern Continental stage are the engineers Brandt of Berlin, Christofani of Buda-Pesth, Brettschneider and Rudolf of Vienna, Lautenschlaeger of Munich, and Richter of Darmstadt. As far as the risk of panic and fire is concerned, the iron stage does not, perhaps, have quite as many advantages as are generally ascribed to it. The canvas scenery always remains, and if it does commence to burn, the heat engendered will soon destroy everything, and probably the iron roof first. Electric lighting is, of course, a great improvement so far as safety is concerned, but absolute reliance on immunity from fire on account of its introduction would be reckless indeed. Some authorities regard an iron stage lighted by electricity practically safe. At Warsaw, Mr. Sachs visited the Opera House, which was being renovated regardless of expense, and found that the architect had purposely not allowed for an iron curtain, on account of the electric light and modern stage machinery. Of the disadvantages of iron stages, mention was made of their effect on the acoustics of the building, the difficulty of giving the stage a comfortable temperature in winter time, and, further, the greater risk of accidents to the *employés*. To improve the acoustics, the top of the stage is generally kept full of canvas, and this, of course, means an extra risk. Sprinklers, for instance, cannot be as effective where the streams of water are constantly blocked by rolls of canvas. When a fire has actually broken out on the stage, reliance is almost placed in the fireman, with the buckets of water, and then hydrants, being close at hand. Next come the sprinklers. The ventilation flue over the stage and the first divisional iron curtain are to prevent the spread of fire in the direction of the auditorium. Hydrants, with good reliable pressure, and hose and branch attached, ready to be run out, are always provided in great numbers in Continental theatres, and the cock can generally be opened with one movement only. Sprinklers are very common abroad in the new theatres; the rows are generally divided into sections, so that if necessary the force of water can be localised in one particular spot, and the danger of unnecessary water damage avoided. The ventilation flue, which is nearly everywhere found over the stage, and can be easily opened, is considered a safeguard for the audience in the case of the hydrants and sprinklers failing, as the smoke and fumes will be drawn away from the auditorium. The danger of having ventilators is the possibility that they may be opened too soon, before any water has been brought to play on the fire, and that the flames will thus be fanned and the spread facilitated. The divisional curtains are everywhere introduced abroad, and at present the only question ever raised is as to the advisability of having double curtains, either in the form of a second asbestos protector or a water-sheet. Without a ventilation flue over the stage the curtain will be pressed into the auditorium by the expansion of air on the stage. The lecturer here showed drawings illustrating the stages of the Buda-Pesth National Opera House and the Halle Municipal Theatre, both carried out by the Asphaleia Co., of Vienna; the Vienna Hofburg Theatre, of which Herr Brettschneider, of Vienna, was the engineer; and the Rotterdam Municipal Theatre, Herr Rosenthal, of Cologne, engineer. They showed respectively the original Asphaleia system, the improvements of Herr Brettschneider, and, finally, a simple adaptation of the old wooden stage with modern resources. The only thing remarkable about the stores in Continental theatres was the ample space allowed, both where the main stores were in the same block as were the audience, and where there was only a secondary store the main storage being outside the building. Where main stores were inside, there was always a double wall some 4ft. apart between the stage and the stores to prevent spread. In some cities the main stores had to be outside the building. This, of course, meant much wear and tear, and extra labour for the management. The St. Petersburg and the Paris theatres had very extensive buildings for storage purposes only. Dressing-rooms were generally well arranged on the Continent; but the absence of bath-rooms was remarkable, and the lavatory accommodation did not come up to our requirements. Proper arrangements for curling-irons and paint-warmers were seldom to be found, though very practical electric ones had been invented. In conclusion, the lecturer described the people's theatre at Worms, in which a theatre and assembly hall are combined. (See plan, section, and elevation.*) The building seated 1,200 or 1,400, and had 33 exits, and cost just on £30,000. Herr Otto March was the architect.

The PRESIDENT, in inviting discussion on Mr. Sach's paper, remarked that we had in this country only two theatres built on the sumptuous scale familiar on the Continent, the Palace Theatre and the Shakespeare Memorial at Stratford-on-Avon.

Mr. RICHARD ROBERTS, Chairman of the Theatres Committee of the London County Council, observed that while he had been for some years in favour of a municipal theatre, which he regarded as desirable from the people's point of view, and also from an architectural standpoint, he entertained considerable doubts as to whether the English were sufficiently educated to appreciate such an institution. The failure of the Royal English Opera House seemed to suggest that the English were not an artistic nation. One reason for the greater popularity of the music-hall and variety entertainment over the drama proper was the great expense attendant on going to a theatre. For himself, he should like to see a municipal theatre established, with a school of dramatic art attached to it, and it might be that such a school could be subsidised by the London County Council; but without a subsidy of some sort success could not be predicted for such a movement. It was singular that in this country wealthy citizens did not endow a theatre, as was so often done for churches, hospitals, or free libraries. He held that the site of a theatre ought to be perfectly isolated on every side; at present the L.C.C. had only power to insist upon making one-half of the site free, and even that was regarded as a burdensome restriction by managers. The architects of theatres were, he suspected, very much what managers made them, for they were bound to carry out their clients' instructions.

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* The illustrations we publish are from specially prepared tracings, the property of Mr. Sachs.

Mr. Mulholland, proprietor of the Camberwell Theatre, pointed out that however desirable a municipal theatre, subsidised by the ratepayers, might be in the interests of dramatic art, there were objections to such an institution. One of the principal was that where a single controlling mind did not regulate all that was undertaken the business was generally an artistic and commercial failure. A municipality would prove a cold and unsympathetic stepmother to art. He thought the plans of theatres should be submitted to a permanent authority of experts, who should promulgate and adhere to a definite code of constructional rules. Managers provided as good a theatre as was consistent with regard for £ s. d.

Mr. A. L. Leon, a member of the Theatres Committee, L.C.C., thought great objections would be raised by householders to a rate-supported theatre, which, moreover, would not thrive in this country. The Theatres Committee were often asked to sanction iron doors in theatres, but he would ask the lecturer if they did not involve considerable risk. The County Council were bound by the requirements of the Building Act in their restrictions on theatres, but when they sought to amend the provisions they found that managers were not agreed as to the changes they desired. If there was to be an improvement in theatre architecture public opinion must lead the way, and a permanent body would be less likely to be sensitive to progressive public opinion than one liable to re-election.

Mr. Thomas Blashill, F.S.A., superintending architect L.C.C., said he had inspected many of the Continental theatres described by Mr. Sachs. There was hardly one in a little German town but was so well isolated on all sides that you could drive two or three carriages abreast round it, whereas there were only two in the Metropolis round which one could drive, and a few others with a clear footway surrounding them, and many were only clear on two sides. English theatre architects went the wrong way to work in planning; they first arranged their auditorium and stage, and fitted the exits into whatever corners could then be afforded, whereas the first requirement should be to provide sufficient staircases and passages, and utilise the area then left. There should be provided covered accommodation outside for the protection of those waiting to enter on rainy evenings. The stores should be separate buildings, whereas in many cases the scenery was piled up beneath the stage, and sometimes looked as if laid for a fire. He experienced great difficulty in insuring that all exits were used; in one case he found, at 9 o'clock, during a performance, that every door was locked, and the manager had the key in his pocket. Each tier should have an independent entrance. If the theatres were under the control of a permanent body, managers might rely upon it that two of the requirements would be a 40ft. clear street all round the building, and an isolated store-house for scenery.

Mr. W. D. Caröe pointed out that the value of land was immensely greater in London than in little German towns. The theatre at Exeter destroyed by fire, when many lives were lost, was entirely isolated. Mr. Mulholland suggested that London theatres were the best that could be provided for the available means, but architects thought that much money was wasted on gilding, fibrous plaster, and other gewgaws, and he thought that, for the same expenditure, a little real art could be introduced.

Mr. Sachs, in acknowledging the vote of thanks, which was carried by acclamation, said he did not know of a single municipal dramatic school; the only school of the kind was that supported by the late Czar, which numbered 125 pupils. In Germany, when a lessee was engaged by the municipal authority, he was allowed to do as he liked during his three or seven years' term. In reply to Mr. Leon, he must say that iron doors were very bad arrangements; even if kept closed, they were sure, during a fire, to bulge on one side, and so allow flames to pass through. The best construction was an oak or teak door, double ledged, with an asbestos framing, and, perhaps, a light iron plate on the surface. He fully endorsed Mr. Blashill's views as to the necessity of isolating stores for scenery; no more scenery should be allowed in a theatre than was required for two plays.

Major-General Hutchinson, the Board of Trade inspector, on Tuesday week inspected the new section of the Newport Corporation tramway system, which extends over Newport Bridge to Maindee and Barnardtown.

OBITUARY.

We announce with much regret the death of Herbert Augustine Keates Gribble, A.R.I.BA., the architect of the Brompton Oratory, which took place at his residence, 64, Redcliffe-road, South Kensington, after a long illness, on Saturday last. Mr. Gribble was still comparatively young, not having completed his 48th year; but his career, although brief, had been brilliant. He was born at Plymouth in 1847, and showing at an early age evidences of good ability in drawing, he was articled to the late Alfred Norman, J.P., of Plymouth and Devonport, who, in conjunction with Mr. James Hine, was joint architect of the Guildhall and Municipal Buildings at Plymouth. While still a pupil he entered the Plymouth School of Art, and was successful in winning five medals and two national medallions for architecture and for decoration; the national gold medal for Gothic architecture, and other medals from the Royal Cornwall Polytechnic and the Albert Hall Exhibitions. He also gained the prize awarded in connection with the "Building News Sketch-Book" by his drawing of the north transept of Westminster Abbey. This sketch, numbered 17 in the series, appeared in the Building News for February 4, 1870, but had been executed some three years earlier. When in his 20th year Mr. Gribble was engaged by the late Mr. Joseph Hansom, architect (and inventor of the cab known by his name), as head draughtsman, and Mr. Gribble remained in his office for a period of over ten years. He then commenced practice for himself, and soon afterwards submitted a design for the proposed oratory at Brompton to the Oratory Fathers. A competition for the building was then instituted, and this was won by Mr. Gribble, as is well known, by a scheme based on the lines of his first sketch, and this design, which was illustrated by a double-page perspective and an interior, elevation, and plan in our issue of May 2, 1879, has been carried out. Other of his works are the Roman Catholic churches at Sevenoaks and of the Perpetual Adoration, London, N.W.; the National Armada Memorial at Portsmouth (illustrated by us, May 4, 1888); the premises of Messrs. Goad and Sons, marble merchants, Millbay, Plymouth; additions to the Convent at Plymouth (see our illustration, Feb. 24, 1888), and the R.C. church at Devonport; artisans' dwellings at Plymouth; the reconstruction of the West Hoe Pier at the same town, after its destruction by a gale; an altar at St. George's Cathedral, Southwark; and the high altar and campanile of the R.C. Church of the Holy Name at Poona, India, the last two respectively illustrated in the Building News for April 26, 1889, and Aug. 29, 1890. Mr. Gribble was an active member of the Architects' Registration Committee from its foundation. His clear-cut, dark features, and vivacious manner, and ready and fluent speech, made him a prominent member at any meeting in which he took part. He joined the Institute as an Associate in 1878. His portrait appeared with a biography in our issue for June 6, 1890. He leaves a widow, a daughter, and a son, Bernard, who has already won some distinction as an artist by his waterside sketches in oils and water colours.

Mr. John Welch, formerly a prominent architect in Brooklyn, N.Y., died suddenly a fortnight ago, at the age of 70. Mr. Welch was a Scotchman by birth, and was trained to his profession in Scotland and England. His first important building in the United States was a church at Newark, N.J., built in 1859. From that time until recently he had been chiefly engaged in church-building, his best-known work being Dr. Talmage's Tabernacle, built in 1872.

Colonel Von Cohansen, the well-known archæologist, and Keeper of the Antiquities of Nassau, died at Wiesbaden on the 3rd inst. in his 83rd year. He was one of the most painstaking investigators of the Limes Germanicus, the line of walls, castles, watch towers, and embankments erected by Adrian in South and West Germany against the Germans. These fortifications, at some points double and triple in construction, and about 360 miles in length, begin at Kelheim, and run over the Spessart, Vogelsberg, and Taunus Mountains to the Valleys of the Ruhr and the Lippe. Colonel von Cohansen wrote a number of essays on this subject, and also published monographs on Cæsar's bridges over the Rhine, the Roman quarries in the Bergstrasse (between Darmstadt and Heidelberg), and the antiquities in the valley of the Rhine. So far back as 1840 he left the army to undertake the management of the potteries at Mettlach. During this part of his career he was also engaged in architectural work. He entered the Engineers in 1848, excavated old fortifications and graves on the Hansrücken, in Rhenish Prussia, 1850 and 1851, and studied Mediæval fortifications in Prussia Proper and Italy in 1857. In 1870 he was chief engineer at Minden and at Coblentz. After the war he was appointed Keeper of Antiquities at Wiesbaden. In 1874 he was called to the Managing Council of the Roman-Germanic Museum at Mayence, to that of the Germanic Museum at Nuremberg in 1885, and, finally, to the Imperial Commission on the German Limes.

CHIPS.

New central board schools are in course of erection at Millbrook, near Southampton, at a cost of about £5,000. Mr. A. F. Gutteridge, of Southampton, is the architect, Mr. H. Cawte, of the same town, the contractor, and Mr. H W. Randall the clerk of works.

The theatre at Newcastle-on-Tyne is about to be remodelled, under the supervision of Mr. Walter Emden, of London, and Mr. W. L. Newcombe, of Newcastle.

At the meeting of the Bristol city council on Tuesday it was reported that Mr. Frederick Ashmead, who has been city surveyor since 1854, had retired, and been appointed consulting engineer at a salary of £500 per annum, and that in his stead Mr. Thomas Henry Yabbicom, who has been in the employ of the council for 26 years, and has been deputy surveyor for the past three years, has been appointed city surveyor at a salary of £500 per annum.

Mr. Thomas Codrington, M.I.C.E., an inspector of the Local Government Board, on Friday, held an inquiry at the Guildhall, Canterbury, with reference to the proposal of the corporation to borrow money for drainage and street improvements at Hanover and Norman-roads and for works at the Sewage Farm.

The Council of Egyptian Ministers have approved the appointment of Sir Benjamin Baker as Technical Adviser to the Department of Public Works for the reservoir at Assouan.

The members of the Liverpool centre of the Sanitary Inspectors' Association held their seventh annual dinner at the Washington Hotel, Lime-street, Liverpool, on Saturday evening. The city engineer, Mr. H. Percy Boulnois (president), occupied the chair.

At the meeting of the Town Council of Bury, Lancs, on Friday, it was stated that Earl Derby had given 2½ acres of land, worth £1,000, as an addition to the recreation grounds in Walmersley-road.

Mr. James Anthony, Clun, has now completed his contract for repainting and rebuilding the inside of the walls of the Old Castle, for the Duke of Norfolk. The keep has also been fenced in with iron palisading, and the work has been carried out under the supervision of Mr. R. Parry, The Lodge, Lydbury North. It is the Duke's intention, next spring, of having the outside of the castle walls and buttresses put in through repair.

A Local Government Board inquiry into an application of the Birmingham City Council for sanction to a loan of £23,400 for the extension of the Scarlet Fever Hospital at Lodge-road was held at the Council House, Birmingham, on Wednesday.

The Sun Insurance Company is issuing a series of handy and tasty desk-calendars, date-cards, and blotting-books, as useful as they are tastefully designed. It is old association possibly, but we always look on the *Sun* as especially the architects' and builders' Insurance Company, and its well-known badge as an indispensable feature of the decoration of any structure worth guaranteeing against loss.

The Wednesbury town council have appointed Mr. G. Pritchard, engineer, of Birmingham, to carry out the extension of the Wednesbury sewerage scheme, which is estimated to cost between £7,000 and £8,000.

The Bishop of Gloucester and Bristol dedicated, on Wednesday week, a wing which has been added to Dr. Bell's Schools at Fishponds, near Bristol. The alterations have cost £1,000, and have been carried out by Messrs. G. Humphreys and Sons, of Stapleton-road, Bristol, the architect being Mr. W. L. Bernard. The Bishop afterwards proceeded to the infants' school erected in connection with the Diocesan Training College in Manor-road. The site was presented by the principal of the training college, and the cost of the undertaking, apart from the site, is about £2,300. Mr. W. V. Gough was the architect, and Mr. H. Rossiter, Bedminster, was the builder.

Building Intelligence.

Hereford.—St. Martin's Church, Hereford, built in 1845 at a cost of £5,000, is being enlarged by the extension eastwards of the chancel. The new walls are built of stone from the Three Elms quarry, with grey Bromsgrove dressings, Bath stone being used on the inside. The inner chancel roof is of panelled oak, which will be decorated with carved bosses. A new chancel arch has been erected. The floor is to be laid with encaustic tiles, with oak blocks under the stalls, which will also be of oak. A new pulpit is being provided, and an organ-chamber built at the angle of the chancel and north transept. In the nave the old boarded floor with the stone paving in the passages has been taken up, a bed of concrete laid down, and upon this will be laid a flooring of oak blocks, with tiles in the aisles. A hot-water heating apparatus will be provided. Messrs. Nicholson and Sons, of Hereford, are the architects, and Messrs. Beavan and Hodges, with Mr. H. George as their foreman, the builders.

Islington. — An underground convenience, which has been constructed for the Islington Vestry in the High-street, near the Grand Theatre, was opened last week. It is constructed under the carriageway, and comprises entrance and exit staircases, inclosed by wrought-iron railings, six w.c.'s, twelve urinals, lavatory with three basins, attendant's room, and two store-rooms. The roof is formed of pavement-lights, supported on steel joists, and is laid out as a refuge. The brickwork has been built in Portland cement. The interior is faced with white glazed bricks, with a plinth and dado of blue glazed bricks. To prevent the soaking of water into the brickwork, a horizontal damp course has been laid in all walls at the floor-level, the rear of the exterior walls has been twice coated with a boiling mixture of tar and pitch, and a backing of dry rubble has been put round the walls and drains, formed of channel-pipes, laid so as to discharge subsoil water through weep-holes in the exterior walls into gullies inside the convenience. The drains are formed of glazed stoneware socketed pipes, jointed with cement, and made watertight. They are ventilated into brick chambers in the carriageway, the chambers also acting as surface-water gullies. Doulton's "Simplicitas" w.c.'s have been used. The urinals have semi-circular backs of white glazed ware, with screens and backs of Rouge Royal marble. A special feature in the construction is a movable slab in the back, which makes the pipe to each urinal accessible without the removal of the whole of the marble back. The lavatory is furnished with Doulton's pedestal basins of the tip-up kind. All the frames of the doors and partitions have been set on chamfered bases of York stone 3in. above the level of the floor, in order to prevent their lower parts being injured by water splashed from the hose. The work has been designed by Mr. J. Patten Barber, M.Inst.C.E., chief surveyor to the vestry, and carried out by Messrs. Doulton and Co., sanitary engineers, London, Paisley, and Paris, the cost amounting to £1,510. The underground conveniences which have been constructed for the Islington Vestry in Parkhurst-road (near Holloway-road) by Mr. Geo. Jennings, Lambeth, from the designs of the chief surveyor, Mr. J. Patten Barber, were opened on Monday. The cost has been £2,640.

Leeds.—The new home for the nursing staff of the Leeds Union Infirmary at Burmantofts was opened on Friday. The building contains 40 separate sleeping apartments, mainly in the two end wings. There are also a large kitchen, scullery, store-room, and dining-hall. Owing to the sloping site, the ground floor meets the level of the land at the front, thus securing a full basement story the whole length of the block. Baths and lavatories are provided at the extreme end of the wings on the ground and first floors. Mr. Thomas Winn, of Albion-street, Leeds, is the architect. The cost of the building, including furnishing, has been between £10,000 and £11,000. Mr. J. T. Boothman has officiated as clerk of the works.

Newcastle-on-Tyne.—The building trade and its allied industries in Newcastle-on-Tyne seem—according to the *Newcastle Chronicle*—to be in a brisk condition, thanks to public and private enterprise, and it is estimated that more large undertakings are now in progress than have ever before been known in the history of the city. One of the corporate works is the extension of the City Lunatic Asylum at Coxlodge, at an estimated cost of from £80,000 to £100,000 in all. Another contemplated corporation undertaking is the formation of deeper water berths at Newcastle Quay, in order to make room for larger steamers, and the improvement of the quayside, a work that is to cost about £25,000. It is to be done under corporation official management, and not to be let to contractors.

Rotherham.—The workhouse has been remodelled on the old site. Immediately on the left of the large gates is the porter's lodge and office, with tramp and receiving wards for men and women. Further on is the central block with main entrance, having, on the left, stores and officers' rooms, and, on the right, master's house and offices. On each side of this block are men's and women's day-rooms, dormitories, and cottages for aged inmates and old couples, waiting-hall and stores, with a large dining-hall over, giving accommodation for 350 people. Continuing further are the children's day-rooms, also dormitories and attendants' rooms. The Tudor style has been adopted, the materials being Dunford Bridge wallstones and local stone for ashlar. The whole of the work has been designed and carried out under the personal superversion of Mr. H. L. Tacon, architect, Rotherham, the contractor being Mr. G. H. Smith, of Mexbro'. The cost, exclusive of furnishing, amounted to £26,000.

Sparkhill, Birmingham. — The Sparkhill, Greet, and South Suburban Technical Institute was opened on Monday. The building has been erected at a cost of about £2,600. It has seven classrooms on the basement and ground floors, which are fitted up for the accommodation of technical classes. Over these is a lecture hall, 73ft. by 30ft. A large assembly room will be erected at some future time at the rear. The design is in the Renaissance style, and is carried out in brick, with red terracotta dressings. The work has been carried out by Mr. Frank Davis, of Showell Green, from designs of Mr. Arthur Harrison, architect, Colmore-row, Birmingham.

Torquay.—Amongst the many improvements recently carried out by the Corporation of the Borough of Torquay have been some alterations to Cary Green, and arrangements were entered into between the Devon and Cornwall Banking Co., Ltd., and the corporation for alterations to the old site of the banking premises. The building was, therefore, taken down, and a new building erected on a portion of the site. The rusticated bases, as well as the face work of upper story, are built with hard red sandstone. The band sills and pilasters are of red polished Aberdeen granite by Messrs. James Wright and Sons. The remaining portion of ground-floor masonry and cornices are of fine-grain red Wilderness stone, the dressings to upper floors being of Ham Hill stone. The banking offices are fitted up with polished Spanish and other mahogany framing, doors, overdoors, counters, and desks of a high-class description. The buildings have been carried out by Messrs. Vanstone and Mumford, contractors, of Torquay. The architects are Messrs. Geo. Soudon Bridgman, M.S.A., and Norman G. Bridgman, A.R.I.B.A., architects, of Torquay and Paignton.

Engineering Notes.

Society of Engineers.—The 41st annual dinner of this society was held at the Holborn Restaurant on Wednesdary night, Mr. George A. Goodwin (the president) in the chair. The president proposed "The Army, Navy, and Reserve Forces," to which Mr. A. J. Durston (engineer-in-Chief to the Admiralty) and Colonel Davis responded. Mr. J. W. Wilson, jun., proposed the toast of "The Society of Engineers, the President, the Hon. Secretary and Treasurer, and Secretary of the Society." The president, in acknowledging the toast, said that the society was in a most satisfactory condition, and its financial position had never been so good as it was now. He referred to the death of their late hon. secretary and treasurer, Mr. Alfred Williams, their oldest and most valued member, who founded the society in 1854. Mr. Nursey and Mr. G. A. Pryce-Cuxson also acknowledged the toast.

"BUILDING NEWS" DESIGNING CLUB.

THIRD LIST OF SUBJECTS.

D.—A Country Parsonage in stone on a well-wooded site in an undulating country. The house is to be solidly built and picturesque in design, suitably planned for a married priest and small family. Economy of service is a necessity in such a household, and sources of dilapidation should be avoided, such as needless external woodwork constantly requiring repainting and repair. The accommodation required will be two reception rooms, about 330ft. super. each, a study about 10ft. by 12ft., having an easy approach for parishioners calling on the vicar on business; a meeting-room attached to the house, about 30ft. by 18ft., adapted for parochial purposes; kitchen, store-room, larder, pantry, scullery, servants' and garden w.c.; upstairs, six bedrooms, bath-rooms, and w.c.; two bedrooms may be on a second floor. Style left to the designer. Scale, 3ft. to the inch; but, if necessary, the plans may be drawn to 1-16th scale. A view to be included, and, at least, one section. Two elevations will suffice.

Drawings Received.—"Just My Luck," "Flash in the Pan," "Sesame," "Calcutta," "Ageepee," "Tim," "Titch," "Artifex," "Gryph," "Chichevache," "Arnaud," "Ictinus 2nd," "Quaigh," "Kelly," "Minstrel," "Waterbouget," "Stabilitas," "1894," "Heather," "Nyoola," "Mac," "Albyn," "Gray Rat," "William of Sens," "Sphinx," "Lux," "Parramatta," "Bona Fides," "Wykehamica" (no address), "Esto quod es," "Storm Fiend," "Inkerman" (too late and unfinished).

Correspondence.

THE NEW LONDON BUILDING ACT.

To the Editor of the Building News.

Sir,—In the illustrations to my paper you have been good enough to insert in your current number, I find on p. 779 your printer has described the diagram showing the thickness of the walls as the thicknesses of the walls under the New Act, whereas the diagram was intended to show the thicknesses of walls under the Old Act, with the additional thickness required by the New, and which is shown by the additional line at the side.—I am, &c.,

Ellis Marsland.

Intercommunication.

QUESTIONS.

[11263.]—**Sewer.**—A drain was put in by the old turnpike road trustees in a populous district. The inhabitants have from time to time connected the house drains, and the original road drain is now carrying both sewage and surface water from the road. Who is responsible for the maintenance of this drain? Is it now a sewer under the Public Health Act?—Culvert.

[11264.]—**Golf.**—Can anyone, from experience, recommend to me a means of keeping clubs in good order Should oil be used for the shafts, and also for the heads of wood clubs? And if so, what kind?—Tee.

[11265.]—**Society of Antiquaries.**—I should feel greatly obliged if some kind reader would give the information as to what course to pursue to enable me to qualify for and become a Fellow of the Society of Antiquaries.—F. S. A.

REPLIES.

[11257.] — **Infectious Hospitals.**—The Local Government Board published in 1882 a supplement to the 10th annual report, and there is to my knowledge no other book on the subject; but much information can be obtained from the many books on Hospital Construction, for which see Mr. Batsford's catalogue.—H. L.

[11258.]—**Wall Sinking.**—Lay at a sufficient depth below the surface concrete of good width and depth. If the walls are already erected, and are sinking, I advise careful underpinning on a deep bed of cement concrete. What is the size of the building? Is there a story below ground?—H. L.

[11261.]—**Surveyors' Charges.**—The fees under Ryde's scale would cover the time occupied in negotiating the sale. Any charges for sundry services should be made to the client.—H. L.

[11262.]—**Licenses.**—A license is not required to enable an architect to measure and value artificers' work. —H. L.

* * *

On Saturday Lord Egerton of Tatton unveiled, at St. Mark's Church, Manchester, a window in memory of the late Hon. Miss Egerton. The window, which is placed above the altar, represents the Resurrection and the Ascension.

There is at present being erected in the Holy Trinity Church, Dunfermline, a grand organ, as a memorial of the late Hon. R. Preston Bruce. The organ, which is being built by Messrs. C. and F. Hamilton, Edinburgh, according to the specification of Mr. T. H. Collinson, St. Mary's Cathedral, Edinburgh, consists of two complete manuals and an independent pedal organ. The case, designed by Dr. Rowand Anderson, Edinburgh, and made by Mr. J. Slater, Edinburgh, is of an elaborate description.

Legal.

OVERHANGING TREES, ETC.

We now have the decision of the House of Lords upon a long-vexed question, which, though apparently trivial, contains some points of principle which may be of practical importance under some circumstances. In the case of "Lemmon v. Webb" (*Times*, 28 Nov.) the plaintiff sued the defendant for damage for cutting down some branches of trees that overhung his land, without having given any notice to the plaintiff before so doing, or allowing the plaintiff to cut them himself. He also asked for an injunction and a declaration that the defendant was not entitled to cut branches of trees which belonged to the plaintiff, and had been overhanging the defendant's land for many years without objection by his predecessors in the property. The judge at the trial had given a judgment in favour of the plaintiff, with £5 damages against the defendant, on the ground that he should not have cut down the trees without due notice. This was, however, reversed by the Court of Appeal, where the Lords Justices held that no notice was necessary, as the case was one of nuisance, and so there could be no damage in the lawful abatement of a nuisance. The House of Lords has now confirmed this ruling, and upon the same grounds.

It is, therefore, clear that an easement cannot be acquired for branches of a growing tree that spread over the land of another. This being so, it follows that the owner of the land over which these branches hang can cut them down, no matter how long they may have been allowed to hang there. For if there can be no easement the spreading branches always continue to be, as they began by being, a nuisance in the eye of the law. It is legal for an owner to abate a nuisance affecting his land, and the person guilty of the nuisance, being in the wrong, has no right, legally speaking, to any notice before the nuisance is abated. In this way we get at the judgment of the House of Lords, and see that if the defendant was within his legal rights in doing what he did, however unneighbourly and harsh his conduct may appear, he cannot be held liable in damages for not giving a notice to abate a nuisance, where no notice is by law required. In clearing building plots it might well be necessary to cut down overhanging branches, although they may be those of fine old trees standing and spreading for many years.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Querist. — Co-agent. — Repairs.—Agreement.—You were wrong in retaining the instalments due, and they can now act upon the clause and cancel the agreement if they choose, as to doing future repairs. But I consider that the words of that clause, "such course shall not prejudice any right, benefit, or advantage," must mean that they are bound to do all the repairs that were then required at the time of cancellation; of course, upon your paying them all the overdue instalments.

X. — Council.—Election.—Resigning.—There would be a difficulty about refusing to sign declaration on election or resigning during term of office, unless for good cause. You should consult a local solicitor of experience in election matters.

Rex.—Shop.—Building Line.—The Board are entitled to make regulations as to the building line of new premises to be erected in an old road, and they have a discretion to insure a good width of roadway, which they especially insist upon for shops. The fact of there being no covenant in your lease as to this, makes no difference to the legal position of the local authorities.

LEGAL INTELLIGENCE.

House Drainage not Up to Date.—Mr. Edward William Hudson, A.R.I.B.A., F.S.I., of Fellows-road, Hampstead, answered an adjourned summons at the instance of the Vestry of St. Mary, Battersea, on Monday, in respect of premises at 29, Kersley-street, which were stated to be insanitary by reason of the soil-pipe being improperly constructed, and terminating too close to one of the windows. The case was a test one under the Public Health Act, London, 1891. It was stated that the system of drainage had existed at the house for twelve years, and was that of open soil-pipes, devised and still used by Mr. Norman Shaw, R A. (illustrated from this architect's own drawings in the Building News for Jan. 25, 1878). Although now tabooed by all Metropolitan sanitary authorities, when constructed it was in accordance with the latest sanitary requirements. A similar system was in force at New Scotland-yard. Mr. Pilditch, consulting architect and sanitary engineer, proved having made an examination of the soil-pipe to which exception had been taken, and failed to discover the existence of a nuisance. It was not the best form of drainage. Mr. Gover argued, for the defence, that the vestry had no power to interfere, as they had already sanctioned the existing system of ventilation. Although medical scientific discovery had advanced, the vestry could not compel private owners to keep their property up to the standard required by each new discovery. The drain could not possibly be more dangerous now than it was before science discovered its injurious effects. It was unfair to place owners at the expense of alterations because the vestry had got hold of new sanitary notions. Mr. Young pointed out that it was the duty of the sanitary authority to enforce necessary sanitary requirements in the district over which they had jurisdiction. He was unable to say that there was a nuisance, but a nuisance was likely to occur at any moment. Mr. Denman declined to hold that sanitary fittings were likely to produce a nuisance because they were not up to date in sanitary science. If that contention were allowed, it would mean that all old fittings would have to be pulled down and replaced. He dismissed the summons, but nevertheless thought that a temporary imperfection in the pipe should be remedied, and allowed three guineas costs.

WATER SUPPLY AND SANITARY MATTERS.

Portishead Sewerage Scheme.—The Portishead local board have received the Local Government Board's sanction to borrow £14,000 to carry out the works in connection with the proposed sewerage scheme, £12,000 to be repaid within 30 years, and £2,000 within 15 years. The works include eight miles of sewers of various sizes, a sea outfall, 136 manholes at an average depth of 11ft. 6in., about 100 iron ventilating shafts, air-compressing station with gas-engine air-compressors, cottage for attendant, ejectors, air mains, &c. Estimates will shortly be invited for the carrying out of the works, as it is proposed to commence operations without delay. Mr. T. J. Moss Flower, Assoc.M.Inst.C.E., Carlton Chambers, Bristol, is the engineer.

West Riding Rivers Purification.—Shipley Drainage —Major-General C. Phipps Carey held a Local Government inquiry at the Manor House, Shipley, on the 5th inst., with reference to the application of the Shipley Local Board to borrow £55,000 for the purposes of sewerage, sewage disposal, and the erection of a refuse destructor. Mr. J. H. Woodhead, civil engineer, having explained the system of sewers proposed for the Windhill section of the district, which are in the hands of his firm, Mr. M. Paterson, M.I.C.E., described the works designed by him, consisting of the main outfall sewers, the works of precipitation, and the land filtration works. The main outfall sewer, which is 17,118ft. long, the Valley-road outfall, and the Red Beck outfall, are the principal sewers, and present a combination of difficulties seldom met with in so small a compass, including seven tunnels, three of which are under the canal, a mill yard, and a mill respectively, cast-iron pipes along the river bed, several beck and railway crossings, and a heavy retaining wall at the River Acre. The premises of no less than eight mills, foundries, tanneries, and other large works are intersected, including the well-known Saltaire Mills, which are traversed for nearly 200 yards in tunnel. Pumping will be necessary. Pumps are to be provided capable of lifting an extreme limit of 4,100galls. per minute 47ft. high, steam for which will be raised chiefly by a Horsfalls destructor. A tank sewer, holding 280,000galls. storage; precipitation tanks holding 12 hours dry weather if low, or 1,120,000galls. will be provided. After precipitation the clarified sewage will be passed into 12½ acres of land adapted for filtration, chiefly gravel and a porous gravelly loam. Besides this area, 16 acres are reserved for the future needs of the district. After the inquiry, the inspector made a careful inspection of the site of the proposed works, specially examining the difficult lines of the outfall sewers. The population of Shipley is about 25,000, and storm water is at present turned into the sewers, but will be excluded in future extensions. Mr. Paterson pointed out the necessity of making proper provision for dealing with mingled storm water and sewage so as to satisfy the requirements of the West Riding Rivers Board, whose powers in this direction were greatly strengthened by their Act of last Session.

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A new Wesleyan chapel is being erected at Gorton-on-the-Wolds from the designs of Mr. J. Shepherdson, architect, Driffield. Special attention has been given to the ventilation, which will be carried out on the Boyle system, the latest patented form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

Our Office Table.

According to the *résumé* of the work of the corporation of Glasgow during the year 1893-4, prepared by the Lord Provost, Glasgow continues to flourish and prosper. The result of the transfers of the tramways to the corporation has been satisfactory from a financial standpoint, and month by month the receipts have shown a substantial increase. The council during the year has also resolved to proceed with the erection of a weir across the Clyde, the estimate for which is under £45,000. The Corporation Art Galleries have made rapid and steady growth in public favour, and it has been decided by the council that a people's palace shall be erected in the East-end, at a cost of £20,000. The demand for the electric light still continues to increase. The preliminary work has been started in connection with the erection of Ruchill Epidemic Hospital, and new city sanitary buildings are to be erected at a cost of £17,000. The success of the Dalmarnock sewage purification works is alluded to as giving hope for the purification the Clyde.

The Italian Minister for Education has issued a circular pointing out the serious injury often occasioned to ancient paintings by empirical treatment, and offering a prize of £120 for the best essay on the technique of painting, fresco, encaustic, and tempera, and on the results which have been obtained by investigations into the materials and processes used in these different kinds of painting. The essays, which must be sent in to the Public Education Department, Rome, not later than the 30th June, 1895, will be adjudicated upon by a Government Commission, assisted, if necessary, by scientific experts.

CHIPS.

Mr. John Joseph Faulkner, R.H.A., died on the 4th inst. at Adelaide House, Shepherd's Bush, aged 58 years.

The celebrated landscape painter, Count Stanislaus Kalckreuth, died at Munich on Tuesday week, at the age of seventy-four.

A Local Government Board inquiry into the proposed extension of the borough of Kingston-upon-Thames so as to include within it Surbiton, Coombe, Malden, Kingston Hill, Kingston Vale, and Southborough, is being held this week at the Assize Courts, Kingston. On the second day, Wednesday, the borough surveyor of Kingston was called, and detailed the difficulties which have arisen through the suburban portions of Kingston being governed by separate authorities.

A two-light window has recently been fixed at St. Paul's Church, Chippenham, Wilts, the subjects being those of St. Paul preaching at Athens, and the scene after the shipwreck where the Apostle shakes off the venomous beast into the fire. The subjects were painted by Mr. Kendrick Swaine Bourne, of the firm of Messrs. Swaine Bourne and Son, King Edward's-road, Birmingham, and London.

The Queen has granted to Mr. E. Law, B.A., the historian of Hampton Court Palace, the occupation of the small residence known as "The Pavilion" at the end of the Long Walk in the Palace Gardens.

A stained-glass window has just been placed in All Saints' Church, Clevedon, Somerset. The window consists of three lights, and is illustrative of Our Lord's Sermon on the Mount. It was designed and executed by Messrs. Joseph Bell and Sons, of College-green, Bristol.

The new post-office in process of erection in Chapel-street and Cambridge-road, Harrogate, has given rise to much local criticism, because of the alleged meagre character of the elevation, and the Postmaster-General has been communicated with on the matter, and he has replied to the effect that the suggestions made will receive attention.

St. Mungo Episcopal Church, Alexandria, N.B. which has been in course of construction during the past year, was formally opened on Sunday. The building has been constructed with the view to future extension, only the nave, 65ft. by 30ft., and porch being meantime completed. The church in its present form is seated to hold 250.

Mrs. Lane has had finished and has added to the canopies above the stalls on the south side of the chancel of St. Lawrence's, Ludlow, which she began some years ago in memory of her husband, late rector of Ludlow, and of her son. The carving is of oak, twenty-nine figures in all, seven apostles, with angels on either side of them, and six angels at the east end have been placed in the niches left for them. The work is being carried out by Mr. L. Turner, of London.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Royal Institute of British Architects. "The London Building Act, 1894," by Professor Banister Fletcher. 8 p.m.

Tuesday.—Institution of Civil Engineers. Discussion on "Colliery Surface Works." 8 p.m.

Glasgow Architectural Association. "The Thirteenth and Fourteenth Centuries in Italy," by T. L. Watson. 8 p.m.

Wednesday.—Society of Arts. "Forestry," by Lieut.-Gen. J. Michael, C.S.I. 8 p.m.

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CHIPS.

The practice formerly carried on by the late Mr J. C. Moncrieff, F.R.I.B.A., at 26, Nicholas-street Bristol, has been taken over by Mr. Chas. A. Rowley, from the city surveyor's offices in that city, and will in future be conducted under the style of "Moncrieff and Rowley."

The Clothworkers' Company have lent their hall in Mincing-lane for the annual distribution of prizes to the students of the Royal Female School of Art, which will take place on Wednesday next, at half-past three p.m., under the presidency of the Master of the Company.

A temperance hall is about to be erected at Cardiff, the sole cost of which will be borne by Mr. John Cory, J.P., D.L., and is a memorial to the late Mr. John Cory, the father of the donor. The plans are now in the course of preparation by the architects, Messrs. J. P. Jones, Richards, and Budgen, of Cardiff, and the erection of the buildings will be commenced early in the New Year.

Maesteg School Board, Blaenllynfi schools, are being erected for the above school board. from the plans, and under the direction of, Mr. E. W. Burnett, architect, Tondu, Bridgend, and will be warmed and ventilated throughout by means of Shorland's patent Manchester grates.

Five architects have been invited to send in competitive plans for the public hall about to be erected in Viewfield-gardens, Selkirk, at the expense of a private donor, aided by a grant of £2,300 from the town council.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender; it adds to the value of the information.

Aberdeen.—For supplying engine, dynamo, and other plant for the extension of the electric lighting system, for the town council:—

Holmes, J. H., and Co, Newcastle-on-Tyne (accepted).

Bethnal Green.—For alterations to Excelsior Swimming Baths, Mansford-road, Bethnal Green. Mr. Walter Emden, 105, Strand, architect:—

Holland and Hannen	£1,339	6	0
Haskins, G. W.	1,100	6	0
Marshall, R.	1,098	2	0
Roffey, H.	1,031	6	0
Beer and Gash	1,029	0	0

[The lowest tender will be accepted, subject to deductions.]

Blackwood.—For the erection of the Masons' Arms, Blackwood, S. Wales. Mr. E. A. Lansdowne, Newport, Mon., architect:—

Richards, J. C., Pontypridd	£1,950	0	0
Williams, J. D., Knighton	1,790	0	0
Jones and Co., D. C., Gloucester	1,652	0	0
Haines, J., Cardiff	1,596	17	0
Davies, D., Cardiff	1,594	0	0
Davies Bros., Abersychan	1,500	0	0
Jones, W., Blackwood	1,484	0	0
Richards, A., Newbridge	1,449	8	0
Jenkins, J., Newport	1,449	0	0
Hatherly and Carr, Bristol	1,435	0	0
Perkins, Parsons, and Co., Cardiff	1,396	0	0
Williams, E., Newbridge (accepted)	1,379	17	0

Bratton Clovelly, Devon.—For repairing works of water supply at Bratton Clovelly, for the rural sanitary authority of Okehampton:—

Abell, Israel, Hatherleigh (accepted)	£56	10	0

Bromley, Kent.—For alterations to coachhouse at Springhill, for Mr. W. Bowley. Mr. Percy B. Strudwick, Bromley, Kent, architect:—

Podger, J. (accepted)	£42	0	0

Bury, Lancs.—For paving, flagging, and curbing certain streets, for the town council:—

Woodhead and Greenhalgh (accepted).

Bury, Lancs.—For the supply of 3,000 tons of 4in. iron pipes and 3,000 tons of 6in. iron pipes, for the waterworks committee of the town council:—

Stanton Iron Co. (accepted).

Cardiff.—For the erection of new church in St. Andrew's parish, for the Rev. G. W. Handford and Building Committee. Mr. Geo. E. Halliday, Cardiff, architect. Quantities by Mr. John W. Rodger, Cardiff:—

Hatherley and Carr, Bristol	£8,769	0	0
Knox and Wells	8,654	0	0
Davies, D.	8,560	0	0
Rees and Thomas	8,050	4	6
Latty and Co.	7,500	0	0
Cadwallader and Hockridge	7,220	0	0
Evans Bros.	6,962	9	10
Stepson, S., and Son (accepted)	6,936	17	3
Fryatt, Richards, and Co.	6,811	13	4
Haines, J.	6,498	0	0

Rest of Cardiff.

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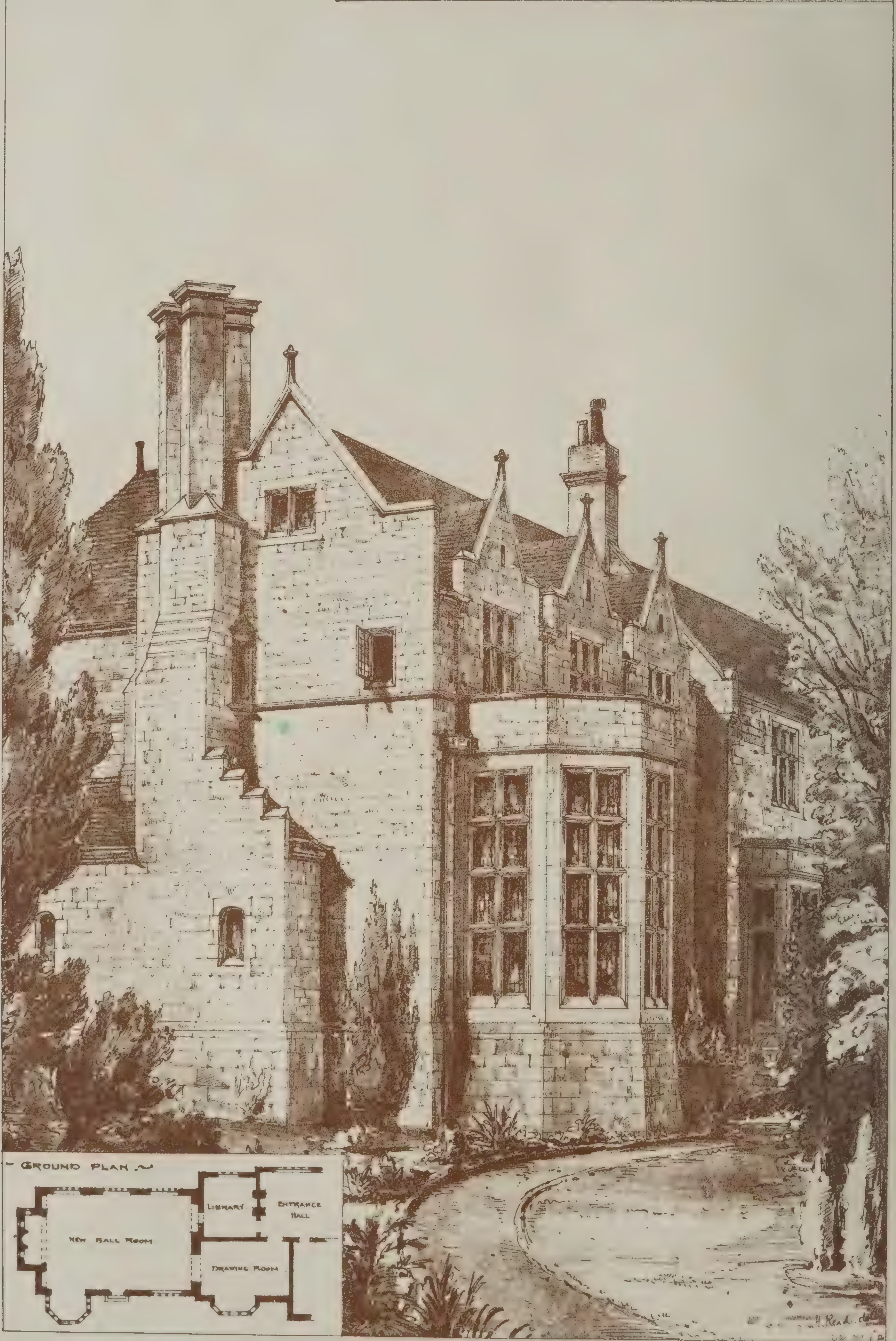
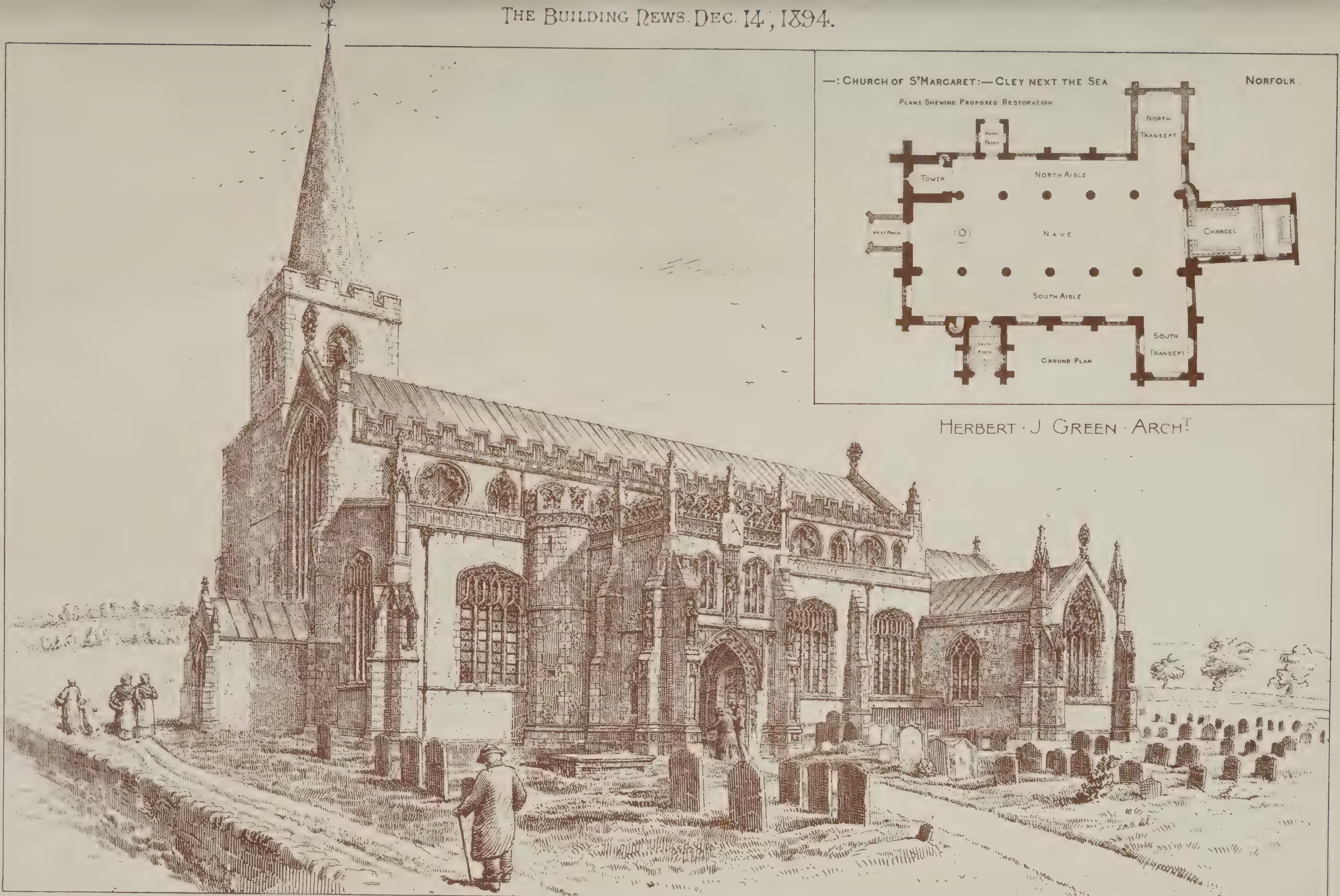

GROUND PLAN.
NEW BALL ROOM.
LIBRARY.
ENTRANCE HALL
DRAWING ROOM
H. Read. del.

"PHOTO-TINT," by James Akerman. 6. Queen Square London. W C



—: CHURCH OF ST MARGARET: — CLEY NEXT THE SEA NORFOLK.

PLANS SHEWING PROPOSED RESTORATION

HERBERT · J GREEN · ARCHT

Photo-Lithographed & Printed by James Akerman, 6, Queen Square W.C.

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NEW MARKET HALL
GOOLE

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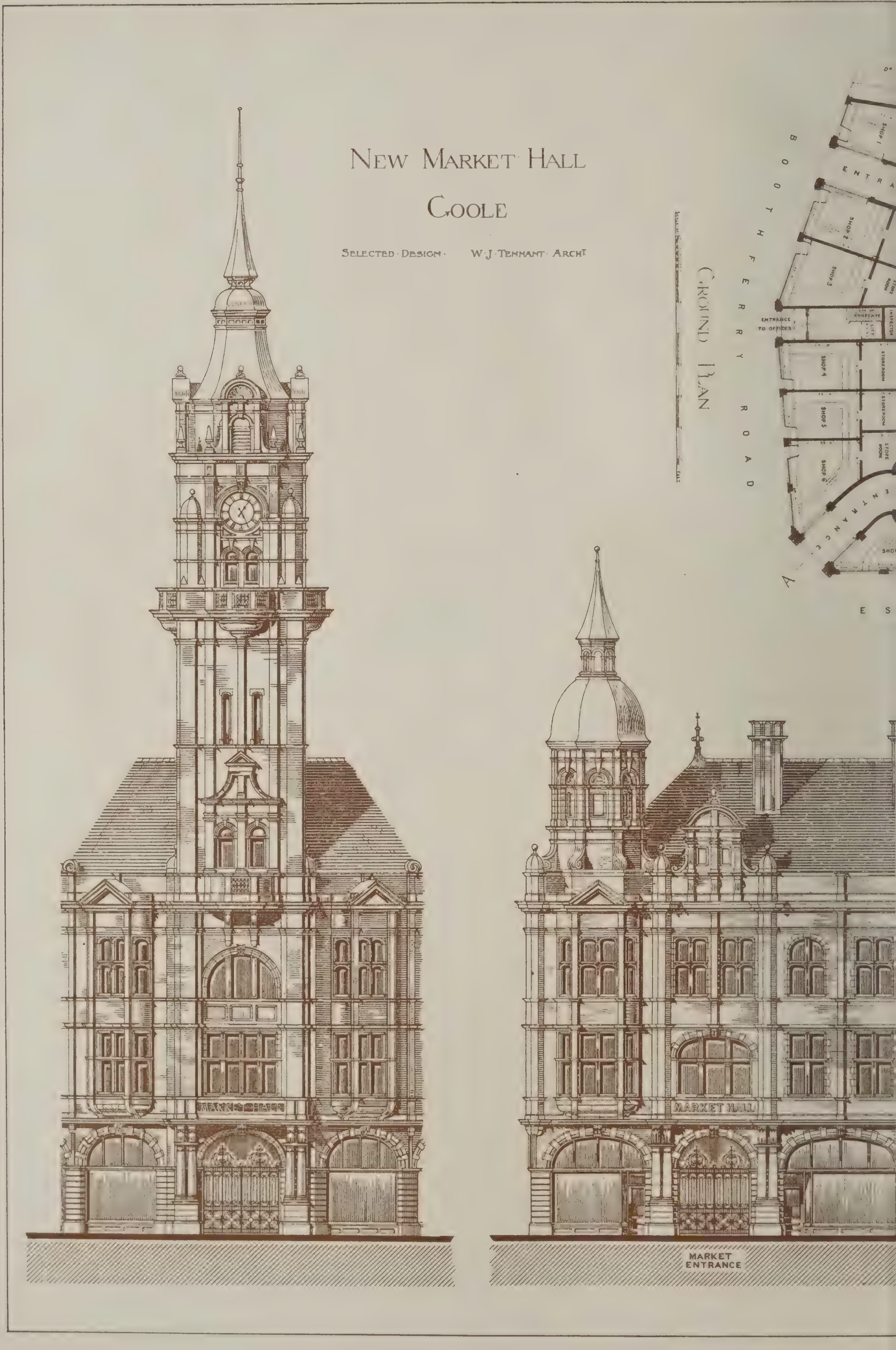

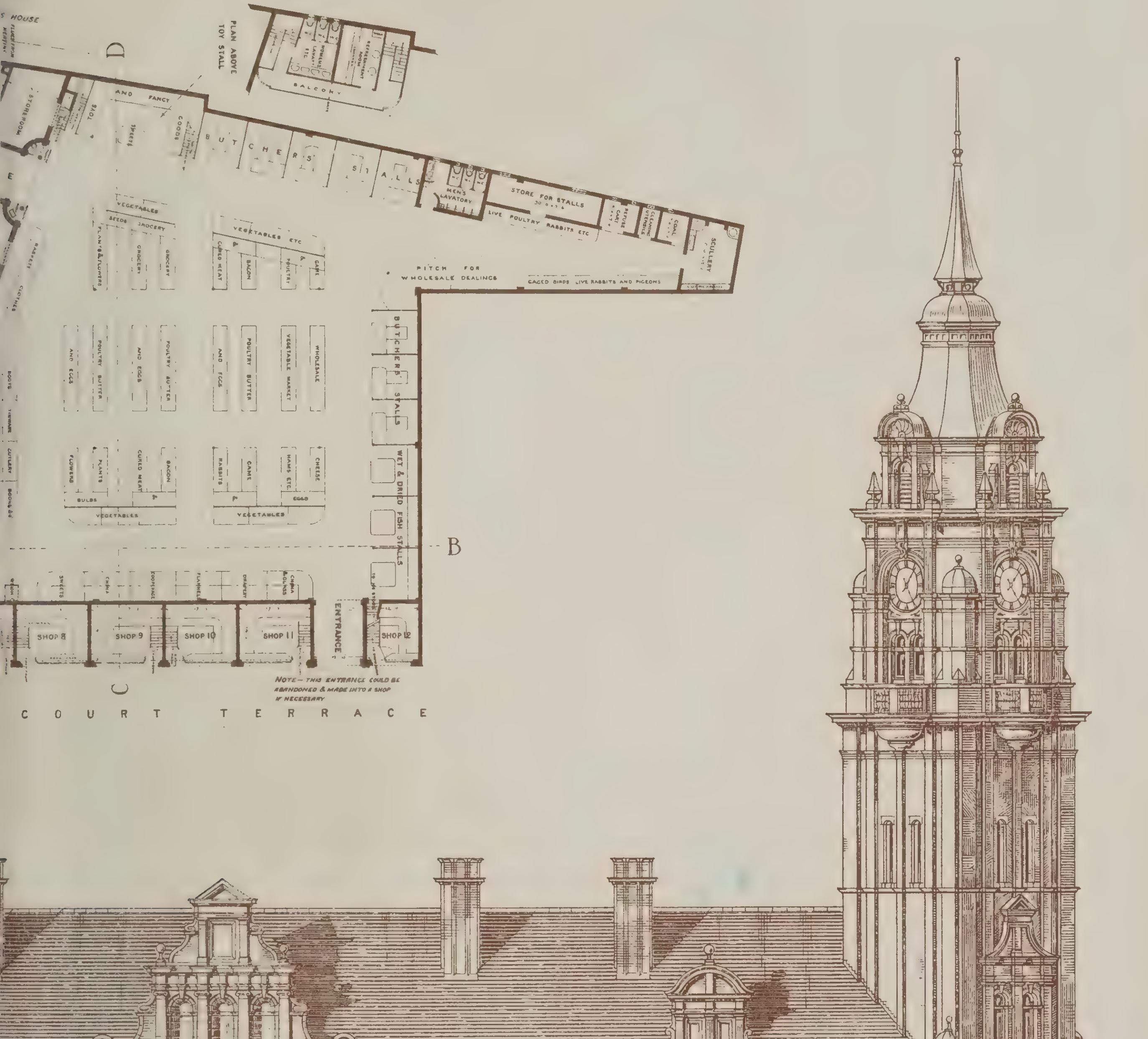

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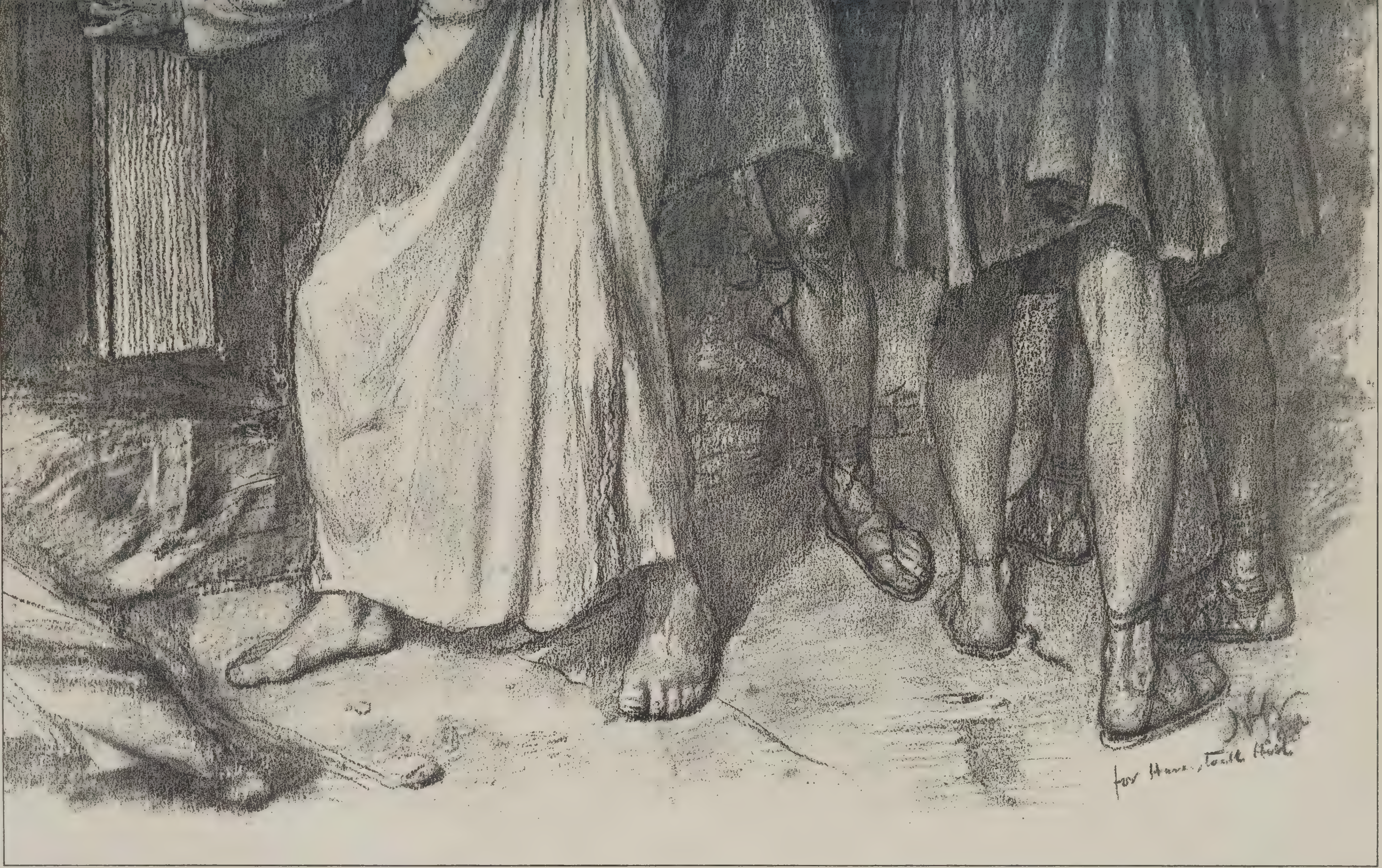

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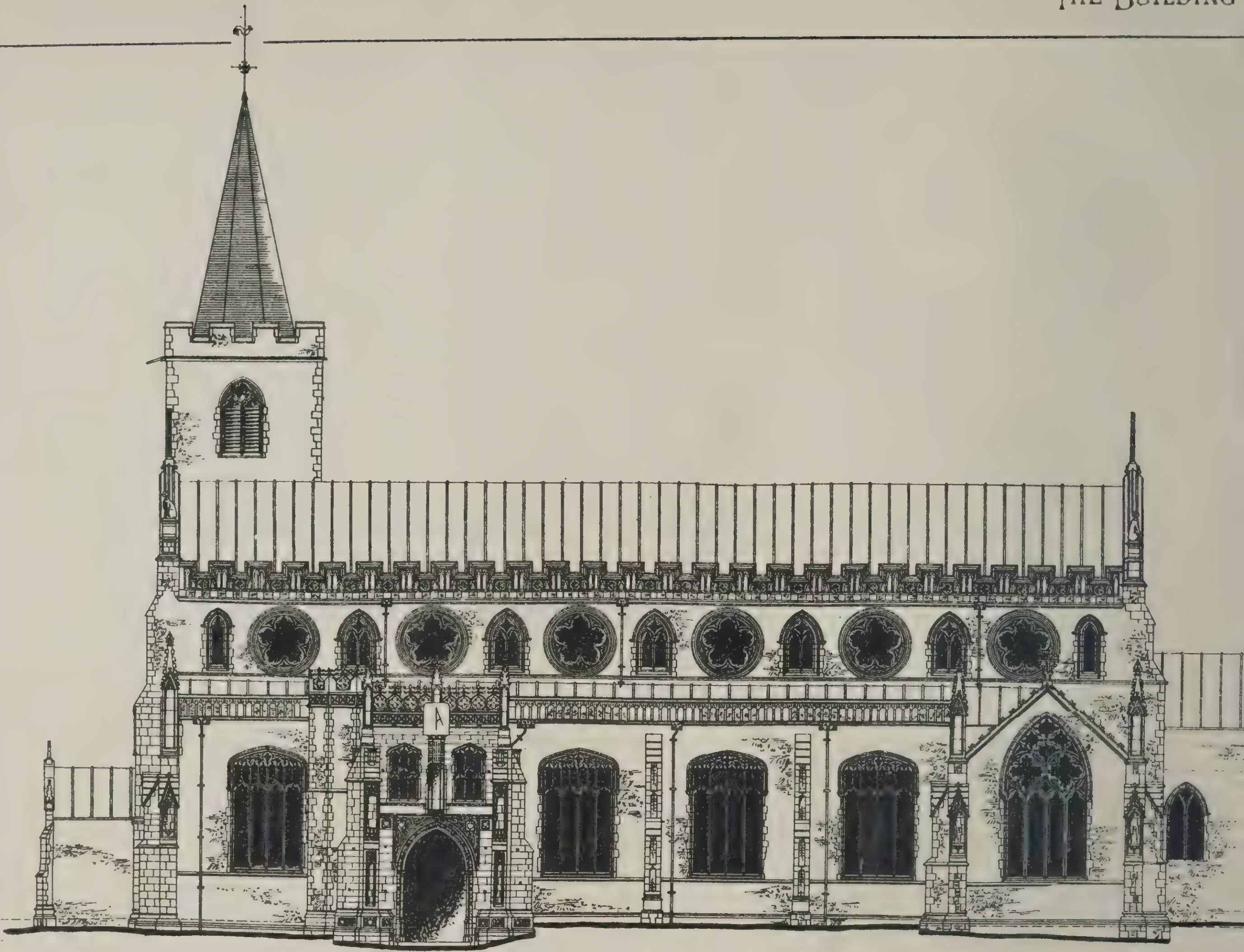
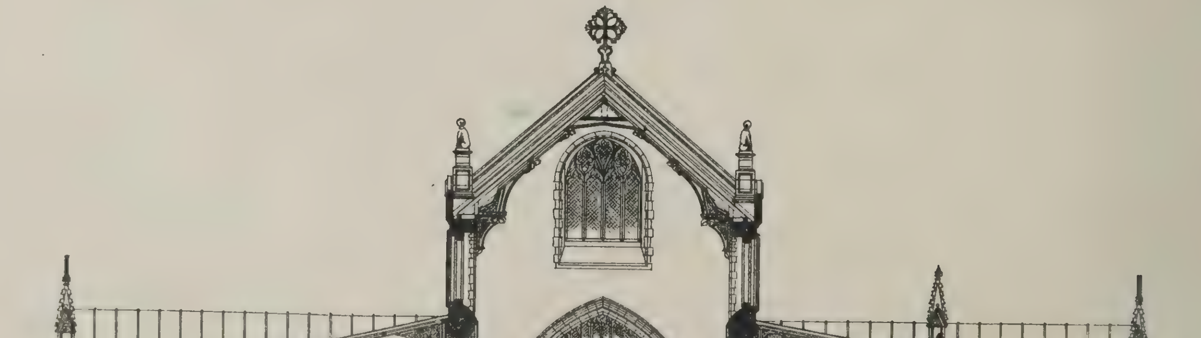
SIMON·THE·CYRENIAN·IS·FORCED·TO·CARRY·THE·CROSS·

STUDY·FOR·ONE·OF·THE·"STATIONS"·AT·THE·PRIORY·HAVERSTOCK·HILL BY·N·H·J·WESTLAKE·

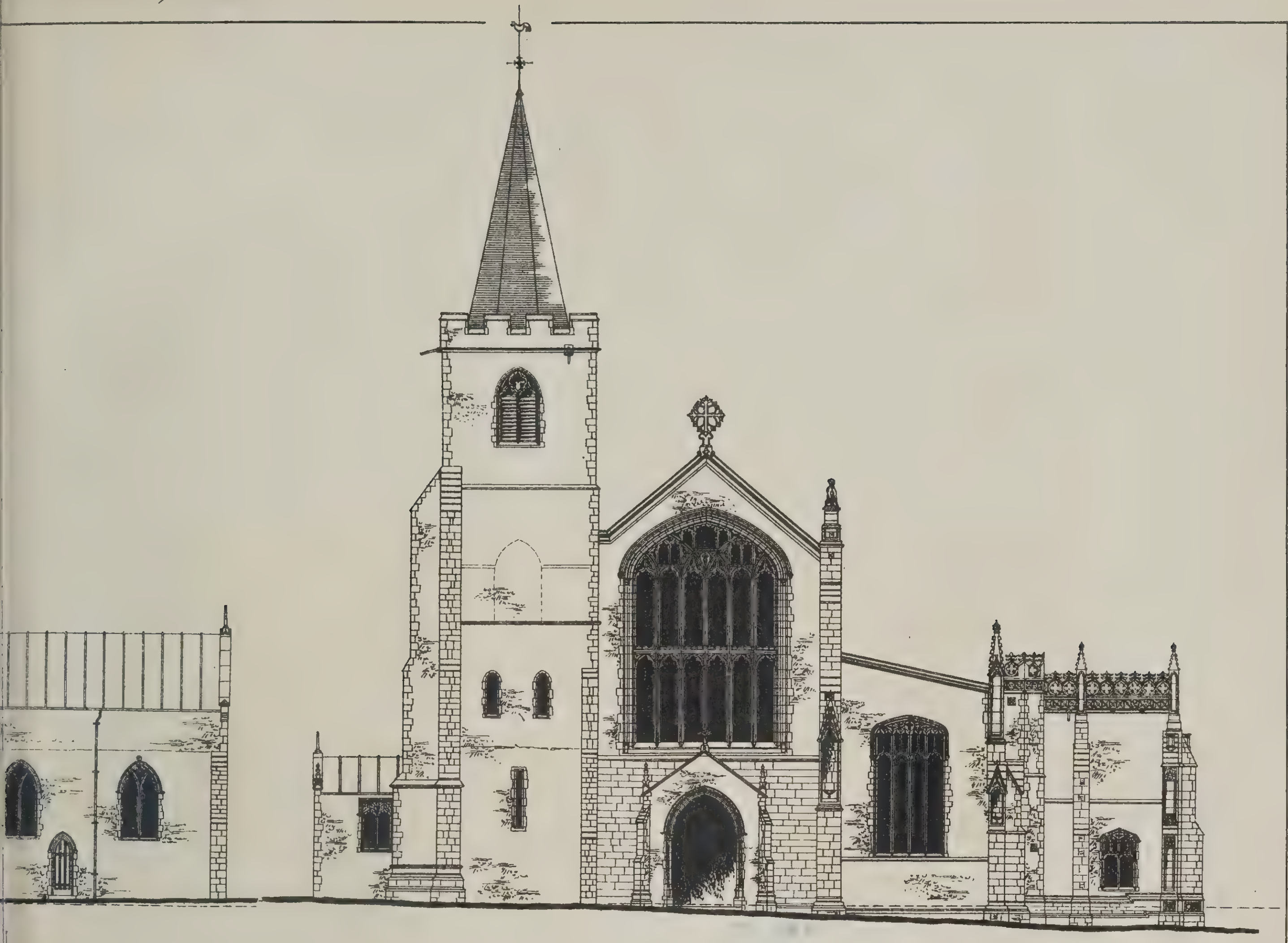


SOUTH ELEVATION



SECTION LOOKING EAST

SCALE 10 5 0 10 20 30 40 50 60 70 FEET.



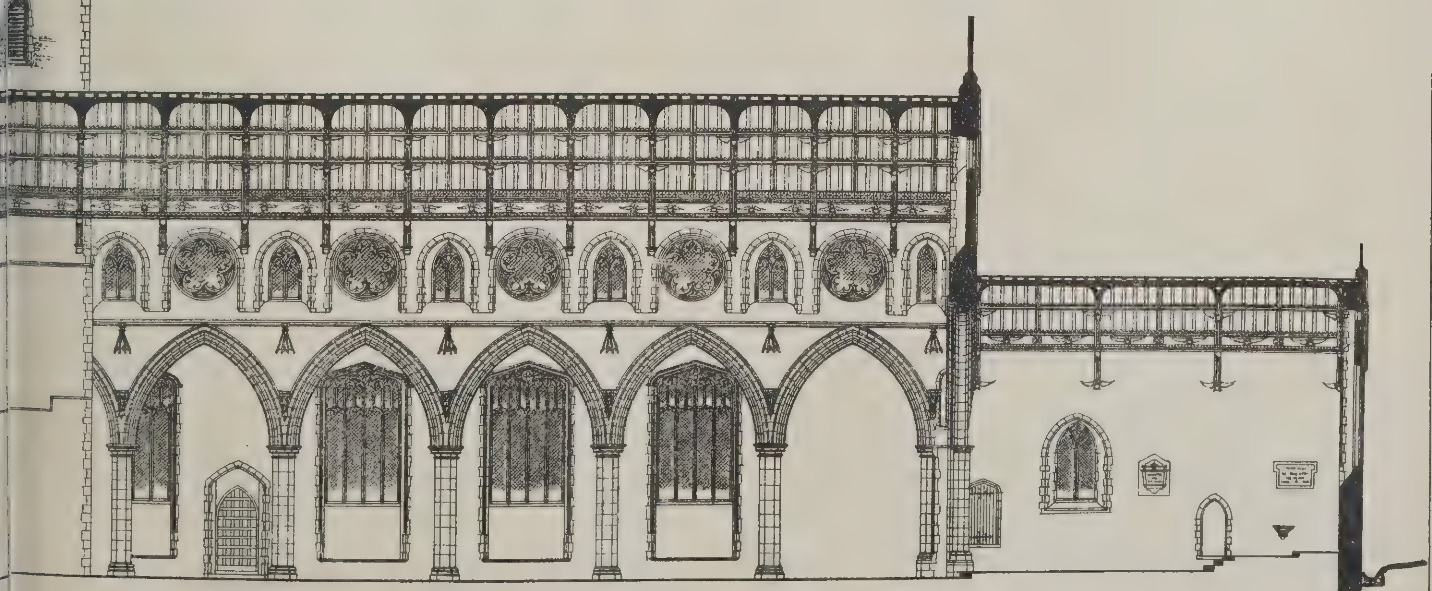
WEST ELEVATION

—: CHURCH OF ST MARGARET :— CLEY NEXT THE SEA. NORFOLK :—

PLANS SHEWING PROPOSED RESTORATION.

HERBERT · J · GREEN · ARCHT

LONGITUDINAL SECTION LOOKING NORTH



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THE BUILDING NEWS
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FRIDAY, DECEMBER 21, 1894.

THE LONDON BUILDING ACT, 1894.

By Professor T. Roger Smith.

A MEMORANDUM of the principal changes made in the rules, and of the new enactments introduced, under the above Act, so far as the same are likely to affect the erection of dwelling-houses of moderate size in a suburban district.

N.B.—This memorandum is not exhaustive. It does not refer to all the parts of the Act, and does not profess to include any of the rules in the old Acts and by-laws which are re-enacted. What is given is only what is new, and of that only what is most likely to be wanted, and this has been, generally speaking, stated in as condensed a form as possible, not in the words of the Act.

The London Building Act, 1894, takes effect from January 1, 1895; but buildings commenced before that date and then in progress may be carried out in conformity to the old Acts, as may works executed under any contract entered into before 25 August, 1894 (the date of the passing of the new Act).

WALLS OF DWELLING-HOUSES.

Schedule 1 (7).—For the purpose of determining their thickness, the height of walls shall be measured from the base of wall to the top of the topmost story, whether such wall is carried to the full height or not. In the case of a gable where there are no rooms in the roof, to half the height of the gable.

Schedule 1, Part 1.—A wall one brick thick may under no circumstances inclose more than two stories.

(1) A wall up to 25ft. high and up to 30ft. long, and comprising one or two stories, may be one brick thick. If there are three stories, or the wall is more than 30ft. long, a wall of this height must be one brick thick on top story and one and a half brick below such story.

(2 and 3) Walls between 25ft. and 40ft. high and under 35ft. long must be one and a half brick thick below the top story, and one brick for the remainder. If longer than 35ft., a wall of this height must be two bricks for the lowest story, then one and a half up to topmost story, and one brick the remainder. The same thicknesses apply to a wall between 40ft. and 50ft. high, but under 30ft. long. A wall of this height between 30ft. and 45ft. long must be two bricks thick for two stories, and one and a half the remainder. If longer than 45ft. the lowest story must be two and a half bricks thick. For greater heights and lengths consult the Act.

Schedule 1 (9).—Footings.—The height of the footings must equal $\frac{2}{3}$ of the thickness of the wall at the base. So provide for a 1-brick wall, two courses; for a $1\frac{1}{2}$-brick, three courses (four if bricks are small); for a 2-brick wall, four courses (five if the bricks small). To have regular offsets. When an adjoining wall interferes the footings may be omitted.

Schedule 1 (10).—Underpinning is to be in cement to full thickness of old work, and with proper footings, or to an increased thickness, if required on solid foundations. The whole shall be executed to the satisfaction of the district surveyor.

Schedule 1 (11).—Thicknessing may only be done after notice has been served on district surveyor of the intention to thicken; must be in cement properly bonded to the old to the satisfaction of the district surveyor.

Schedule 1 (2).—Corbelling-Out is permitted to the extent of 6in., well and solidly done, and the inner face of the wall opposite the corbelling is to be carried up flush.

Schedule 1 (3).—Hollow Walls, if constructed, must have, on one side of the hollow space, a wall of the full thickness prescribed by the Act.

Sec. 54 (1).—Recesses and Openings in External Walls.—The area of these *above the ground story*, taken together, is not to exceed one-half of the whole area of the wall itself, above the ground story.

Sec. 54 (2).—Recesses in Party-Walls must have an arch in two rings of brickwork to full depth of recess turned on every story, except in the case of recesses for lifts; but if recess is not deeper than 5in., corbelling may be substituted. Recesses must not come within $13\frac{1}{2}$in. of external walls. The superintending architect, if applied to in accordance with rules to be hereafter made by the County Council, will have power to consent to a modification of the rule as to recesses and openings in special cases.

Sec. 73 (1).—Projections which are to be of fireproof material include outside landings, outside stairs, outside steps. Excepted are the eaves, barge-boards, and cornices to detached and semi-detached dwelling-houses (without the restriction as to their position which was in the previous Acts), and to other dwelling-houses in which the party-walls are corbelled out so as to project 4in. beyond such eaves, barge-boards, or cornices. N.B.—The County Council can vary this provision.

Sec. 73 (2).—Every Balcony, cornice, or projection shall be tailed into the wall of the building, and weighted or tied down to the satisfaction of the district surveyor.

Sec. 73 (5).—Bay Windows may not encroach on the public way, but in a 40ft. street, or if the front wall of building be not less than 40ft. from opposite boundary of street, bay windows to dwelling-houses, on the owner's land, 3ft. from ground line of front, but not so as to come within prescribed distance of centre of roadway. They must not be brought nearer to centre of party-wall than the amount of their projection. They may be three stories in height, but must not occupy more than three-fifths of the frontage, must not encroach on public way, or occupy land agreed to be given up to public, and must not be used for trade purposes.

Sec. 73 (6).—Projecting Oriel Windows or Turrets in a 40ft. road may be corbelled-out from a front wall. They may not project more than 3ft., nor more than 12in. over public way; no part of them is to be within 10ft. of the pavement, and no part of any such projection where it overhangs the public way may be within a distance of 4ft. of the centre of nearest party-wall. On no floor shall the width of such projections taken together exceed three-fifths of the frontage at the level of that floor. The whole is to be constructed to the satisfaction of the district surveyor, with an appeal to the superintending architect.

For bay windows, oriels, or turrets to which above rules do not apply the sanction of County Council (in consultation with the Local Board) must be obtained.

PARTY-WALLS.

Sec. 87.—A party-wall can only be built at the line of junction of two properties by consent of the adjoining owner and after notice. If such consent is refused, the builder may serve a notice on adjoining owner, and after one month may erect an external wall up to the boundary line, and may put his footings and concrete on his neighbour's land; but he must make compensation for any damage occasioned thereby.

Where an external wall is built against another external wall the district surveyor may permit the footings on one side to be omitted.

BICYCLE HOUSES AND SOME GREENHOUSES EXEMPT.

Sec. 201.—Small buildings not exceeding 30ft. in area and 5ft. from ground to eaves or plate, standing at least 5ft. from any other building and the street, and with no stove or flue, or heating apparatus, are exempt from the Act. So are detached greenhouses and the woodwork, but not the brickwork of greenhouses attached to other buildings. Window-cases for plants not projecting more than 12in. over the public way are also exempt.

Sec. 84.—No Wooden Structure, except a hoarding inclosing vacant land, and not more than 12ft. high, may be set up in any place without the previous consent of the Council. A builder's wooden workshop is only exempt during the construction, alteration, or repair of a building. A duly licensed hoarding is exempt, so is a pile or stack or store of timber not being a structure fixed or fastened to the ground.

Sec. 55.—Timber in External Walls must still be set back 4in.; but door-frames, window-frames, and loophole-frames may now be flush with the face of any external wall. The Council has power to exempt oak, teak, or other wood by by-law or otherwise.

Sec. 56.—Bressummers, if of Metal, must have at each end a clear space left for expansion equal to $\frac{1}{4}$in. for every 10ft. The district surveyor has power, at his discretion, to require that every bressummer shall have such story-posts, iron columns, stanchions, or piers of brick or stone or corbels as may be sufficient to carry the superstructure. The end of a timber not permitted to bear on a party-wall may be carried on a corbel or templet of stone, iron, or vitrefied stoneware tailed into the wall $8\frac{1}{2}$in., or otherwise supported to the satisfaction of the district surveyor.

FIRE-RESISTING DIVISIONS IN MIXED PREMISES.

Sec. 74.—If part of any building more than 10 squares in area (say 21ft. by 50ft.) be used for trade or manufacture and part as a dwelling-house, the two parts shall be separated by walls and floors of fire-resisting materials, and all passages and stairs and approaches to the dwelling-house part shall be of such materials. The doorways necessary for communication may be constructed in the walls of such passages, stairs, and approaches; and openings fitted with fire-resisting doors may be formed in any of the walls.

Sec. 81.—Railway Arches.—The Act shall for the future apply to any building constructed or adapted to be used for human habitation, built under, over, or by inclosure of a railway arch, or abutting thereon.

ROOFS.

Schedule 1 (1). — Sheds. — Open sheds under 16ft. high and under four squares (400ft.) in area may be built of substances and in manner approved by the district surveyor. For sheds of greater height or extent, it is still necessary to obtain the consent of the County Council.

Sec. 61.—The Roof of a dwelling-house must not be steeper than 75°, with the exception of tower, turret, or spires, and there may not be more than two stories in the roof. If the floor of any story in the roof of a domestic building is over 60ft. from the street-level, such story shall be constructed of fire-resisting material throughout.

Sec. 64 (1).—Fireplaces and Chimneys may now be corbelled-out at the level of any floor. Chimneys may be carried on iron girders having a direct bearing on walls to the satisfaction of the district surveyor.

Sec. 64.—(4) A flue must not be adapted to, or used for, a new oven, furnace, cockle, steam-boiler, or close fire for any trade or business, or for the range or cooking apparatus of any hotel, tavern, or eating-house, unless it be inclosed with brickwork one brick thick from the floor level up to the ceiling of the room above that in which the fire is placed.

Sec. 64 (5).—No flue shorter than 20ft. may be used for a steam-boiler or hot-air engine.

Sec. 64 (6).—Every flue must be rendered outside when passing through any floor or roof, or behind or against any woodwork.

Sec. 64 (7).—The position and course of every flue shall be distinguished outside the work as it is being carried up by outline marks in some durable manner, except where the wall is not likely to be built against.

Sec. 64 (17).—A hearth, and the incombustible substance on which it is bedded, shall be solid for a thickness of 6in. beneath the upper surface of the slab.

Sec. 64 (18).—A flue shall not be built in or against any party structure, unless it be surrounded with new brickwork at least 4in. in thickness.

Sec. 64 (13).—The six top courses of every chimney are to be built in cement.

Sec. 64 (21).—Timber shall not be placed inside any chimney opening within 10in. of the top of the hearth.

Sec. 66 (1).—The floor under every oven, copper, steam-boiler, or stove which is not heated by gas, and round the same for 18in., must be of incombustible and non-conducting materials, not less than 6in. thick.

Sec. 67.—The floor over any room or inclosed space in which a furnace is fixed, and any floor within 18in. of the crown of an oven, shall be constructed of fire-resisting materials.

Sec. 65.—Rules for the erection of furnace chimneys are given in the Act.

Sec. 47.—The Height of buildings is limited, and no building (with certain exceptions) may be erected or raised, without the consent of the Council, to a greater height than 80ft., exclusive of the two stories in the roof. More than two stories in the roof are forbidden.

Sec. 63.—Every new building exceeding 60ft. in height shall have such a fire escape from the part above that level as can reasonably be required. No such building shall be occupied till the County Council has certified that this is the case.

Sec. 61 (2).—Every building exceeding 30ft. in height, and used wholly or in part as a dwelling house or factory, and having a parapet, shall be provided with a dormer, window, or door, or a trap-door or other proper means of access to the roof.

Sec. 49.—No building (except a church or chapel) in a street laid out after August 7, 1862, and less than 50ft. in width, may be carried higher than the street is wide.

OPEN SPACE.

Sec. 40.—Air Space Behind Houses.—If there is a habitable basement, a space for light and air of no less than 100ft. super. in the rear, belonging exclusively to the house, free from any erection above adjoining pavement, must be provided.

Sec. 41 (1 and 2).—In the rear of every domestic building there must also be a space not less than 10ft. deep, as wide as the building, and of 150ft. superficial area at least. This space is to be free from any building, save a w.c. and ash-pit, and these must nowhere be more than 9ft. high; but the ground story of the main building, if it is not to be inhabited—e.g., if it be a back shop—may extend over this space as high as 16ft.

Sec. 41 (3).—The buildings must, at the back, be limited by an imaginary slope, starting from the back boundary, and allowing them to rise 2ft. for every foot they set back therefrom. If they stand in a street laid out before Jan. 1, 1895, that slope starts 16ft. above the pavement level in front, in other cases from that level. Such a house at 10ft. back may, therefore, rise 36ft., and at 20ft. back, 56ft. A house in a street to be laid out hereafter might only rise to 20ft. at 10ft. back, and to 40ft. at 20ft. back. Chimneys, dormers, &c., may extend past this line.

There are various provisions affecting the above rules, and directions how to apply them when the pavement is not level, or the site is not level, or the plan of the site is irregular, or there is open space at the rear dedicated to the public, or when the buildings occupy a corner site. The Council can dispense with these rules if satisfied that as much cubic space of air will be provided as there would have been if the rule had been conformed to.

Sec. 70.—No Habitable Room may be constructed, and no such room constructed after the commencement of this Act may be occupied unless it be of the clear height already stated, and ventilated by a window, dormer, or lantern of the size and description given in the Act. In the basement story the boarded floor of every such room shall be ventilated. Every habitable room constructed over a stable shall be separated therefrom by a floor having 3in. of concrete pugging and with a lath-and-plaster ceiling, or other solid construction. The approach to such rooms (staircase, passage, &c.) shall be separated from the stable by a 9in. brick wall.

Sec. 74.—Staircases.—In every tenement building the common staircase must be ventilated on every story above the ground by windows or skylights, and the principal staircase of every dwelling-house must be ventilated by a window or skylight.

Sec. 13 and Sec. 43.—A person wishing to alter or re-erect a building standing on the 1st January, 1895, or within seven years previously, may cause plans of the building to be verified by the district surveyor, and may then proceed to build, but so that no more land be occupied. If he desires to deviate from the old plans, he is to obtain the sanction of the Council.

Sec. 42.—There are special provisions in several parts of the Act affecting houses to be inhabited or adapted to be inhabited by persons of the working class, and tenement buildings in which such persons may be accommodated. If such buildings do not abut on a street the plans must be approved by the Council.

Sec. 118 and Sec. 119.—No building may be erected within 50ft. of any building used for a dangerous business, and no dwelling-house within 50ft. of any building used for a noxious business.

Sec. 20.—The Conversion of Buildings is the subject of rules which prohibit without the consent of the Council (1) the conversion into or use as a dwelling-house of a building not originally constructed for habitation; (2) converting two or more dwelling-houses into one; (3) turning one dwelling-house into two or more; (4) so altering an exempt building as to bring it within this portion of the Act had it been originally built in that form; (5) restoring to use as a habitation a building which has been discontinued as a dwelling-house or appropriated to another purpose; (6) converting a shop into a dwelling-room; (7) converting a dwelling-house into a shop, if any of the above is so done that the building when altered will not be in conformity with the provisions of this Act.

OFFICIAL v. PRIVATE PRACTICE.

WHETHER an official to a board should retain his professional practice or not is a debatable point among many. As a matter of experience it has been found that the public gain by the official giving his undivided attention to the duties of his office, and that the men selected for a public position are best taken from those whose inclinations and training have specially fitted them for official duties. The private practitioner is not invariably the right man; he is often a man of indecision or want of firmness, or he may have a very sensitive organisation which ill-qualifies him for a position in which equanimity is particularly necessary. An important requisite to a man holding a public appointment is that he be not too "thin-skinned." Officialism soon dulls the edge of a keen sensibility; it makes the representative of the law less punctilious about offending the individual, and in proportion to the extent of his official jurisdiction it makes him sometimes arbitrary and overbearing. Municipal surveyors and medical officers of health are called upon to discharge duties of the most varied and onerous kind, which demand qualities of firmness and capacity to administer with even-handed justice. These are not often to be found amongst professional men in private practice, and for certain obvious reasons. The private practitioner has to seek his clients, to comply with the instructions he receives, to uphold his client's interest in case of disagreement. His position is often one which requires tact and complacence in dealing with his client, whom he desires naturally to please. In many cases he has to, if possible, overcome the objections of the municipal surveyor or district surveyor, to try and evade the Act, and even to resist the strict compliance with certain sections or by-laws. The private practitioner has rather to assume the position of defendant in all those points of law which the local surveyor has to enforce. These are qualifications, or, rather, habits of mind that disqualify the private architect, however able he may be, from discharging the judicial functions of the public surveyor. The very qualifications which go to make a gentleman of education, courtesy, and good feeling are remote from those most necessary for a public official who has to control, or keep in check, builders and owners of all sorts, many of them not over-scrupulous or particular in their mode of warfare. The municipal or the district surveyor must be prepared to deal with daring and unscrupulous enemies of the law at times, and with all sorts of intrigues amongst members and partisans on his own committee.

A question of considerable importance to the profession in the Metropolis has arisen connected with the statutory appointment of district surveyors under the new Building Act. According to the by-laws and regulations which the London County Council have lately passed, Part XIII., it is made prohibitory for a district surveyor to practise as an architect. Of course there is a great deal to be said on both sides; but we are certainly disposed to think the weight of evidence is on the side of the "regulation" of the Council. The strongest argument that has been adduced by those who think that district surveyors should be permitted to be practising architects is that advanced by Mr. W. D. Caröe, and supported by many members of the Institute, that the practising architect who has dealt with problems of construction, and has supervised operations on his own account, is the most efficient man for the post. There cannot be any doubt that men who have been interested in their own work in difficult questions of construction are better able to form an impartial judgment of any such question that may arise under the Act. The administrator of the by-laws may be a fairly competent surveyor, of general knowledge and some experience, but not so skilful in constructive details as an architect. On the other hand, a great deal can be said for confining the district surveyor's attention to the duties of his office in seeing that the provisions of the Act are carried out. If he had a private practice as an architect he would be naturally restrained in action; he would scarcely like to insist upon rules which he himself had been neglectful of in his own work, and his time would be less at the service of his official duties. On many questions of disagreement he could not lay down the law or exercise a judgment with the same independence and freedom as he could if he were entirely acting on his responsibility as a surveyor of the London County Council. Another point, to our minds, that seems equally strong against the dual capacity is that independent practitioners would have less chance of engagement where district surveyors also practised on their own account. Owners and lessees of buildings would consider it to be their best policy to employ the district surveyor, under whose control all plans and buildings would have to come. They would say "he might as well be employed first as last," as the designs have to be submitted to him.

In the discussion of this question at the Institute, it appears to us that Mr. John Marsland, a member of the Building Act Committee, struck the key-note when he remarked that he had listened to no argument why the resolution should be taken off the books "except that it would be for the benefit of the Institute." No independent member or younger members had anything to say against the regulation, and he thought the Institute should support their recommendation with better argument. Again, Mr. E. T. Hall very rightly urged that the members of that body would do well to repudiate the notion that they looked after the appointments of district surveyors because they were valuable to the members. This is certainly a rather low view of a public duty for a professional body to take. Whatever their objections may be to independent district surveyors without private practice, it would have been in better taste not to have brought this point too prominently forward. Architects, in their corporate capacity, are responsible to the public for matters connected with the safety and construction of building in London, as upholders of the Act, and the only useful stipulation would be that a candidate for the office of district surveyor should have been in practice some years.

One of the chief reasons why a district surveyor ought to be independent of private practice is that he should devote his whole time to the duties of his office. We can bear out the statements made the other evening that in some districts the surveyor was never seen. If a dispute arose about a party-wall or projection, he would probably put in an appearance. Generally his clerk assumed the *rôle* of surveyor. By the new regulation in force this delegation of duty will be impossible. Every candidate will be required to sign a declaration that he accepts the appointment on the understanding "that he will personally discharge the duties of his office," subject to sec. 142 of the Act; "that he will give his whole time to the duties of his office," and that he will "not during his continuance of office carry on business as an architect, surveyor, or builder, &c., directly or indirectly as a partner, or otherwise be interested in such business," &c.

The absolute importance of such a rule has been proved by the experience of large municipalities. Whenever the corporation engineer or surveyor has been permitted to undertake private work, the tongue of slander has not been long quiet. Quite lately we have heard disquieting rumours about surveyor-"pluralists" who have undertaken work on their own account; and of others upon whom financial duties of the borough have been undesirably thrust, to the detriment of public interests and of their own peace of mind and reputation. Those who have had any experience of the duties of municipal surveyors know very well how often they are expected to undertake work quite outside their special function, in managing estates, collecting rents, paying wages, and other matters, which more particularly belong to the accountant's and treasurer's departments. Corporation economists are ever ready to put these duties on the surveyor, and the result is the appointment of assistants, or the overburdening of the surveyor with responsibilities which he ought not to be called upon to fulfil.

Whether an administrative capacity for carrying out the statute law for building and the by-laws of the Public Health Act in relation to various sanitary matters can be efficiently combined with architectural ability in the same individual, is a question which we may leave to our readers to judge for themselves. One thing appears certain, and that is that official municipal architecture has not been generally esteemed, and we cannot expect an official, "steeped up to his ears in details" of town work, to spend much thought or study on designs for public buildings, however valuable his ideas of official accommodation may be. Nor is it fair to the profession, who have local claims or otherwise, that buildings of importance, in an architectural sense, should be exclusively designed by salaried officers. We are ready to acknowledge instances where substantial and creditable structures for baths and washhouses, piers, markets, and even public libraries have been carried out by town surveyors; but we believe the consensus of opinion of these officials would be found generally to be in favour of leaving strictly architectural work to outsiders. Utilitarian buildings, like markets, abattoirs, and baths, are often intrusted to the borough surveyor, because he is probably better acquainted with the actual requirements than a stranger would be. In particular branches, indeed, such as these and artisans' and labourers' dwellings and public abattoirs, the borough surveyor has an advantage, as he is conversant with the Public Health Act and the powers of urban authorities under it, and under the Artisans' and Labourers' Dwelling Act. These are qualifications which often enable him to undertake works not so well understood by the private practitioner. His plans are everything that can be desired, though his elevations are faulty. It is here his weakness appears. He has to employ another to do the architectural drawings, or it is given to an assistant in his office. Architectural practice alone is sufficient to engage the attention of one man. When he is distracted with sanitary and surveying practice, valuations, arbitrations, the administration of by-laws, and other matters, it is impossible for him to direct his mind profitably to any work of an artistic kind. Upon these grounds the union of public duty with private interests appears to be undesirable, if not impossible.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The fortnightly meeting of this Institute was held on Monday evening, the President, Mr. F. C. Penrose, F.R.S., in the chair. The deaths were announced of Mr. W. G. Coward, of Sydney, Fellow, and of Mr. H. A. K. Gribble, of London, Associate, and on the motion of Woodward a vote of condolence was passed with Mrs. Gribble. The President announced that the Ashpitel Prize, given to the candidate who had most highly distinguished himself during the year in the obligatory examinations, had been awarded to William Edward Vernon Crompton, of Moot Hall Chambers, Wallgate, Wigan.

THE LONDON BUILDING ACT, 1894.

A paper on this subject, illustrated by diagrams, was read by Professor Banister Fletcher. The author remarked that, the definitions had ever been the stumbling block of Acts of Parliament, and it was curious that, although in the new London Building Act the definitions were much improved, there was among them no answer to the moot question, "What is a building?" The case of "Stevens v. Gourley," heard before magistrates, and on appeal before the late Chief Justice Erle and Justices Williams and Biles, showed the extreme difficulty of definition. Indeed, the lecturer believed that in the original draft of the Bill an attempt was made to define a "building," but this definition was struck out during its progress through Parliament. Why did not legal practitioners he would ask, face this difficulty of settling definitions, instead of shirking it, and thus leaving laymen to fight over mere expressions in Courts of law? As a proof that definitions could be made clear and not liable to be misunderstood, he quoted Definition 26 in Part I. of the Act, which was so worded as to include every building which could be erected except two—"public building," defined in No. 27, and "warehouse," defined in No. 28; definitions No. 37 and 38 again explained the expressions "inhabited" and "habitable." As regarded the centre of a roadway, the lecturer pointed out that, under the Act, the centre remained fixed, notwithstanding that the centre of the roadway might have become altered by reason of the roadway having been widened on one side only, or on both sides, to an unequal extent. This definition seemed to him of much value in preventing the active owner from loss of his proper advantage. Thus the owner on either side of a road 20ft. in width, if the widening were required for carriage traffic, would have to set back each 10ft., and therefore each owner, A and B, lost respectively 10ft. in the depth of his land. Now, let them assume that A desired to have a 50ft. road, and set back from the centre of the roadway 25ft. B, without this regulation, need only set back 5ft. instead of 10ft., and then to provide a road 40ft. in width gained 5ft. in the depth of his land, and hence by delay B gained an advantage, and prevented A from obtaining the advantage he desired. It was, therefore, absolutely essential that they should distinguish between the legal and geometrical centre of the road. The fixing of a gradient, under Section 9, sub-section 6, was a new and, he considered, an extremely good feature. He strongly objected to the powers the County Council had reserved to themselves to vary the rules; in fact, the Bill, as originally drafted, bristled with permissions to evade every clause of it, and although it had to some extent been modified in this respect, he would strongly recommend the Council to get rid of this permissive power as far as possible by formulating fixed rules and regulations, so that one set of rules would apply to all cases. It seemed to him that subsection 4 of Section 9 would prevent the formation in the future of circular and crescent roadways having each end communicating with the same streets. There had been much litigation on this point; but the words used in the present Act, "laying out the same to afford direct communication between two streets," would probably prevent any question arising in the future. Under Section 56 of the new Act, the district surveyor had more power with respect to bresummers, and, so far as he was aware, it was the first Building Act setting out any allowance for expansion of metal. The mention in this section of a "bearing of 4in. in length at each end" was important, because, in dealing with long wooden beams, if the builder insisted on his right of only giving 4in., the district surveyor could, if he thought the bearing insufficient, require additional story-posts or iron columns to be provided. The new restriction as to projection of cornices to only 2ft. 6in. over the public way would seriously interfere with the treatment of Classic and Renaissance architecture, and the only way to obtain a greater projection would be to set back the front walls, or to obtain the permission of the County Council. It would be noticed that a slight alteration was permitted in the area as to the cubic contents of warehouse buildings, which had been extended from 216,000 to 250,000c.ft. In Clause 76 power was given to the Council, acting under the advice of the superintending architect and the chief officer of the Fire Brigade, to consent to each building containing additional cubical contents; but such consent would only continue in force while the said building was actually used for the purposes of the trade or manufacture in respect of which the consent was granted. More latitude in the use of combustible materials was permitted by the relaxation of the provisions in the expiring Act, and under the new Act cornices and bargeboards of wood were permitted. One of the new requirements was that buildings exceeding 30ft. high, used as dwellings or factories, and having a parapet, were to be provided with a dormer window or door opening on to roof, and a trapdoor with proper step-ladder, or other proper means of access to the roof. It seemed that this requirement could only be enforced where there was a parapet. The new Act limited the number of stories in the roof to two, and where a story was above 60ft. from the street level, the upper surface of the floor had to be not of wood, but of fire-resisting materials. While the old rule as to the angle of inclination for warehouse roofs was continued, a novel feature in the Act was the fixing of an angle of inclination for the roofs of other buildings, which must not incline upwards at a greater angle than 75°; this limitation did not, however, apply to towers, spires, or turrets. The Act recognised for the first time a separation of buildings by other than party-walls. It permitted the separation by a "party structure," and this might be a party-wall or a partition, floor, or other structure separating buildings vertically or horizontally. The rules with regard to separate sets of chambers in one building were made more stringent by making the area commence at 2,500sq.ft. instead of 3,500sq.ft., and the uses to which such buildings might be put were very limited. The provisions as to chimneys and flues were practically the same as in the expiring Act; an important alteration prevented the use of ordinary flues for trade purposes. The provision for marking the position of flues on walls that were likely to be built against was a useful one; but, personally, he had never experienced any difficulty in getting this done. Section 64, sub-section 6, provided that all flues were to be rendered on the outside face when passing through a floor or roof; this would involve some additional expense. The new Act had no provision as to the thickness of the backs of chimney openings in walls other than party-walls, such as was made in Section 20, sub-section 7, of the expiring Act. There was a slight reduction in the thickness of hearths, from 7in. to 6in. An important new feature in the Act is the requirement that the top half-dozen courses of a chimney-stack or shaft should be built in cement. This would be most useful in maintaining the stability of the chimney-stack, and also that of the tallboys, wind-guards, and cowls, too frequently added. The thickness and tapering of shafts was fixed in the new Act, which also limited the height of a shaft by its width or circumference at the base. Indeed, many existing shafts, if condemned, could not be rebuilt to their present height without increasing the width at the base. The provision as to "hollow walls" was likely to prevent them from being built, because the wall on one side of the hollow space was required to be of the full thickness prescribed, plus the hollow space, plus the outer casing. The enactment that no recess should come within 13½in. instead of 12in. of the outer surface, as in the expiring Act, was wise, as it made a brick measurement of the requirement. A valuable alteration under the new Act was that no limitation seemed to be set on the quantity of openings and recesses on the ground story. This was an important concession, and removed a great difficulty as to shop premises; and although some critics had contended that this clause might read that there should be no openings or recesses on the ground story, the common-sense reading would assuredly be adopted by the Courts. Instead of merely saying, as the old Act did, that recesses were to be "arched over," the new Act set out the structural method of arching recesses more than 5in. in depth, and a novel feature of the Act was that recesses under 5in. in depth might be corbelled out in brickwork or stonework. Hoardings were exempted from the Act where they were placed around vacant land, provided that they did not exceed 12ft. in height. A relaxation of the strict rule as to open sheds would be found to be of much advantage to small traders. The Act demanded an increased height in all dwelling rooms, which, instead of 7ft., must now be 8ft. 6in., while for rooms in roofs the height must now be 8ft. instead of 7ft., an increase of 18in. in the one case and of 12in. in the other. He thought the silence of the Act as to the size of lantern lights was a wise one. The requirement for ventilation was sufficient; it was that the open should be equal to one-twentieth part of the floor space. Under Section 70, the restrictions as to underground rooms were continued, and although the penalty for non-compliance was not stated in sub-section 2 of that section, its amount was duly given in Section 200, sub-section 11. Then Section 70 in the Act required ventilation under the lowest floor, unless it were a solid wood floor on concrete. Novel, and as he thought scarcely necessary, provisions were made as to the sizes of windows in rooms; but the regulations of the sizes of windows in the the roof were, he thought very desirable, for too often such windows were placed too near the floor solely to suit the elevation. The lecturer, by means of a series of elaborate diagrams, showed the requirements of the Act as to the thicknesses of walls; the walls were now defined for every class of building, and were simplified. Speaking broadly, domestic walls had been a little increased in thickness, while those of the warehouse class were reduced; but there were many exceptions to these generalisations. A novel feature provided that where the length was 45ft. or greater, the increased thickness might be distributed in piers. An extremely important alteration was that to the yard space, the novel feature being the introduction of the diagonal line, limiting the height of buildings according to the depth of the back yard. In the original Bill it was proposed to have an angle of 45°, which would have reduced the heights of buildings to a much greater extent than the angle finally adopted, which was 63½°. The lecturer exhibited a diagram showing the operation of the rule with a back yard of the smallest depth permitted by the Act, and showed that it must injure a building internally, for it would be impossible to get square rooms while building up to a diagonal line. In conclusion, he said it would be very advantageous to learn whether, to exempt a structure from the operations of the new Act, a builder must have the footings actually put in, or was it sufficient that the contract should be signed? And, further, what was the position of a lessee who, under an old agreement, was under covenant to erect a certain number of houses to a given plan on an estate year by year?

Professor T. Roger Smith, in opening the discussion, said there were a great number of other variations between the expiring and the new Building Acts besides those touched upon by Mr. Banister Fletcher. Speaking generally, there was not a large amount of radical change in building legislation; but there were very many variations and adjustments, and a great number of special cases were provided for. This would no doubt prove troublesome in some cases, especially at first; but a good many difficulties had been cleared away by the new Act. One instance of the improvement was the removal of all restriction as to the proportions of openings in the front wall on the ground story, which would be of great advantage in designing shopfronts. The old rules as to voids and spaces were structurally unnecessary now that the manufacture of steel girders had been so much improved. The law had been amended in permitting walls to rest on iron girders; it was true this had constantly been done of late, but the doubts as to the legality of the system were now removed. There were at least a dozen similar points on which the law recognised the changes in constructional systems, and was rendered more clear in its requirements. The law had also been relaxed with regard to oriel windows, bargeboards, and other picturesque features. Personally, he was sorry to note another relaxation — that which permitted windows and doors to be brought out flush with the wall surfaces without a reveal. He did not imagine these relaxations would affect house architecture much for the next twenty or thirty years. When the duty was taken off bricks, it was expected that they would be made of all sizes; but they all knew that the vast majority of bricks were still made of the stock dimensions. Professor Banister Fletcher had made no reference to the Tribunal of Appeal. The decisions of such a court should be systematic and based on a certain course of procedure. He wished to bear testimony as to the great attention given by the Building Acts Committee of the County Council to suggestions by district surveyors and architects for the improvement of the draft Bill, and the many modifications introduced had greatly improved it. He wished the Act had been a smaller one.

Mr. H. H. Collins observed that the major portion of the lecture was to be found in the introduction to Mr. Banister Fletcher's new book on the Building Act. The Act had been greatly improved by the changes made at the suggestion of the District Surveyors' Association, and the members of that body would loyally carry out its provisions. He agreed with the lecturer in regretting that the 63½° rule had been adopted, as it would be productive of bad construction, for back walls would be constructed of slates and tiles, instead of honest brickwork. He should like to ask Dr. Longstaff what provision had been made for communication through horizontal party structures. There was no mention in the new Act of the sizes of flues, which might now be 2in. in diameter, or any other size a builder preferred. Hollow walls were, as Mr. Fletcher had said, practically prohibited within the Metropolis. He should like to know what was the meaning attached to "habitable rooms" in a basement. Did it include a kitchen, scullery, or pantry? Again, in the clauses relating to dwellings for the "working classes," the latter term was not defined. Perhaps Mr. Longstaff could tell him if he might include his own house in the category? Mr. Collins concluded by exhibiting some diagrams he had prepared, from which he sought to show that under the new Act the width of a court being reckoned from window to window, it could be made a mere narrow slit of any length possible, and thus would become a long reservoir of stagnant air.

Mr. John Slater thought that on the whole the London County Council were to be congratulated on amendments made to the crude suggestions of the original draft Bill. He disagreed with Mr. Fletcher as to the ill effects of the powers retained by the Council to vary or relax the requirements in exceptional cases. To him the permissive clauses seemed the salvation of the Act in dealing with an ancient city like the Metropolis, for in many cases insistence on the letter of the law did inflict considerable hardship on building owners. He trusted the Council did not intend to prohibit the formation of open crescents under section 9. He should have preferred that the Tribunal of Appeal should have consisted of one barrister and one architect, rather than of three architects and surveyors.

Dr. Longstaff, Chairman of the Building Act Committee, L.C.C., said strong objections had been made to granting the Council permissive powers to vary or relax their rules; but he, for one, should decline to frame a single building regulation unless powers to waive it in exceptional cases were granted. At the same time, he hoped and believed the clauses would, as a rule, be enforced, for every permission involved delays and the possibility of injustice. As to the angle of 63½° at the rear of premises, he regarded it as a very liberal allowance to building owners. There were several ambiguities in the Act, each the result of alterations made while passing through Parliament, and in particular there were two very difficult questions of interpretation of which the Building Act Committee knew, which no critic had yet discovered, and which he certainly was not going to reveal. Mr. Collins had complained that the term "working classes" was not defined, and had suggested that he might come within its range. That was impossible, for the most modern definition of the working-classes was "persons who never work more than eight hours a day." It had also been said that men might be divided into two classes—men who work, and working-men. The commencement of a building could not be reckoned from the date of the signing of the contract, nor even from the making of excavations, but from the placing of materials in position. A building agreement would not be construed by the Council for the purposes of the new Act, as a building contract. As to habitable rooms, Mr. Collins seemed to regard a wine-cellar as coming under that definition, but neither that nor a pantry or scullery would be included. If a building were separated horizontally by a party structure, say, by iron and concrete floors, if Mr. Collins formed openings in those floors it would cease to be a party structure. They had thought it unnecessary to define the dimensions of flues, as architects might have their own ideas on the point. As to the width of areas, it was true that under the new Act they might be made very narrow; but he did not believe this would be acted upon. If an area were constructed for light and air, it would let in more of each if 300ft. long than if carried only 10ft. The rule that Mr. Slater fancied would permit the formation of crescents was intended to give powers to prohibit the formation of a street behind a square block having only an outlet at either end into the main thoroughfare, and was merely a permissive clause.

Mr. C. Stanley Peach suggested that a classified list of decisions of the Tribunal of Appeal ought to be kept for reference by architects and building owners. The question of the centre of streets promised to be a difficult one, and he had a case coming on of a street formed between July, 1878, and August, 1890—dates referred to in the Act—in which the centre had never been defined.

Mr. C. Fowler, in proposing a vote of thanks to the lecturer, expressed his disapproval of the rule as to an angle of 63½° at the rear of buildings as inimical to good building.

This was seconded by Mr. Thomas Blashill, superintending architect L.C.C., who asked what better definition than an angle of 63° could be suggested? It was easy to give a sound rear wall under it by keeping the building well within its boundary at the back. One great reason for the regulation requiring a 4½in. reveal to all windows (now abolished) was that, in case of fire, the glass was less liable to fall out on the heads of passers-by, and special means would have to be taken by architects building their windows flush to prevent such accidents.

Professor Banister Fletcher, in acknowledging the vote of thanks, said that he quite agreed with the omission of the sizes for flues. Many architects regarded a circular flue 6in. in diameter as preferable to the old 9in. by 14in. flue. They had been divided in opinion on the diagonal line at the rear of buildings; but he could assure Dr. Longstaff that all the district surveyors acted on the square, and would loyally carry out the provisions of the new Act, so as to make it work well and thoroughly.

A SPECIFICATION ANNOTATED.—V.

21. *Removal of Rubbish.*—The buildings and site must be kept clear of rubbish and waste material. On completion of the works, these must be given up in proper order; the floors of the building washed and the windows cleaned, and the site levelled or sloped as shown on the plan.

Some builders and their foremen conduct their building work in a very slovenly manner. Not only is the site covered with all kinds of rubbish and materials, but every apartment of the building is also converted into a lumber store. Brickbats, stone rubbish, old mortar, and cement which has set should be carted away from the premises as these are produced during the progress of the works, or they will without doubt be used where they should not be. In an important building in the north of London a heap of soil and a quantity of turf, stripped off the area of some foundation trenches, were allowed to lie along the trenches until the concrete was filled in. The work commenced one morning early by burying all the turf in the trenches before the concrete was thrown in. If all this spoil or waste had been carted away, this irregularity could not have occurred. In another case, in a southern county, the floors of the outbuildings were specified to be of broken bricks laid 6in. thick. Tons of broken bricks were delivered on the site long before the floors were laid, and, it was noticed, these disappeared gradually, owing to a liberal use of them in the brick walling! All material not in strict accordance with the specification should be declared a nuisance, and its immediate removal from the site insisted upon.

22. *Scaffolding, Shedding.*—Safe and sufficient scaffolding is to be provided throughout, and the scaffold floors are to be raised at intervals of not more than 3ft. 6in. high to prevent building "overhand." Putlog holes are to be filled at once when the putlogs are removed. Temporary sheds, for lime and other materials liable to be damaged by wet, are to be erected on convenient spots, and "horses" to take flooring-boards are to be placed where the boards will have a full exposure to currents of air.

Some contractors have such a scant supply of scaffolding, that to get round the building the architect must balance himself on a single 9in. plank. Others, if they have a sufficient supply, take care to remove it from any place where the work is likely to attract attention owing to some defect. Others, again, are not able to carry up the work in stages all round the building, but must raise it in blocks, owing to a deficiency of poles and planks. This is prejudicial to good building, and therefore a good supply of sound poles, putlogs, cords, and planks should be insisted on. Bracing and staging ranges of scaffolding should also be insisted on—that is, poles should be tied diagonally across the uprights and ledgers in sufficient numbers and in such position as will stiffen the whole, and, what is most important, prevent it from *leaning* in any way against the fresh work, whether of brick or stone. Some really first-class ranges of scaffolding may be seen to many of the buildings in course of erection in London, done by special workmen, who do no other work. Indeed, the scaffolding to some of these buildings appears to be the only really first-class work about them. The erection and maintenance of water-tight shedding is a matter of the first importance. Cement and lime, delivered in casks or bags, should be placed under cover at once in a proper shed. It is painful to see these stored under such extemporised covers as loose corrugated sheets, sacks, or old tarpaulins. All sheds of this kind should have roofs constructed with a slope sufficient to discharge water from melting snow and heavy rains. A few years ago a firm of contractors in the north of London stored some tons of cement in sacks under a shed with a roof nearly horizontal. The snow lodged on the roof, weighing it down to a hollow in the centre, and the water from the thawing snow, of course, saturated the cement, setting it all solid in the bags. The contractors were equal to the emergency, for they ground up the cement, bags and all, to make mortar!

23. *Care of the Building.*—The care of the buildings is to rest with the contractor, who must be responsible for, and make good all damage done to, them until possession is taken by the building owner.

This clause is a more important one when the contract works are for additions to an existing building, or a restoration, than when the building is entirely new; but in all contracts, whether for new work or alterations to old, the builder should be held responsible for the due care and maintenance of the buildings. Some architects insert a clause in their "conditions of contract" that the builder shall insure the new work in the owner's name in an approved office, and for sums increasing in amount as the buildings are raised. Receipts for the insurance premiums should be presented to the architect, and endorsed by him, before any certificate for payment is made on account of the works. In altering an old building already insured, it must be borne in mind that an increased premium must be paid while workmen are on the premises. Before any such works are commenced the office should be advised of the fact, and the increased premium paid, or considerable loss may be incurred in case of fire. Several important questions may arise out of the application of Clause 23, in the course of a very ordinary experience, chiefly as to the extent of a contractor's liability under such a clause. Let it be supposed that in the execution of some new work to an already existing building, that building is found to be in a more dangerous condition than was anticipated when the contract was signed; can the contractor be held responsible for the safety of that building when he cannot carry out his contract work without endangering it? Or, to convert an abstract possibility into a concrete actuality, take this case: In a certain church restoration it was provided that the uppermost story—the bell-stage, in fact—of the western tower was to be taken down and rebuilt, and a large archway opened between the tower and nave. Provision was made for this work, and the conditions of contract contained Clause 23. Now an inspection of this tower after the contract was signed showed (1) that the bell-stage was of wrought stone, very substantially built, the quoins and dressings tailed from 3ft. to 4ft. along the wall face, the alternate stems of the window panels bending through the full thickness of the walls. The whole stage, in fact, though of debased "Perpendicular" work, was as well built as it was possible to build it, but was still sadly out of perpendicular, and rent in several places on the four sides from top to bottom. The lower stages of the tower were stuccoed outside and plastered inside. The walls, over 3ft. 6in. thick, appeared to be sound. There was clearly nothing whatever in the construction of the bell-stage to account for its ruined condition, so the contractor set to work to clear off the stucco and plastering from the lower stages, feeling quite certain that the cause of the failure would be found here. Now, no work of this kind was provided for in the specification. It was taken altogether for granted the lower stages of tower were sound, but the contractor, feeling satisfied something must be wrong with the bottom, proceeded to examine it before he dealt with the top. The removal of the stucco and plastering showed (2) that the lower stages were built with rubble boulder stones having no bond of any kind whatever; (3) that there were several fissures in the walls, all of which had been filled with mortar, and were concealed by the subsequent stuccoing; (4) that these fissures were caused by the walls bursting asunder from the strain on them of the heavy bell-stage, and were not due to foundation failure; (5) that the two detached angles of the tower were supported by angle buttresses, and as these had wrought-stone dressings, and could not, therefore, settle down like the rubble-work, they burst away from the main structure, in some places far enough to thrust one's arm between the buttress and the walls it was meant to support! And this was the structure on which it was provided the wrought-stone bell-stage should be rebuilt. On the condition of the lower part of the tower being pointed out to the rector, he at once decided that it would be sheer madness to build anything on it, and appeals were at once issued for subscriptions to remove and rebuild the entire tower on account of its "dangerous" condition. The architect had little to do with this new departure—he was for ignoring the condition of the tower, and carrying out the contract. In knocking holes through the east wall of the tower, where it rested in part on the nave wall, to take needles for shoring, bucketfuls of perfectly dry mortar in the shape of dust poured out of the walls for hours at a time. In fact, so dangerous did the whole operation become, that the contractor took personal charge of the work, and on several occasions for days he had to order all hands out of the building, fully expecting to see the whole structure collapse. It may be asked here, Why, before this work was attempted, the bell-stage was not removed? Because the amount provided for that work had been deducted from the contract sum as its absurdity was recognised, and the contractor was now carrying out the only provision made for the tower—viz., the insertion of the arch. After incurring much personal risk, a large archway was cut through this old tower, and the jambs and arch were lined with wrought stone. The success of this operation invited attempts at other improvements in the tower. Two small windows were enlarged and a doorway widened, when one morning, the entire tower settled down quietly on the ground, bells, roof, and weathercock, all occupying positions vertically under those occupied by them before the settlement. The walls fell neither north nor south, east nor west—they simply burst out all round, as a plum pudding would if a weight was placed on it. And now the trouble commenced. Who was responsible for the collapse? Rather an important question, for responsibility carried with it a liability to rebuild the tower. The architect stoutly maintained that his general clause, "the contractor should be responsible for the buildings," clearly provided for rebuilding the tower at the contractor's expense, and he would listen to no compromise. The rector and the building committee, who had previously dealt with the contractor on their own responsibility in this tower business, now discovered that they had an architect, and must be guided by him. The contractor was naturally indignant. He said: "Here you have the failure of a building not put up by me, a wretched old construction of rubble masonry concealed by plaster, the condition of which your architect failed to discover before the contract was entered into. At my expense I cleared off the surface of the walls, and made clear to you the absurdity of carrying out an important work provided by your architect, and which must not only lead to the ruin of the lower portion of the building, but of necessity to the upper portion as well. You were so convinced of the correctness of my views, that you opened a subscription list for rebuilding the tower, on the grounds, as stated in your circular, that its present condition was 'most dangerous.' Yet, after risking the lives and limbs of myself and my men, you seek to make me responsible for a failure brought about by endeavouring to carry out your wishes." The errors here were first in the architect—failure to discover the condition of the tower; in the second place, when he was made aware of it, he should have recognised the fact, and provided accordingly; and, third, when the failure took place, he should have admitted it was almost inevitable, and have done what he could to bring about some amicable arrangement in the matter. The contractor was at fault in dealing with the tower at all when he discovered its condition, and that work must of necessity be done in maintaining it for which no provision was made in the contract. The sequel, unfortunately, proved that irregularities of this kind are a fertile source of annoyance to all concerned. Law proceedings were commenced, and friendship estranged, and though the contractor was paid a price for his work, yet both architect and client believed, or affected to believe, they were very badly treated, for they intrusted the rebuilding of the tower to someone else. Minor cases of damage to buildings arise when frost destroys pointing or cement work; but these are such trifling matters, contractors generally make them good without complaints. It is very doubtful, however, if they could be compelled to do so, unless the architect could show that materials not specified were used in the work. An amusing case, in further illustration of Clause 23, occurred to an engineer in the West of England. He was employed by a corporate body to construct some reservoirs for the water supply of a large city. A contract was entered into, and when the works were completed it was found that the main reservoir leaked badly. The corporation refused to pay the contractor, alleging, as a reason for this refusal, that a reservoir was of no use unless it held water, and as this one did not hold water, the contract could not be considered as completed. The contractor, however, insisted on being paid; he said he never contracted to build a watertight reservoir—that he only agreed to do so much digging, puddling, and brickwork—that he had fulfilled his contract to the letter, and did not care whether the reservoir held water or not. It is almost needless to add he was right, and he was paid the balance of the amount in full. To apply this principle more directly to building work, suppose it is found that, owing to a low pitch and insufficient lap of tile or slate, the rain drives through a roof and destroys the ceilings. Then if this work is done in accordance with the drawings and specification, the contractor is not responsible for its failure. He merely carried out his contract, and he did not determine what pitch of roof or bond of tile would be sufficient to make the whole watertight. In the building of a new church in one of the Midland Counties ground lias lime concrete, made with shingle from a local pit, was specified for the foundations. When the roof of the church was covered in, it was noticed that the arcade shafts were out of plumb, and were rapidly going over. The tower and spire leaned over 3in. or 4in. in a height of 50ft., and threatened to fall over altogether. On carefully examining the foundations it was found that the concrete had never set, and that it was as soft as the day it was thrown into the trenches, and this apparently because the shingle used was coated with clay. The walls and piers were instantly shored up, and brickwork in cement substituted for the concrete, which was altogether removed from the trenches. Here the client had to bear the expense of the work, as the contractor carried it out strictly in accordance with his specification.

COUNTY LUNATIC ASYLUMS.—VIII.

By George H. Bibby, F.R.I.B.A.

THE amusements of the patients are provided for in the recreation-hall, music and billiard-rooms, &c., within the building, and in the airing-courts and cricket grounds without. Their education is forwarded, when possible, in a room or rooms set apart as a school, but this occupation is suitable only for a comparatively small number of patients. These may be near to the sewing-rooms of the females, and the work-rooms of the males. The idea of the school is not to contend with the insane ideas of the patient, or to demonstrate by philosophy the impracticability of his projects; but to withdraw his attention from morbid ideas to matters which are of use and interest. It may, in some cases, be a useful means of awakening the mind, and of imparting the elements of mental culture to patients who were previously ignorant. Like all employment which excites the brain, it ought never to be permitted in acute stages, and never continued but for a comparatively short time; the subjects of instruction should be regulated according to age, sex, and previous education, and may consist of elementary instruction in music, drawing, history, and attractive subjects. It may be combined with recitation, and might sometimes with advantage be conducted on the principle of mutual instruction, the more educated patients being encouraged to assist those with less knowledge. Lectures, walks, games, tea-parties, balls, theatrical entertainments, &c., also serve to engross the attention, and amuse the patients.

In the workshops of an asylum the number of persons to be employed may be proportioned to those I have already given (*vide* page 495), or regulated according to any special requirements of the district from which the asylum patients are drawn. Work is decidedly advantageous for the quieter patients and during convalescence, where the desire for work is apparent. In some cases, all healthy thought and action is closely connected with their ordinary employments and callings in life, and the artisan can often only find in his occupation the best means of recovering his mental capacity. There should always be ample means for thorough access to all workshops by the supervising officials. The lighting, ventilation, warming, fittings, and other arrangements should all be of the highest quality, and ample lavatory, water-closet, and urinal arrangement must be provided in suitably-placed annexes, care being taken to provide separate sanitary offices in all arrangements, dividing quarrelsome patients from those who may be quiet and disposed to be orderly.

In all cases of insanity, whether recent or of long standing, next to diet, a judicious regulation of rest and activity is most necessary to be observed, fresh and open air, and, in the less acute cases, abundance of outdoor exercise on foot, and sometimes in a carriage. No asylum is complete which has not space sufficient to admit of prolonged outdoor exercise for all classes of its inmates, in gardens, airing-courts and fields, &c. In many chronic cases it has been found very beneficial to prescribe gymnastic exercises and cheerful games which necessitate exercise, where in the mild excitement of the game the patient may forget self and distressing thoughts. Sleep should be the result of work, of exercise in the open air, of fatigue. It is also promoted by baths and quiet; but narcotics should be avoided as far as practicable.

The airing-courts for patients should be laid out with good paths, flower-beds, lawns for tennis and croquet, and be planted with shrubs, ferns, and flowers, and in every airing-court should be placed a few water-closets and urinals, a shed for garden-tools, watering-cans, and garden hose, &c. A few garden seats and arbours also might be provided; but in all these matters it must be arranged that the patients may be well under observation at all times, and that there shall not be easy means for hiding.

The fences round the airing-courts may be constructed with iron railings erected upon a dwarf wall, the whole being about 12ft. in height. These are far better than brick walls, which, to be of utility, would not only have to be of considerable height, and therefore expensive, but have the further disadvantage of arresting the free circulation of the air about the grounds and buildings. To obviate this difficulty, a sunk or "ha-ha" fence is sometimes provided, which has a manifest advantage in one respect, inasmuch as the prospects of the surrounding country are left open and uninterrupted.

In former times the airing-courts were merely paved yards surrounded by high walls, and were frequently of very small area compared with the numbers of patients dealt with. This, I believe —at all events, as regards this country—is a thing of the past; but many airing-courts or gardens are far from being laid out so well as they might be, some being of rather small dimensions. For an asylum of 1,000 patients, the land required for airing-courts should be not less than 20 acres. Any trees planted near the fences must be cut from time to time, so that branches therefrom may not afford means of escape.

The paths in the airing-courts should be usually 7ft. or 8ft. in width, thoroughly well made, in suitable forms for throwing off rain, with a foundation of not less than 6in. of broken bricks or other suitable material. The airing-courts generally should be drained with agricultural drain-pipes, unless there be special reason for dealing with the area otherwise. The walks should be laid out in undulating forms, but not arranged to resemble a maze.

The garden-seats should be placed upon small patches of paving or asphalte, and may be of wood. In an airing-court used usually by 100 patients, there should be seating of this description for about 25 patients placed at the most desirable points—some under the shade of trees, others in places where good prospects may be obtained.

Some accommodation should be provided in the airing-courts for such of the elderly patients as may be infirm or weak. This might be in the form of ornamental arbours where shelter from the elements could be obtained by the patients generally when necessary. Aviaries and pens for birds and animals may be provided for with advantage in specially designed buildings or sheds, of more or less ornamental description. These things interest patients and attendants, and give common pleasure to many. These buildings might be so planned by the asylum architect as to also include a room for storage of the materials requsite for the various outdoor amusements and games.

In some instances the airing-court closets are placed against the wall or fence in the centre of the sunk "ha-ha," the approach thereto being by an incline or steps from the general level of the ground. An objection to this arrangement is entertained by some medical officers upon the ground that closets when so sunk are liable to form hiding-places for patients. One advantage of placing them below is that they would be less conspicuous, and they are certainly unsightly features for view from the asylum windows. These places should always be carefully searched by the attendant in charge when returning with the patients to the asylum buildings.

The airing-courts should always adjoin the wards of the class of patients for whom they are intended, and in most cases it is desirable that there should be some space between the fences, so that patients differently classified may not approach too close to one another, or communicate with each other from each side of open iron fences.

The general approach to the main asylum and airing-courts (from the public road) should be arranged so that there shall be at the entrance to the grounds a residence for the lodge-keeper, such as is shown in Fig. 17. For some asylums a lodge is provided much larger than here shown. The minimum accommodation should, however, include a parlour, kitchen, and the usual offices, with three or four bedrooms, according to circumstances, the windows of the living-rooms being placed in the usual position so as to command a view of the gates. There should also be a waiting-room, with a small office. This might be used on various occasions—for instance, during visiting days, where patients' friends would be detained to show their authority to visit, or their fitness to do so ascertained prior to their further admission on the asylum grounds; for these persons w.c. and urinal accommodation may be provided as shown. On the opposite side of the entrance may be a second residence for an asylum official, or a number of attendants' cottages, as indicated upon Fig. 17. At some asylums the distance from the outer entrance lodge to the main asylum buildings is considerable, and therefore the provision of a shelter for visitors and tradespeople is certainly most desirable should a waiting-room not be provided. The shelter might take the form of a verandah attached to the lodge. In the design for the lodge and entrance-gates, considerable scope is allowable for ornamental treatment, which, however, would be less permissible on other portions of asylum buildings intended chiefly for pauper patients, and which ought to be built with some regard for economy now that lunacy is alleged to be increasing in some districts (even beyond the ratio of the natural increase of population). Upon this subject the medical superintendent of a large district asylum says:—

> "The immediate cause of the continuous increase of the asylum population is, of course, the preponderance each year of the admissions over discharges and deaths combined. The conditions differ from those of ordinary hospitals, in which, if a patient does not recover, and fails to improve after a fair period of treatment, he is discharged as incurable. But in an asylum *all the incurable have to be kept on as permanent patients*, except a few which may be sent to workhouses; so that from the nature of things an asylum population must perforce go on increasing until the admissions are balanced by an equal number of discharges and deaths, a condition of things the occurrence of which is only a remote possibility at present. Were all the other hospitals for the sick conducted on the same principle (unavoidable in the case of asylums), they too would be rapidly overcrowded with occupants, and, like asylums, there would be an ever-recurring necessity of adding to their accommodation by *structural additions*. This peculiarity, connected with asylum economy, is one apt to be lost sight of, or, at least, not to receive the attention which it deserves."

Architects who have competed in reference to

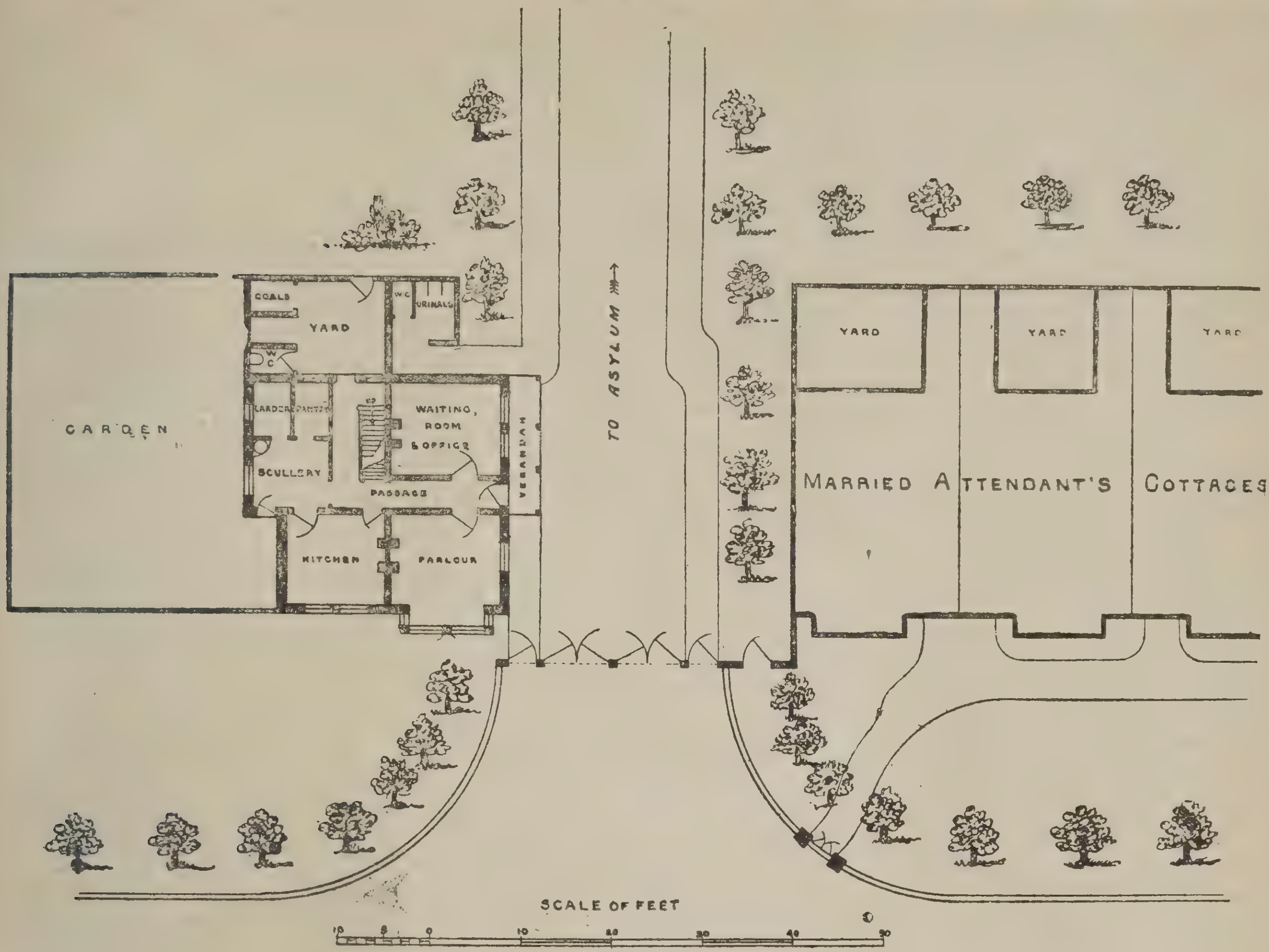


Fig. 17.

many recent schemes for asylums have been requested by the promoters of the competitions to arrange in their plans for future extensions, beyond first requirements. In several sets of plans for asylums I have noticed that the architects have considered it desirable to show in great detail the whole of the buildings (present and future) upon the plans, and there can be no doubt that this is an advisable procedure so far as the final efficiency of the buildings is concerned; but it is apt to be forgotten that for these plans for future extension the architect is not fully remunerated by the premiums or commission payable on the partly built asylum.

In arranging for future extensions, it is better to allow space for additional blocks of buildings rather than arrange for adding upper floors at a later date to the disturbance of the whole asylum, and it is certainly necessary to calculate the capacity of the required *administrative buildings* for the final number of patients to be accommodated after the full extension likely to be attained.

Perhaps one of the most difficult matters to adjust, however, is the *rearrangement* of the plans for the administration blocks of buildings for a very large asylum—one, for instance, like the one at Richmond, near Dublin, which has been enlarged again and again as regards the wards for patients, but without a corresponding enlargement of the laundries, kitchens, and other portions necessary for the officials and for administrative purposes. To rearrange the central buildings for a large asylum means frequently the temporary disturbance of the whole establishment and interference with the heating, ventilating, cooking, and laundry machinery for the whole place, also the rearrangement of the hot and cold-water supplies, and of the sewage and rain-water systems, while the patients must all the while be provided and cared for as usual. The duties of the resident asylum engineer are always most important, and the individual chosen must be thoroughly versed and experienced in all departments of engineering work. He must understand thoroughly the fitting and working of steam and hot-water boilers, machinery and appliances of all descriptions connected with cooking, heating, laundry work, and sanitary matters, and he should always be in charge of, and responsible for, the work of other artisans engaged upon the premises, who should work under his directions; he must always reside either in the asylum, or be provided with a suitable residence on the estate near to the scene of his labours; he should not only be able to keep the water supply in good order, but be competent to direct the operations of the asylum fire brigade, and see that its appliances are kept in repair and good order.

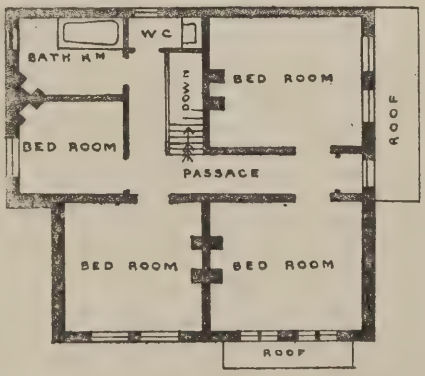


Fig. 18.

In some asylums he is expected, I believe, to make almost daily inspections of every part of the buildings, examining everything he can, keeping everything in good order structurally, seeing that the drains are flushed, the gutters cleaned, and all dilapidations are attended to.

Judging from the reports of those who have inspected some of the asylums in Ireland, it would appear that the buildings are too often allowed to fall into a great state of dilapidation. The attention of the authorities has been continually drawn to structural defects in the Irish asylums, and I believe that steps are now being taken in various institutions there to make good the deficiencies. The requirements of the Board of Control in Ireland are less stringent than in England—for instance, the day-rooms in Irish asylums need not contain more than 30 superficial feet per patient, whereas in this country the Commissioners in Lunacy insist upon a minimum of 40 square feet per patient, thereby increasing the cost per patient (for day-rooms) 25 per cent.

(*To be continued.*)

TALL BUILDING FOUNDATIONS IN NEW YORK.

THE tall office buildings of New York are growing apace. One of the latest is the American Surety Company's building in that city, which is a 20-story building resting upon columns, and constructed on the steel-frame system. The *Scientific American* gives a view of the building, and a detail of the steel foundations. The structure is 303ft. in height, and it covers about an area of 84ft. 4in. each way, though the sides are not parallel. The piers of different heights which carry the superstructure were sunk by the pneumatic method. On each pier a steel plate is placed. On this is placed a grillage. The first course is of ten 24in. I-beams, which just extend across the top of pier. Transversely to these are five 20in. I-beams, covering about one-half of the area, arranged in the centre. A course of steel billets, 4in. square each, rest on these beams, and on this the base of column is placed. To provide against pressure of a column coming too near the edge of pier, cantilevers are employed at the corners to shift the bearing of the outer column to the centre of pier. The end of each cantilever is held down by iron straps to the foot of masonry. For example, on the grillages a deep plate girder rests on two sets of steel billets. On the outer end which projects beyond the steel billets, the column of outer wall is placed, and on the inner end rests another column which supports a share of the weight and relieves the anchorage. Thus the ends of the plate girder, or cantilever, sustain these columns, the outer one resting on the overhanging end of the girder. There are 32 of these steel columns, two of which bear a weight of 584 tons each, and another is said to carry 1,280 tons, while the remainder carry smaller varying loads. Mr. Bruce Price is the architect. In another building, 150ft. high, a layer of concrete covers the whole area of building, and on this I-beams of 20in. depth are laid 12in. between centres imbedded in concrete. On this platform, longitudinal plate girders, 4ft. deep, are placed, on which the 26 columns carrying the superstructure rest. These carry loads varying from 172 to 357 tons. When the ground is of unequal bearing power, or soft, this kind of foundation is found to answer.

* * *

NOTES ON BUILDING PRICES.—LXVII.

By John Leaning.

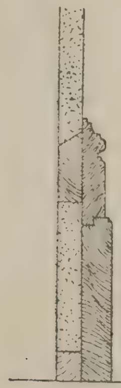
(*Continued from p.* 806.)

THE application of the foregoing constants may be illustrated by the analysis of a *few* ordinary items of joinery. An exhaustive selection from the enormous variety of joinery in modern use would unduly increase the bulk of these papers without an adequate advantage. It is, however, hoped that they will prove sufficient to explain the principles which should be observed.

Skirtings.—Large quantities of the ordinary kinds of skirtings are imported ready worked from Sweden, or are prepared in a considerable variety of stock patterns by the moulding mills. These are usually sold by the hundred feet lineal, and are subject to a discount of from 5 to 30 per cent. off list prices. The ordinary discount may be taken as an average of 15 per cent., including waste. If a cartload of skirtings or mouldings is purchased, it would be delivered free within ordinary limits. Smaller quantities must be fetched.

1in. by 9in. *torus skirting*, imported—

	s.	d.
1ft. of 1in. by 9in. torus at 22s. 6d. per hundred	0	2¾
Waste 15 per cent. equal to discount.		
Cleaning up	0	0¼
Fixing, ·013 at 7s. 11d.	0	1¼
Cost per foot run..	0	4¼



Skirting in two pieces, rebated together, the upper 1in. by 4½in., moulded 3in. girth; the lower 1¼in. by 7in., hollow moulded and rebated on lower edge. The upper piece would be wrought both sides, the lower, one side.

ft.	in.		s.	d.
1ft.	0in.	run of 1in. by 4½in. deal at 2⅛d. super.	0	0⅞
1	0	,, of 1¼in. by 7in. deal at 2⅝d. super.	0	1½
1	0	,, labour moulding, 3in. girth, at ·072ft. super. of 7s. 11d.	0	1¾
1	0	,, labour moulding, 1in. girth, at ·012 of 7s. 11d.	0	1⅛
1	4	super. planing, at ·010 of 7s. 11d.	0	1¼
1	0	run fixing at ·015 of 7s. 11d.	0	1½
1	0	,, rebated edge to 1¼in, ·003 of 7s. 11d.	0	0¼
1	0	,, rebated edge to 1in., ·003 of 7s. 11d.	0	0¼
1	0	,, fixing rough fillet on floor, ·005 of 7s. 11d.	0	0½
1	0	fillet, 1¼in. by 1in.	0	0⅜
		Cost per foot run..	0	9⅜

A few conclusions adopted by estimators which are near the truth and useful may be here given.

Mitres are generally estimated at some proportion of the value of a foot of the skirting, and this is probably the most convenient way of dealing with them. They are usually tongued as well as mitred. Estimators price them at from one-half to one and a half a foot of skirting. The price of *a foot* of skirting may be adopted as a reasonable average.

Fitted Ends.—The price of three-quarters of a foot run may be adopted as a reasonable average.

Housings.—The price of one foot of skirting may be adopted as a reasonable average.

Skirting, circular on plan, twice straight.
Ditto, ramped, twice straight.
Ditto, circular quick sweep, thrice straight.
Ditto, wreathed, five times straight.
Ditto, raking, one-half more than straight.

Floors.—	s.	d.
1¼in. yellow batten floor, at *Docks*	13	0
Landing rate, 1/27th of a standard, at 3s. 9d. per standard	0	1¾
Unloading, 1/27th ditto, at 2s. 6d. ditto	0	1
Cartage, say, 1/12th of a load at 5s. per load..	0	5
15 per cent. for waste in conversion and defects for the four foregoing items	2	0½
5½lb. of 2¾ floor brads, at 10s. 6d. cwt.	0	6¼
Labour, laying ·440 at 7s. 11d.	3	5¾
Cost per square	19	8¼

Casements.—The valuation of casements would be as follows:—Taking, as an example, a 2in. ovolo moulded casement 2ft. 6in. by 5ft. 6in. in a single square (13ft. 9in. superficial), hung with butts:—

ft. in.	ft. in.		s.	d.
2 6 0 4½	0 11	2in. deal. Bottom rail.		
13 6 0 2¼	2 6	2in. deal. Top rail and stiles.		
	3 5			
3 6		supl. of 2in. deal at 4⅛d.	1	2½
13 9		,, labour at ·037 of 7s. 11d.	4	0¼
13 9		,, labour hanging, ·016 of 7s. 11d., glue and glass-paper	1	9½
		13ft. 9in.)	7	0¼
		Cost per foot supl.	0	6⅛

This price may be analysed in another manner:

	ft. in.		s.	d.
5 0 5 0 2 2 2 2	3 6	supl. of 2in. deal as before at 4⅛d.	1	2½
	7 0	,, planing at ·010 of 7s. 11d..	0	6½
	14 4	run, labour to moulding at ·012 of 7s. 11d.	1	4½
	14 4	,, labour to rebate at ·003 of 7s. 11d.	0	4
	13 9	supl., putting together and cleaning up, at ·016 of 7s. 11d.	1	9
		Glue and glass-paper	0	0½
		Labour hanging, as before	1	9½
		13ft. 9in.)	7	0½
		Cost per foot supl.	0	6⅛

When casements, skylights, sashes, and frames are not specially described or drawn to detail, their various parts can be obtained at moulding mills, at some of which a great variety of sections are kept in stock, or the complete sashes and frames will be made to order from such sections. Sashes and frames are also very frequently sublet. The following are some of the current generalisations about casements, sashes, fanlights, &c.:—

That small sashes, fanlights, or casements 12ft. superficial, and under, are worth 20 per cent. more than larger ones. That casements hung on butts or centres are worth 1d. per foot superficial beyond those which are fixed.

SASHES AND FRAMES.

The valuation of sashes and frames requires some nicety of judgment. The variety of size or thickness of the parts of the frames, the quality of the lines and pulleys, the amount of the labour, and the adoption of several kinds of wood in the same sash and frame effectually test the surveyor's knowledge and skill.

Ordinary sashes and frames are rarely drawn to detail—are very often described but superficially in specifications, and only cursorily looked at when supplied. Even when specifically described, the thicknesses may vary if not watched—1in. pulley stiles instead of 1¼in.; ¾in. inside and outside linings, instead of 1in.; thinner sills, &c.

An ordinary description, such as the following, will serve to illustrate the valuation of sashes and frames.

Deal-cased frames of 1in. inside and outside linings, 1¼in. pulley-stiles, oak double-sunk and weathered sills, and 2in. deal moulded sashes in single squares, double-hung with best flax lines, best brass axle-pulleys and iron weights, and grooved to receive finishings. Assuming the example to be 4ft. by 7ft. = 28ft. superficial.

	ft. in.			s.	d.
	3 3 6 10	22 3	2in. sashes, and hanging, same price as already calculated for casements, 6⅛d.	11	4¼
			7½yds. sash line, at 1d.	0	7½
			4 sash weights (at 10lb.) 40lb. at ½d. per lb.	1	8
			4 brass pulleys, at 10d.	3	4
			4ft. 2in. run, 6in. by 3in. oak sill sawn to shape, 4s. per ft. cube, delivered 6d.	2	1
	4 2 1 0		4ft. 2in. superficial planing on oak, ·020 of 7s. 11d. = 2d.	0	8½
	4 2		run, rebate, 4in. girth, on oak, ·012 of 7s. 11d. = 1d.	0	4¼
	4 1 5½	1 10	2in. deal, *head* 1ft. 10in. supl. at 4⅛d.	0	7¾
4 0 7 0 7 0	18 0 0 4½	6 9	1in. deal, *outside lining*		
2/	7 0 0 4½	5 3	1in. deal, *inside lining*		
		12 0	12ft. supl. 1in. deal at 2⅛d.	2	1½
2/	6 10 0 5	5 8	1¼in. deal, *pulley stile*, 2⅝d.	1	3
2/	6 8 0 5½	6 1	½in. deal, *back lining*		
2/	0 2½ 6 7	2 9	½in. deal, *parting slip*		
		8 10	8ft. 10in. supl. ½in. deal, 1¼d.	0	11
2/	6 8		13ft. 4in. parting bead at 2s. 1d. per 100ft. plus 10 per cent. waste, 2s. 3½d.	0	3½
	3 3	3 3			
2/	6 7	13 2 16 5	16ft. 6in. inside bead at 2/8½ per 100, plus 10 per cent. waste, 2s. 11¾d.	0	6¼
	4 2	4 2	Groove in oak, 4ft. 2in. groove in oak, ·006 of 7s. 11d.	0	2
	4 0	4 0			
2/	6 8	13 4			
2/2/	6 7	26 4	Pulley-stile and back lining.		
2/	6 8	13 4 57 0	Outside lining. 57ft. 0in., groove in deal at ·003 of 7s. 11d.	1	2¼
3/2 11 4/3 1	8 9 12 4 21 1	½/2/ 6 8 6 8	Blocking out to lengths, 1d.	0	6½
		21 1	Labour to moulding, ·012, 7s. 11d.	1	11¾
		21 1	Labour to rebate, ·003, 7s. 11d.	0	5¼
			Glue	0	1
			Glass-paper	0	1
	28 0		Supl., putting together and cleaning up, at ·020 of 7s. 11d.	4	5¼
2/	3 3 3 3	6 6 3 3 9 9	Labour splayed edge to 1¼in. Labour splayed edge to 2in. ·006 of 7s. 11d	0	1¾
	3 3		Labour to groove ·003 of 7s. 11d.	0	0¾
2/ 2/	1 10 1 0 12 0 1 0 5 8 1 0	3 8 24 0 5 8 33 4	Planing. ·010 of 7s. 11d. = 1d.	2	9¼
			28)	37	9¼
			Cost per foot super. exclusive of fixing..	1	4¼

The following are a few of the current generalisations about sashes and frames:—

That sashes and frames under 12ft. superficial each are worth 20 per cent. more than those of larger size.

That the difference between single and double hanging is 1d. per foot superficial.

That circular on plan flat sweep is worth 1½ times the price of straight.

That circular on plan quick sweep is worth twice the price of straight.

A PHOTOGRAPHIC RECORD OF WEST LONDON.

THE West London Photographic Society, with the object of forming a collection of permanent prints of places and objects of historical, archæological, and topographical interest in the West London district, and especially those likely to undergo change or be demolished by so-called modern improvements, has inaugurated a competition, and this week an exhibition of the twelve sets of platinotype photographs has been on view at the Chiswick School of Art, comprising some hundreds of views. The prints under the conditions of this "record" competition are to become the property of the society, the council acting as trustees and controlling the working of the scheme. The hon. curator appointed is Mr. W. H. Whitear, who receives and registers all photographs which are to be tabulated for easy reference, and members are invited to send prints and engravings of buildings and other objects of local interest which have been altered or ceased to exist. The medal has been awarded to Mr. Charles Dixon for his series of 21 full-plate photographs of Lord Ilchester's mansion, Holland House, Kensington. The formal gardens and exterior of the building are capitally shown, giving all the fronts and parts in detail. Among the interiors are the breakfast-room, the library, new ballroom, journal-room, gilt-room, yellow drawing-room, the china-room, Lady Ilchester's private room, the staircase, &c., &c. A plan only is wanted to complete the set. As photographs some of these interiors would not pass muster, but judged as a whole they make a good "record" set. Among Mr. Dixon's other views is a fine print of Little Holland House, now pulled down, and Mr. G. F. Watts, R.A., lives in a new home on the site of his old one; Putney Old Bridge; Thackeray's house in Young-street, Kensington, and in Palace Green; Melbury-road, and a view of the late Wm. Burges's house there. The second place in the competition was won by Mr. J. Stein for a series of 65 views, including the King Charles Room at Treaty House, Uxbridge; Northholt Church and bridge; timber cottages at Horsenden; W. Drayton Church; views of the locks on the Brent; cottages at Pinner; Greenford-lane, Acton, and neighbourhood. Mr. W. H. Whitear obtained the third prize with a very complete and uniform set of about 50 studies illustrating Old Chiswick in a thorough way, with views on the Mall, Chiswick House, the church, and the river. All kinds of subjects were chosen by the competitors, and several old drawings and engravings had been reproduced by photography. The referee appointed to make the award was Mr. Maurice B. Adams, F.R.I.B.A., and the society's medal has been accorded to Mr. Dixon upon the assessor's report.

NOTES FROM PARIS.

THE great "charrette" of the competition for the arrangement of the grounds and buildings for the proposed Exposition Universelle of 1900 is over at last, and those who have for the past three or four months worked at the drawings are now able to breathe more freely, and whilst expectantly awaiting the decision of the Exposition Jury enjoy a well-earned repose. The "charrette," as the final struggle to get the drawings and estimates ready in time is called, is seen at its best in Parisian offices only. It is a rare occurrence for any competitor to have his drawings finished quietly in readiness for the sending-in day. The final rush seems a necessary thing here, and on the night of the 11th December, and in several cases the night before, a hundred of the more important architects' offices in Paris witnessed the last frantic rush, and the customary charrette supper to encourage the midnight workers, the dawn of the last day for sending in arriving too soon, but at the same time welcome, as affording still a few hours of daylight before the final delay, necessary for the finishing touches of colour which may have been forgotten or left until the last moment. The strainers and stretchers were prepared in readiness, and as each drawing was completed it was carried off to the frame-maker, whose turn it was now to hurry and bustle, paste on the drawings, and send them off as best he could before the last hour of sending-in time. Those who were not too tired to follow their drawings to the Palais de l'Industrie did not lack opportunity for amusement, meeting their friends or comrades, some of them supporting as best they could flabby stretchers on which the paste was not as yet by any means dry, others even giving on their way a few last necessary touches of paste or pencil. The number of sets of drawings sent in for this competition is 106, and does not come up to the estimate of many who expected at least a couple of hundred competitors. From a hurried view of the drawings as they were sent in it appears that most of the competitors have taken advantage of the permission given to demolish all existing buildings, and have erected in their place immense and gorgeous constructions much surpassing any of those of the last Exposition of 1889. A number have covered the Seine over the whole length of the exhibition. The Palais de l'Industrie, in the Champs Elysées, where the drawings will be exhibited, has been specially lighted by electricity in order to enable the hanging committee to work by night, and accomplish the hanging of probably over a thousand drawings in the three days following the day for sending in. As the number of competitors is below the estimate, this work will be easily performed in the time given. The public exhibition of the drawings will take place on the 19th inst., and will last fifteen days. The President of the Republic will visit the exhibition the day before the opening. The jury is composed of 31 members, ten members of which are elected by the Minister of Commerce and Industry and ten members by the competitors themselves. The remaining eleven members are composed of the various Ministers and directors of public works and expositions. The first ten members are:—MM. Bardoux, Senator; Leon Bourgeois, Instruction Publique; the President of the Paris Town Council; the Prefect of the Seine; the Delegate of the Colonies; the President of the Committee of Roads and Bridges; the President of Civil Engineers; the General Inspector of Historical Monuments; Daumet, President of the Academy of Fine Arts; and Charles Garnier, architect. The ten members elected by the competitors are MM. Gaudet, Coquart, Pascal, Laloux, Moyaux, Loviot, Sedille, Mayeux, Vaudremer, and Ginain, all well-known Parisian architects. The mode of procedure of election may be interesting. The competitors only who have signed their drawings may take part in the election of the jury. No competitor who has sent in drawings may be elected on the jury. The following measures were taken to insure this: As soon as the last set of drawings were received, a list of all competitors who had signed their drawings was made out and publicly exhibited, the authors of designs sent in under cover of a *nom de plûme* or motto, attached thereto a sealed envelope containing their names. These names were kept secret by the general secretary, who, however, had the right, in the case of any of these names coming up for election on the jury, to declare the person not eligible. The day of meeting for the decision of the jury is not as yet made known, but will probably be during the fifteen days of public exhibition of the designs.

The statue of Meissonier, the late celebrated painter, was inaugurated at Poissy a few days ago, under the presidency of the Minister of Fine Arts. The sculptor is the well-known Fremiet. The pedestal was designed by M. Bourgeois, architect, of the town of Poissy. The minister decorated the architect with the palm of Officer of the Academy.

The prolongation of the Metropolitan railway called Moulineaux is now advancing very fast. The work has been somewhat delayed owing to very important drainage work, necessary to allow the construction of the underground railway. The much-talked-of station of the Esplanade des Invalides is being commenced. Thanks to the cry raised and the battle fought by the Amis des Monuments Parisiens, it has been decided, in order not to spoil the aspect and perspective of the fine Esplanade and the Invalides, to construct the station entirely underground, in the rectangle formed by three streets and the quay adjoining the esplanade. An interesting exhibition of the works of the late sculptor and decorator, Joseph Cheret, is being held at the Ecole des Beaux Arts. Joseph Cheret was the brother of the celebrated designer and painter of pictorial advertisements, whose artistic bills cover the hoardings of Paris and London.

The death is announced of Jean Gigoux, one of the oldest of French painters, and one of the last survivors of the school of romantic painting. Born at Besançon in 1806, he obtained his first success at the Salon of 1833. One of the most remarkable of his works is a vigorous portrait of a Russian general, which may be seen in the galleries of the Luxembourg. At his death, at the age of 88, he was still following his work with the love and passion of a younger man. Much disappointment was expressed here when it was learnt that the late artist had bequeathed his entire collection to the Art Museum of Besançon, when it was expected that the Louvre Galleries would benefit by this valuable collection of paintings.

The directors of the Louvre shops, following up the artistic idea which they started last year, are opening a second competition for a bedroom mirror-cupboard and a bedstead, the sale price of which should not exceed £60. The prizes given are a first prize of £60 and gold medal, a second prize of £40 and gold medal, and a third prize of £20 and silver medal. This initiative will probably soon be followed up by the other large establishments of this kind, and much interest is taken by the public in these open competitions.

The new law relating to cheap dwellings for the working classes has been adopted by Parliament, and has now only to pass before the Senate. This new law, of which the articles have been very carefully compiled and discussed, is very interesting, and will be given more *in extenso* later on. The articles which have been added permit the State to aid the scheme with the sum of about six hundred thousand pounds raised by means of tithes on the patrimony of philanthropical establishments and on the reserve funds of the people's savings bank, held by the State. The Bureaux de Bienfaisance, asylums and hospitals, may, by order of the Prefêt, employ a portion of their money in the construction of cheap model dwellings, or the money may be lent to societies undertaking the work of building these dwellings. Another article frees these houses from the door and window-tax for a period of five years from the completion of the dwelling, or set of dwellings. This freedom from taxation will, however, cease immediately if the dwelling be transformed or enlarged, and loses its character of economical construction, or exceeds the legal maximum of value allowed for such houses.

M. Leclere, French resident at Cambodge, has just discovered at Kanpong-Thom the ruins of 13 towers constructed of brick, and once dedicated to the Brahma divinities; also a roadway raised above the inundation level leading from these towers to the old capital of Cambodge. The discoverer has communicated his interesting finds to the French Academy by means of numerous photographs.

At Vienne, in the Isere department, a very interesting archæological discovery has been made. Whilst excavating below a house known by the name of Palais du Miroir, two marble Roman statues were brought to light. One of these, standing on a perfectly preserved pedestal, is believed to be the Dea Roma. The statue measures over 6ft. in height; the face is full of majestic calm, and the motion of the body may be perfectly followed beneath the folds of the drapery, which itself is marvellously executed. The second statue is that of a young girl. The modelling of the body is perfect. Unfortunately, the head is missing. This latter figure measures only 3ft. in height. The museums of France are fast being enriched by the many archæological discoveries which have lately been made all over the country, and the utmost care is taken by the fine art authorities to preserve as much as possible the objects found, and much encouragement is given to searchers after interesting discoveries of this kind.

It is a question of joining the two rival administrations of State Buildings and that of Fine Arts. Up to the present these two services have been kept separate, and unfortunately much rivalry has existed between the two administrations, which in reality should go hand in hand together for the good of public monuments and art work. In 1870 these two services were united in that of Fine Arts, but for eleven years since the war a separation was made. In 1881 the service of State Buildings was re-attached to that of fine arts, but once again in 1890 the separation was made in spite of all logic.

The Fine Arts service is unable to place a nail in the wall of the museums, or give a coat of paint to the woodwork of the State theatres, without coming into contact with the service of State Buildings, because the walls of the museums and the woodwork of the theatres belong to the latter service. A case in point is one now happening at Versailles. The administration of Fine Arts wishes to replace by a copy the original of the "Raft of Proserpine," now in the Palace Gardens; but the bas-relief, which forms a portion of the group, and is the work of the same sculptor, belongs to the administration of State Buildings. What is to be done in this case is a question necessitating much correspondence and red-tapeism. The whole matter has been brought up by the Minister of Public Instruction, and will probably end, it is to be hoped, in a combination, allowing the service of Fine Arts to combine in its functions, the service of State Buildings more closely attached to art.

STUDENTS' MANUALS.*

AT the outset of the career of an architectural student, before the time has come for comparison and research, and when his mind may be considered as almost a blank with regard to matters architectural, it is of the utmost importance that he should have placed in his hands such books as will give him concisely, and in not too forbidding a manner, a correct idea of the elements of the many branches of architectural art and practice. Fortunately there are excellent works of this kind now to be had, and there is consequently at the present time little excuse for the principal who sets his last new pupil to "draw the Orders," without at the same time placing an architectural history in his hands which will give him some intelligent ideas about them, or who sets him to study this same history out of a ponderous encyclopædia, or to master the principles of carpentry out of some old and hardly-written books. It may be said at once that the powers of draughtsmanship and design are not to be acquired from books at all, but only by long and patient work in company with others who are masters, from whom the spirit must be derived. In books there can be illustrated the drawings and designs of others, constant observation of which, if good, will obviously assist the student; but he cannot learn to produce similar work by such observation only. Nor can he learn how to construct, nor even acquire a real knowledge of manufacturing processes, from books alone. In short, what he reads must in all things be considered as introductory or supplemental only to personal effort and personal observation for himself. Taking the subjects a knowledge of which he has to acquire one by one, let us now consider what manuals are most suitable for the youthful student's reading—concise, correct, clearly written, and up to date. The study of history and ornament should go together. In fact, they are so closely connected that no book on architectural history can afford to pass over all mention of architectural ornament, and special works upon ornament must only be considered as corollaries to history. Here the first book to be read is most emphatically that by Messrs. Smith and Slater, containing all essential elementary points, simply written and well illustrated. If weak anywhere, it is in the chapters upon Gothic work, and upon this it is well to read Rickman's book. Later on, the student naturally takes up period by period separately, using Stuart and Revett's "Antiquities of Athens" (the small edition, and bearing in mind that it was written very long ago), Spiers' "Orders," Rosengarten's "Architectural Styles" (remembering that it was written from a German standpoint), Scott's and Barry's "Academy Lectures," Paley's "Gothic Mouldings" (failing a better and more modern work on the subject, which is much wanted), and Parker's "Glossary." Later again, he is likely to beg, borrow, or steal (for they become expensive to purchase) such large books as Fergusson's "History," Taylor and Cressy's "Rome," Sharpe's "Parallels," and Gotch's "English Renaissance," and many others, the mention of which would serve no useful purpose here. The subjects of materials and construction, again, should go together; and, most fortunately, are treated by two authors upon this plan. For many years now, the first three volumes of the book upon "Building Construction," commonly known as "Rivington," and written by R.E. Officers, has been considered the standard work, and almost the only one which students should read. Now, however, in spite of frequent revision, it has in many respects become out of date, and the many scientific materials in the third volume have also militated against it, while a new book under the same title, in two volumes only, and at a much lower price, has appeared from the pen of one of our own members, Mr. C. Mitchell. This is, therefore, upon the whole, to be preferred, though a student is wisely advised who reads "Rivington" also, and compares the two. These should be supplemented, with regard to tools and plant, by Seddon's "Builders' Work," with regard to showing by Stock's "Shoring and Underpinning" (putting no faith in his chapter upon mechanics, however), and with regard to stones by Professor Lobley's paper, read before this Society a few years ago. Upon the subject of sanitation it is difficult for me to speak, as I am ill-conditioned enough to prefer my own little treatise upon "House Drainage" to any other yet produced. It is well, however, to read Hellyer's "Plumbing," and Beardmore's "Drainage of Habitable Buildings" with it; while those who intend going further into the matter than do most architects must perforce read Santo Crimp's "Sewage Disposal Works." Specification writing and quantities are two subjects which are best studied together, and, though there are many who never take up quantities at all, it is an absolute necessity to the provincial architect to be able to take out his own, and even to the Londoner in large practice a knowledge of them never comes amiss. Upon specification writing there has been no good work in circulation for a long time, and the gap has only recently been filled by the newly-issued book by our member, Mr. J. Leaning, whose work upon quantities has also been the standard textbook for some time past. Whether both of these are eventually to be replaced by the larger volume now appearing in parts, by our other member, Mr. C. H. Searle, yet remains to be seen. Older or cheaper books than either of these are not to be recommended, even if written by well-known men. Under the head of scientific subjects may be taken those depending upon geometry, and those depending upon mathematics. The principles of geometry must, of course, be mastered thoroughly by every architectural student, and no better book for its study has yet been produced than Angell's, his smaller work forming an introduction to the larger, but both demanding careful reading. Arising out of geometry is the study of perspective, a study which, as a rule, is by no means well treated in textbooks, though of recent years one by Fergusson has been produced which meets the needs of the architectural student. Land surveying may also be considered as a subject which springs out of geometry; but it is a branch of applied geometry which is best learnt by actual experience in the field, and, in fact, can scarcely be studied in any other way. Books can assist, however, to a very considerable extent, and there are many good ones, old and modern, possibly the most recent being my own; but in face of others of real value, I will not claim more than reliability and up-to-datedness for it. This subject also demands, in its higher branches, some knowledge of mathematics, and the possession both of Chambers's "Mathematical Tables" and of Boileau's "Traverse Tables," as absolute essentials. The other mathematical subject, of which much is heard, that of the determination of stresses, is one which students had best leave alone entirely, unless they possess real mathematical and mechanical ability, and intend to pursue what all its followers find to be a most fascinating series of investigations to their utmost limits. Other opinions are held by some; but most will probably agree that the mere cramming of a few empirical formulæ, but half understood, for the sake of passing what purports to be but an elementary examination on the subject, is utterly valueless to the architect when confronted with great problems in after life. If it is to be pursued properly, a sound knowledge of statics must first be acquired from Newth's "Natural Philosophy," or any other standard textbook. This done, it is then time to take Professor Adams's "Strains in Ironwork," or my "Stresses and Thrusts," and these may be followed, but not preceded, by the careful study of Rivington, Vol. IV., the most valuable work of this important series, though containing many typographical errors, which have to be very closely watched for. Architectural law is so wide a subject, that no one manual covers it in its entirety. Hudson's "Legal Advice to Architects" will probably but mystify the average student, leaving him with the idea that one very generally recognised set of conditions of contract is utterly bad, but giving him nothing better in its place. Professor Fletcher's "Dilapidations," as also his "Arbitrations," will probably be voted dry, though very necessary to be read by those who aim at becoming specialists in these matters, and Mr. Edgar Farman's paper upon "Light and Air," read before our members, and now twice published by the Society, will always find readers so long as the law stands as it now is. Architectural law, however, is not a subject in which the younger students take much interest, and in later life most men acquire their knowledge of it from general rubbing shoulders with the world, and from the study of the special local Acts of Parliament or by-laws which affect their own particular districts.

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* By G. A. T. Middleton, M.S.A., A.R.I.B.A., a paper contributed to the *Transactions* of the Society of Architects, December, 1894. (See p. 817 last issue.)

CHIPS.

New schools, erected by the school board for Stone, Kent, on Brent Hill, were opened on Saturday. They provide accommodation for 130 boys, 120 girls, and 100 infants, the main rooms for the senior departments being convertible into one hall. The contractor is Mr. Seager, of Sittingbourne; but the seating was intrusted to the Bennet Furnishing Company, of Glasgow and London. The architect is Mr. J. T. Walford, of Northfleet.

In connection with the Architectural section of the Glasgow Philosophical Society, Mr. Alex. N. Paterson gave a lecture on "Some Principles of Decoration" in the rooms of the society in Bath-street, Glasgow, on Monday night.

A preliminary test has just taken place of the plant which has now been completed for the electric lighting of the Victoria Dock and the Old Docks, Leith. The machinery has been placed in a building adjoining the Commercial Graving Dock. The installation, which has cost about £4,000, has been carried out by the Brush Electric Lighting Company, under the supervision of Mr. E. G. Craven, superintendent for Scotland.

The central block of Winchester Barracks, gutted by fire on Wednesday morning, was built from designs by Sir Christopher Wren in 1683-5, and was built as a palace for King Charles II. At the time of the fire it formed quarters for the unmarried men in the depots of the Hampshire Regiment of the Rifle Brigade.

Dr. Bliss's reports to the Palestine Exploration Fund the discovery of a Latin inscription on a stone in a wall at Jerusalem. It refers to a votive tablet to Jupiter on behalf of the welfare and greatness of the Emperor Trajan and the Roman people, erected by the Third Legion, i.e., in the interval between the destruction by Titus and the founding of Ælia Capitolina.

After hearing the report of Mr. Gall, C.E., Glasgow, who was appointed a neutral engineer to report as to the relative merits of the Glenmassen and Blairmore schemes for a new water supply to Kilmuir, Strone, and Blairmore, the Ayrshire County Council agreed, on Tuesday, by a large majority, to adopt the Glenmassen scheme, estimated to cost £9,340, and remitted it to the Cowal district committee to carry out the scheme in accordance with Mr. Gale's recommendation.

Jasper Isherwood Helme, ex-clerk, collector, and surveyor to Rishton local board, was charged at Blackburn on Wednesday, under a warrant, with embezzling £2,949 12s. 9d., belonging to the board. The original deficiency amounted to over £4,000, but the prisoner had refunded more than £1,000. The prisoner, who pleaded guilty, was committed to Preston Sessions for trial, application for bail being refused.

A meeting of gentlemen interested in the proposal to establish an engineering laboratory for Glasgow University was held in Glasgow on Tuesday, to take steps for raising the £12,500 necessary to fulfil the condition of the offer of from £10,000 to £12,500 by the Bellahouston Trust. Professor Barr explained the scheme, and, after discussion, a committee was appointed, with Sir William Arrol as chairman. Subscriptions to the amount of £3,750 were announced.

The new board schools, Bulwell, Nottingham, are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

A mural monument, in memory of the late Canon Eagar, was unveiled last Sunday at the parish church, Ashton-under-Lyne. The work has been carried out by Messrs. Earp and Hobbs, under the direction of the architects, Messrs. J. Eaton and Sons, of Ashton-under-Lyne.

During excavations for the foundations of the new County Hotel at Canterbury, the massive foundations in masonry of a Roman building which formerly occupied the site have been discovered. Two Roman jars, some coins, and a spur are among the objects found during the works.

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ILLUSTRATIONS.

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Our Illustrations.

"ST. CECILIA": A DECORATIVE PANEL.

This illustration, reproduced direct from the cartoon drawing of the designer, Mr. L. Fairfax-Muckley, represents a panel picture with St. Cecilia, the supposed inventress of the organ, seated at the keys, listening to the accompanying melody of the moaning wind among the trees which serve to furnish the decorative filling of the conventionally-treated background. Her attitude is expressive of virgin grace, and the nimbus round the martyr's head is indicative of Heavenly inspiration.

CHURCH OF ST. MICHAEL, MAESTEG, GLAMORGAN.

This church has been designed to meet the greatly increasing demand for church accommodation in the parish of Llangynwyd, in which parish no less than seven have already been built within the last few years. The building, which accommodates over 500 persons, will be built of native stone, with hard Doulting stone dressings, at a cost of about £9,000. Mr. George E. Halliday, of Cardiff, is the architect.

INTERIOR VIEW OF THE GREAT HALL, BISHOPSGATE INSTITUTE.

We gave on the 30th Nov. last, a few days after the Prime Minister opened the buildings, a view, elevation, and plans of the Bishopsgate Institute. To-day we publish an interior of the great hall, as then promised. The description which accompanied our previous illustrations gave full particulars of the work, and the scheme very ably carried out by Mr. C. Harrison Townsend, F.R.I.B.A., the architect, so that there remains but little to add on this occasion. This great hall is one of the most important features in the group of buildings. The windows are kept well up to permit of ample lighting, and for the purpose of affording good wall space for the display of pictures. A big organ is intended to occupy the recess to the rear of the platform at the end of the hall, and with this end the space has been kept perfectly plain.

LOCAL BOARD OFFICES, FIRE-ENGINE STATION, STABLES, ETC., LITTLEBOROUGH.

This design was awarded the first premium by the assessors, Messrs. Woodhouse and Willoughby, of Manchester, out of 25 sets of designs submitted in open competition. The stipulated cost of the buildings is £4,000, and they are to be erected upon a site situated at the junction of Church-street with Station-road, Littleborough. The sum to be expended being small compared with the amount of accommodation required by the local board, the design had to be prepared with due regard to economy, and an endeavour was made to plan the buildings so as to avoid any irregular-shaped rooms, and to provide ample external light and ventilation throughout. The offices and caretaker's house are to be cellared throughout, in accordance with the conditions of the competition, as the level of the site is considerably below the road, and the space is utilised to the best advantage to avoid filling-in. The basement of the public offices contains the heating-chamber and stores, and is to be approached from the hall, and also by means of steps from the yard in the rear. The principal entrance is planned on the curve of the site, as stipulated by the conditions, and the whole of the offices are provided, as required, on the ground floor. A broad stone staircase leads to the first floor, at the rear of which ample lavatory accommodation is provided for the officials and clerks; this will be entirely disconnected from the main building by means of a cross-ventilated lobby. The first floor contains the board-room, with waiting-room adjoining, a large committee-room, board's retiring-room, and an extra office, with strong-room attached; and the lavatory accommodation for this floor is immediately over that of the ground floor, and treated in a similar manner, and approached from the half-landing of staircase. The caretaker's house is placed on the south side of the public offices, and is disconnected from these buildings by an entrance to the yard at the rear, and contains living-room, kitchen, two bedrooms, and stores in basement. The fire-engine station is on the south end of the site, and adjacent to the caretaker's cottage, and contains engine-room, brigade-room, and superintendent's and pay office, with store attached; stable accommodation for six horses, with hayloft over, harness-room, men's lavatory, bathroom, coal-store, covered shelter for fire-escape, and a cart-shed for eight carts is provided in the rear of the fire-engine station. The elevations facing Church-street and Station-road are to be faced with Yorkshire parpoints with ashlar dressings, in accordance with the conditions, which were prepared by Mr. George H. Wild, the surveyor and clerk to the board. The buildings, which are designed to be of fireproof construction throughout, are in an English Renaissance style, treated in a free but economical manner. Messrs. Clark and Hutchinson, of 28, John-street, Bedford-row, London, are the architects.

PARK ROAD SCHOOLS, BURSLEM.

These schools are now in course of erection for the Burslem School Board. They will occupy a commanding site overlooking the new park. The arrangement is on the central-hall plan, giving accommodation for 440 boys and girls, with a separate block for infants. The buildings will be red bricks and red terracotta, and tile roofs. Internally, the rooms will have glazed tile dadoes and plastered wall and ceilings, and wood-block floors. For ventilation, Tobin tube inlets and roof-extracting ventilators will be provided, and the heating will be by hot water; but an open fireplace will be provided to every room. The schools will be well fitted up with teachers' rooms, cloak rooms, and lavatories; covered play-sheds with latrines, and a caretaker's house. The tender of Mr. Wm. Grant, builder, Burslem, was accepted, amounting to £7,999, and the architect is Mr. A. R. Wood, of Tunstall and Burslem, the architect to the Board.

CANOPIES TO STALLS AT THE CHURCH OF ST. CROSS, WINCHESTER.

Mr. William Butterfield, the well-known architect, who restored and decorated the famous church of St. Cross, near Winchester, writes to us in the following terms concerning these beautiful canopies:—"I am unable to give you any information as to the interesting and refined Renaissance woodwork at St. Cross about which you write. I never could learn anything which was reliable. St. Cross Hospital and its whole property were entirely under the control of the 'master' for the time being, until the resignation of the Earls of Guildford, when a body of trustees was appointed. The master was so independent a person, and the funds at his disposal were so large, that I have always presumed that everything done in the hospital was done by him, and that this woodwork was his quiet gift. Of the date of the gift I know nothing. A gentleman was very anxious some years since to repair it at his own cost; but nothing was done to it—for good reasons, which I need not go into." Being thus unable to obtain any particulars about these canopies, we communicated with the son of the recent Dean of Winchester, Mr. G. H. Kitchen, an architect in practice in that city, who kindly replied as follows:—"Very little can be gathered of the history of these beautiful and unusual examples of Early Renaissance woodwork. They are placed one on either side of the chancel, below the springing of the two westernmost arches, and appear to have had no connection with the seats below. No mention is made of them in Murray's 'Hampshire,' or in Mr. Humbert's (the late master's) book on St. Cross. They are said to have been the gift of Bishop Fox, founder of Corpus Christi, Oxford, who was Bishop of Winchester, 1500-1528. One of the medallions bears a pelican, which was his crest; but the work in itself is of much later character than Fox's beautiful Tudor chantry in the cathedral. These carvings are supposed to be the work of Italians; but, judging from the almost Gothic and very spirited terminal figures, one would be inclined to attribute their origin to Flemish or Belgian workmen. They were sent to London during Mr. Butterfield's restoration of the church, about 30 years ago, and cleaned at great cost from the paint with which they were covered, and there was some talk at that time of having the northernmost screen restored by Italian carvers. It is in a very mutilated condition, but the southernmost screen is almost perfect."

NEW BREWERY AT BLACKBURN.

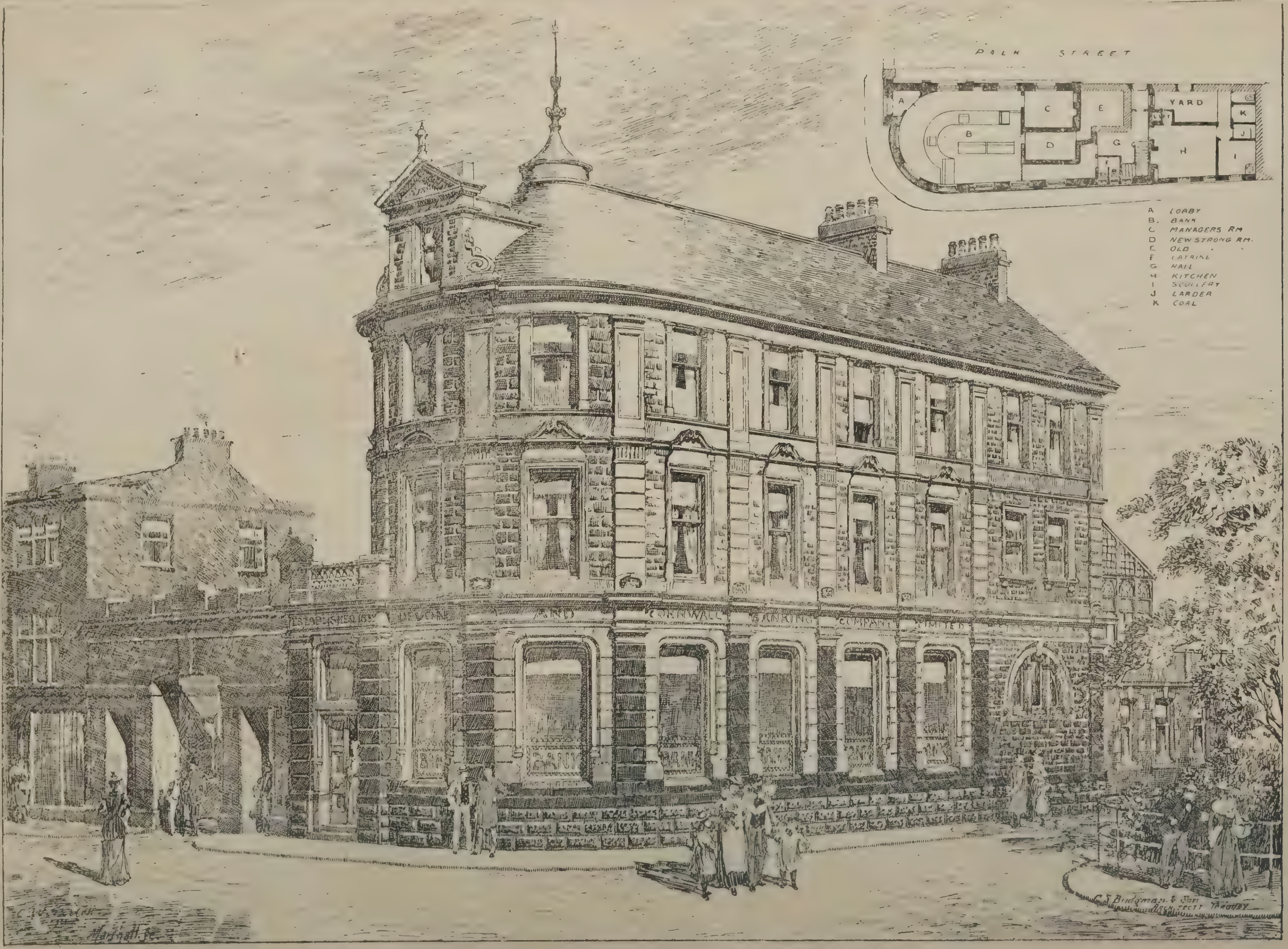
This forty-quarter plant brewery is now being erected for the Blackburn Brewery Co., Ltd., on a plot of land forming part of an estate recently purchased by them. The fall of the land from end to end has rendered it possible to have two loading sets direct from the cellar and racking-room floor, which will be of great value. The buildings throughout are of the best bricks, with Yorkshire and Runcorn stone dressings. The arrangement consists of the brewery block along one side and one end, with stable accommodation down the opposite side, the offices being placed at the junction of the two main streets. The cellars throughout are lined with blue bricks, and the other floors will be lined with glazed bricks so as to be easily cleansed. The entrance to the brewery is through a massive brick archway surmounted by an arc lamp capable of lighting the yard. The boiler-house is at the top corner, and will be fitted with boilers. The chimney-shaft will be of brick, 105ft. high. It is intended to have the main building finished in May, ready to receive the plant. The contracts have, as far as possible, been given to local men, Mr. John Boland being responsible for the masonry and brickwork; Mr. Willson, of Lower Darwen, near Blackburn, for the joiner's work; whilst Mr. R. T. Eastwood, Mr. S. Cunliffe, Mr. R. J. Duerden, and Mr. M. F. Cooper are responsible for the flagging and slating, plumbing and glazing, plastering and painting, and chimney respectively. The offices will be fitted up in the best manner, having wood-block and mosaic floors all through on the ground floor. The "art of water divining" is looked upon with distrust by the majority of the profession; but this is a case, we are assured, in which it has been eminently successful. Before proceeding with the buildings, the directors, under the advice of Mr. Lecomber, the eminent brewery engineer, sent for the late Mr. Mullins, who, in February last, said that water would be found in abundant quantity below a point indicated by his twig. This supply has been come across within a few feet of his estimate. The work is being carried out under the superintendence of Mr. James Bertwistle, F.S.I., of Blackburn.

DEVON AND CORNWALL BANK, TORQUAY.

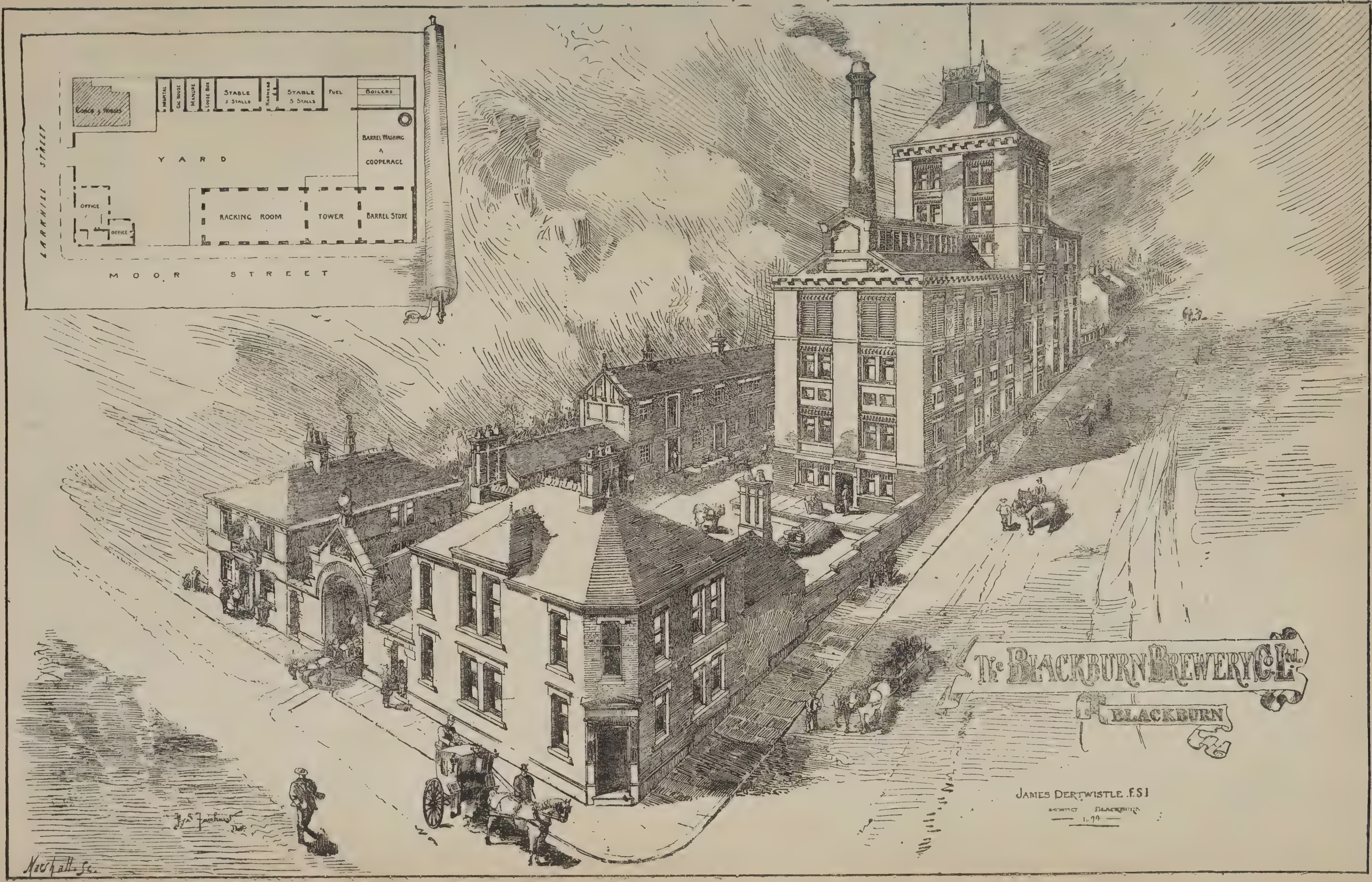
These premises have been rebuilt for the Devon and Cornwall Banking Co., Ltd. The buildings have been carried out by Messrs. Vanstone and Mumford, contractors, of Torquay. The architects are Messrs. Geo. Soudon Bridgman, M.S.A., and Norman G. Bridgman, A.R.I.B.A., architects, of Torquay and Paignton.

* * *

A memorial window was fixed in the south transept of Kineton Parish Church last week. There are three openings, filled with large subjects representing "Our Lord Healing the Sick," "Our Lord in the House of Martha and Mary," "The Blessing of Little Children." In the tracery are emblems and ornament. The work was carried out by Messrs. F. Holt and Co., stained-glass works, Warwick.



DEVON AND CORNWALL BANK, TORQUAY.


Coach & Horses
Hospital
Gig House
Manure
Loose Box
Stable
5 Stalls
Harness
Stable
5 Stalls
Fuel
Boilers
Barrel Washing
&
Cooperage
Yard
Office
Office
Racking Room
Tower
Barrel Store
Larkhill Street
Moor Street
The Blackburn Brewery Co. Ltd.
Blackburn
James Dertwistle. F.S.I.
Architect Blackburn
1.94
Marshall Sc.

WAYSIDE NOTES.

A novel housing scheme has been adopted by the Manchester Town Council. It is proposed to clear a space of about five acres in the centre of the City, in an overcrowded and unhealthy area, and to erect blocks of workmen's dwellings. Large areas will be left for playgrounds, and the roofs of the buildings will be left flat and adapted as recreation and playgrounds and drying grounds. Trees and flower-beds will be planted in the open spaces. Several novel features will be introduced into the construction of the dwellings. The cost of clearing the area will be about £250,000.

The tramways acquired by the London County Council are to be leased until some remaining lines are bought over. Provisions have been inserted restricting the hours of labour of the employés of the lessee to 60 per week, or 10 per day. Being of opinion that the lease of the tramways should be the subject of public competition, the Highways Committee recommend that they be authorised to invite tenders. With regard to the section of the London Street Tramways Company's system authorised by provisional orders of 1873, a point of some interest is raised. On Nov. 6 last, the London Country Council decided to give notice of purchase, subject to the approval of the Board of Trade, as required by statute; and at once the company's solicitor wrote to that department pointing out that the tramways referred to are centrally situated, forming part of a continuous system workable only as one undertaking, and asking the Board of Trade to withhold its consent to the service of the notice until 1898, when the Conncil will be in a position to acquire nearly the whole of the company's system. This letter was forwarded to the Council, and has been considered by the Highways Committee, who recommend that the Board of Trade be informed that the Council does not acquiesce in the proposal in question.

The Parks Committee of the County Council reported on Tuesday that they cannot see their way to acquire the small open space in Flower and Dean-street, Whitechapel, "having regard to the smallness of the area, the very high price, and taking into consideration the nature of the surrounding buildings." This will be a disappointment to the people of Whitechapel, and particularly to Canon Barnett and his helpers at Toynbee Hall, who have been working hard to secure this much-needed recreation ground. It is distinctly unjust into the bargain. The London County Council does not count cost at other ends of the town where the need for fresh air and open spaces is far less pressing than in Whitechapel.

In the advertisement columns of a North of England paper appears the following interesting announcement:—

> A Child of God, seeking employment, would like to take charge of property and collect rents; has a slight knowledge of architecture and sanitary; can give unexceptionable references; age 31; married.—Address J. 167, at the printer's.

I wonder whether "J. 167," is one of the brass plate diploma'd fraternity? Let us pray, brethren, for his worldly success, and that pride may not puff him too early into a full blown successful architect.

The nucleus of what may become an interesting local Metropolitan museum has been formed by the London County Council from the finds of relics of bygone days made during the progress of excavations undertaken by that body from time to time throughout the Metropolis. The collection is deposited in one of the rooms of the Council's headquarters in Spring Gardens, where it may be seen by any ratepayer. It is a curious medley, comprising old shoes of the 16th century, bottles, earthenware vases, coins, flint arrowheads, and a fine Egyptian tablet of an early period, found by the workmen while digging the foundations for the new fire-station in Trafalgar-square, Chelsea. A series of old London maps, presented by Mr. Charles Harrison, which are displayed on the walls, are of great interest, as conveying some idea of the vast growth of the Metropolis. In addition the Council has come into possession of the valuable collection of commemorative medals which belonged to its defunct predecessor, the Metropolitan Board of Works, and of the keys of the gates of the various bridges and closed thoroughfares that have been freed from toll, mementoes that will one day be of curious interest to the student of London history.

In one of the most charming parts of Epping Forest stands Queen Elizabeth's Lodge; a small building of two floors, the upper of which is entirely occupied by a moderately-sized square room with windows in each wall, giving a view in all directions round the ample expanse of the forest. This is the only room which is open to the public, the small apartments on the floor below being occupied by the officials, who, on behalf of the Corporation, look after the building. As there is nothing to see in it, the lodge leads a useless existence, but I am glad to observe that it is to be turned to some good account at last. It is to be made into a museum to illustrate the fauna, flora, and antiquities of the forest. The idea is a capital one. Some of the City companies have contributed money in aid of the object, and before long the lodge will contain a very fine collection.

Specifications for the quality of wrought iron often vary in the requirements. That it should be tough, ductile, fibrous, and uniform in quality, free from seams, buckles, blisters, and capable of being worked at a proper heat without injury, are requirements generally admitted. American specifications require that all iron for tension members of open trusses, laterals, pins, and bolts must be made directly from the muck bar: these are to be rolled into flats and again cut, piled and rolled into finished. No scrap will be allowed. As regards the elastic limit, 26,000lb. per square inch is the least required. In tensile members of open trusses, laterals, pins, and bolts 25,000lb. is specified; also for plates over 24in. wide. Tensile strength, limit of elasticity, and ductility are determined from standard test pieces cut from the full-size bar; the area of cross section of these test pieces shall not be less than ½sq.in. for a length of 10in. The ultimate strength and elongation required by tests on full-size tension members vary considerably. In some specifications the ultimate strength demanded of pieces not over 2sq.in. in section per square inch is 50,000lb., and stretch at least 10 per cent. in thin length; others require that tests on full-size bars shall show not less than 46,000lb. per square inch of ultimate strength, and an elastic limit of not less than 25,000lb. per square inch.

A singular revelation with regard to the bricklayer's toil, pay, and habit was made on Tuesday at the meeting of the Liverpool Water Committee. It was stated that the men who had been engaged in lining Llanforda tunnel at Oswestry had been paid at the rate of £4 per week, that they had gone on the spree, and the work had been stopped for four days. The contractor set on other men, giving them double pay, varying from £8 to £10 per week, to complete the work, but they were found tipsy at their toil. Alderman Hughes said the men did not care to earn money unless they had an opportunity of spending it. After working many hours they felt that they must break away, and spend their wages, and they had no desire to save anything.

New National schools at Gilling have just been opened by the Archbishop of York. They have been built from plans by Mr. Brierley, of York, and accommodate 150 children.

Mr. T. W. Thompson, of the medical department of the Local Government Board, held an inquiry at the Council House, Birmingham, on Friday, relative to the application of the city council to borrow £23,400, for the extension of the scarlet fever hospital at Lodge-road. Mr. W. Martin, of Birmingham, produced and explained the plans, which will provide for 300 additional patients.

The extension of the City Lunatic Asylum at Gosforth, Newcastle-on-Tyne, is in active progress. The extension comprises a new range of buildings to be occupied by men, and the whole of the present buildings will in future be used for women. The total accommodation will then be for about 800 patients. The foundations of the main buildings are now almost complete, and these also include the structural work for the scheme of heating and ventilation, which is by a mechanical system. The cost of the buildings and fittings will not be less than £100,000. The architect is Mr. J. W. Dyson, of Grainger-street, Newcastle. The "Burt" Hall and offices are being erected by the Northumberland Miners' Association in Northumberland-road, also from Mr. Dyson's designs. These buildings, which will be very ornate, will cost, including land, nearly £10,000.

DIARIES FOR 1895.

We have received the usual specimens of Messrs. Hudson and Kearns' architects' and builders' diaries, and also of their date-indicating pads, both of which are as welcome as in past years. There are no very novel features in either the diaries or pads this year; but they are fully up to the mark and up to date. In the pads, the "Bankers'" is the newest, and it has had a very favourable reception, we hear. The special diaries and pads for our own and our readers' use have long been perfection. There is nothing else like them.

The City Diary for 1895 (London: W. and H. L. Collingridge) is as handy a shillingsworth as ever. It has a distinct character of its own, and is one of the few we always keep near us for reference throughout the year.

The Rugby Portland Cement Company issues a well got up and useful wall almanac, with illustrations of its works.

OBITUARY.

Sir Oswald Walters Brierly, R.A.Scot., who has been Marine Painter in Ordinary to the Queen for the past twenty years, and curator of the Painted Hall at Greenwich Hospital since 1881, died on Friday at his residence in Ladbrooke-terrace, S.W., at the age of 77 years. During the Crimean War he was present with the fleet during the operations in the Baltic, the Black Sea, and the Sea of Azof. Sir Oswald Brierly accompanied the Duke of Edinburgh on his voyage round the world in 1867, and the Prince and Princess of Wales on their trip up the Nile two years afterwards, and had cruised about for eleven years on various men-of-war and visited all quarters of the globe; an island of the Louisade and a point in Australia were both named after him. He was a member of the Royal Water-Colour Society, and had painted many historical marine pictures. He was knighted in 1886.

CHIPS.

The interesting contents of the Royal United Service Museum, hitherto so little known to the general public, have now been removed to the new premises in Whitehall, and the formal opening of the latter will take place about the middle of February. It is proposed in future to admit the public to the Museum at a small charge.

The Pavilion Theatre in Whitechapel-road, which has been reconstructed from plans by Mr. Ernest Runtz, will be opened on Boxing Day. The entrances, exits, and passage-ways have been enlarged, the ceiling has been raised several feet, and the whole of the auditorium reseated, while the roof over the stage has been raised 32ft. The new façade to the main road is chiefly of terracotta.

The Secretary of State has received from Her Majesty's Agent and Consul-General at Sofia an invitation for tenders for the works to be undertaken in connection with the harbour at Varna. The total cost of these works is estimated at £332,000, and a deposit of £16,600 will be required. The adjudication will take place on January 30 next. The copy of the invitation to tender may be seen on application to the Commercial Department, Foreign Office, S.W., between the hours of 11 and 6.

The City Commission of Sewers agreed on Monday to intimate to the London County Council that the Commission was prepared to construct the City portion of the approach to the Tower Bridge at an estimated outlay of £63,050, the Council paying half the cost, and to improve Thames-street at an outlay of £37,500, the Council contributing a third of the cost. The terms of the arrangement have been suggested by the County Council.

A special meeting of Inverness town council was held on Monday to consider the offers sent in for the construction of a steel girder bridge over the Ness at Waterloo-place, in place of the present wooden structure. Eighteen offers were received from engineering firms, the lowest being £6,985, and the highest £10,916. The council remitted all the offers to the engineers for examination and report.

At Tuesday's meeting of the London County Council, complaint was made by Mr. Antrobus, Mr. Walter Emden, and others that the Council were not getting a proper return of labour for the wages they were paying, and that it was remarked throughout London that there was an enormous waste of time by the workmen employed by the Works Committee. Sir J. Lubbock said the Committee had undertaken an impossible task, and if it were allowed to continue, great loss must result to the ratepayers.

COMPETITIONS.

PARIS.—The jury appointed to examine the competitive plans sent in for the Exhibition of 1900 commenced their labours on Monday. The plans sent in are 112 in number, and are hung in the Salon de Reception at the Palais de l'Industrie in the Champs Elysées. The chief problem grappled with has been the disposition or retention of the Eiffel Tower. Most of the competitors are in favour of preserving the construction, owing to the enormous cost which its removal would entail. Many of them propose, however, to cut it down to the first platform. One daring projector suggests that every building on the Champ de Mars, including the tower, should be swept away, and replaced by a vast hall with an entrance on the riverside. Another shows a plan for covering over the Seine from the Pont de l'Alma to the Pont des Invalides, and for the erection of a Crystal Palace on the space thus obtained. Several competitors are in favour of covering over the Champ de Mars. The jurors will select a plan out of the number presented about the end of the month, and the public exhibition of the designs was opened at noon yesterday (Thursday).

RICHMOND, SURREY.—The design of Mr. T. Locke Worthington, A.R.I.B.A., of Westminster, has been chosen for a small "Free Church," to be erected in Ormond-road, Richmond, and the building will probably be commenced early in the new year.

SWANAGE.—The school board again discussed at their last meeting a proposal that the two architects practising in the town be asked to submit plans for the two proposed new schools, and that two premiums be awarded, the cost not to exceed £7 per child, for the 530 children, for the new schools, exclusive of land and furniture. This was rejected, and the competition will be an open one. The following letter was read :—"Gentlemen,—Having observed that at the last meeting of your board the chairman expressed an opinion that the architect for the proposed new schools could not be chosen by competition, and that no trustworthy man would undertake to do the work for less than a commission of 5 per cent. on the outlay, I beg to inform you that I am ready to undertake to prepare plans and specifications to be approved by the Education Department, and to do all the work which would fall to the architect, including, of course, the proper superintendence of the buildings, for an inclusive commission of 3 per cent. on the outlay. In my opinion, it is not usual in a large job involving the expenditure of £3,000 or £4,000, as stated, to charge more than 3 per cent (!), and I have no doubt, whatever, that if the matter be thrown open for competition, you will have no difficulty in finding a competent man who will undertake it for that remuneration.—I am, yours truly, G. P. D. SAUL, Architect and Surveyor."

WALSALL.—The baths competition is to be re-instituted. At the last meeting of the town council the General Purposes Committee reported that they had come to the conclusion that the erection of the baths should be proceeded with, and that the fairest course would be to invite all the Walsall architects who sent in competitive plans on the occasion of the last competition to send in fresh plans, the size of the first-class swimming-bath to be reduced from 80ft. by 30ft. to 75ft. by 30ft.; the second-class swimming-bath from 60ft. by 30ft. to 50ft. by 25ft.; and the number of slipper baths from 33 to 24; the cost, excluding the Turkish baths, not to exceed £5,000; the architects to be requested to include a suite of Turkish baths at a further cost not exceeding £1,000; and the successful architect to be employed to carry out the work at the usual commission of 5 per cent. The report was adopted.

* * *

Mr. Thomas Rider, the youngest son of Mr. Tom Frank Rider, a well-known and widely-respected member of the London building trade, died at his residence, Durand-gardens, Clapham-road, on Monday, aged 22 years.

Major Durnford, R E., conducted an inquiry at Knottingley, Yorks, on Friday, into an application by the local board to borrow £7,500 for 50 years, proposed to be expended on a water scheme, and also into the proposed modifications of the board's plans for a sewage scheme. Mr. Richardson, C.E., and Mr. Gott and Mr. J. R. Dodds, civil engineers, were present. It is proposed to take the Pontefract mains, and to raise the water to a tower with a storage of 100,000gal., calculated to be a three days' consumption.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—At a meeting of this association, held on the 13th inst., in the Royal Institution, Mr. W. W. Robertson, the president, in the chair, Mr. S. Henbest Capper, architect, read a paper on "The Monks and their Abbeys in Olden Days." Mr. Capper referred to the difference between the monastic life of the East, with its rigid asceticism, and that of the West, where the monks lived together for a common end. When the Benedictines fell away from the strict observance of their early rule, a reformation towards more primitive austerity was begun at Citeaux by Robert of Champagne, and was continued and spread by St. Bernard of Clairvaux, who was characterised by the lecturer as the greatest figure in the twelfth century. The Cistercian Order, to which St. Bernard belonged, also became popular all over Europe, and was especially so in this country, possibly, the lecturer suggested, on account of the more prosaic character of its ritual as compared with that of the Benedictines. By the aid of the limelight a large number of typical examples of Benedictine and Cistercian abbeys and churches were thrown upon the screen, and their points of difference explained. In the Cistercian monastery the lay brother played an important part, and how his appearance there modified the architectural conditions of the abbey buildings was also illustrated and explained. Views were likewise shown of cloisters, kitchens, refectories, &c., and of the internal furnishings of the churches and cloistral buildings. On the motion of Mr. Hippolyte J. Blanc, a vote of thanks was given to the lecturer.

GLASGOW ARCHITECTURAL ASSOCIATION.—A meeting was held on Tuesday, the President, Mr. A. N. Paterson, in the chair, when Mr. T. L. Watson, F.R.I.B.A., delivered the fourth lecture of the winter series, the subject being "The XIII. and XIV. Centuries in Italy." The lecturer pointed out some of the varieties of Gothic architecture that prevailed in the different divisions of the country. The influence of the Classical art of antiquity was felt throughout the whole Gothic period, and was seen in the general effect of breadth, in the horizontal treatment, and the flat surfaces, as opposed to the vertical treatment and the deeply-recessed openings and mouldings of Northern Gothic. It was seen in the indiscriminate mingling of round and pointed arches; in the fondness for the single round pillar or shaft in place of the clustered column, and for the tapered form of pillar instead of the cylindrical form almost invariable in the North. There was a certain defect of the constructive sense seen in the prevalence of the iron tie-rod to hold the arches together, and in the overloading of slender pillars apparently quite unequal to their task. The fact that they are still standing after 500 years is a proof that they are in reality strong enough, and something must be allowed for the known hardness and strength of marble, as compared with the building stones employed in the North. After every allowance is made, however, it has to be admitted that the apparent weakness of many of their buildings is a characteristic and serious defect. A third characteristic was the great wealth of colour produced by various marbles, brick, and terra-cotta, and by mosaics and fresco paintings. Many of the painters were architects also, and even those who were not showed an intimate knowledge of architecture. The paintings were really allied to the buildings, and not merely applied. The architecture painted as accessory to the figures was in harmony with the lines of the building, and the figure subjects also had the architectural qualities of symmetry, restraint, and repose. The architecture, painting, and sculpture of the Renaissance were then touched upon, and the same qualities were illustrated up to the middle of the 16th century, after which there was rapid deterioration.

* * *

Great Barr Church, Staffordshire, has received the addition of a memorial stained-glass window, designed and executed by Messrs. Swaine, Bourne, and Son, King Edward's-road, Birmingham, and London. The subjects are those of "The Good Samaritan" and "The Raising of Jairus's Daughter." The tracery quatrefoil contains the emblematic representation of the Holy Spirit by the Dove. A further commission is to be given to the same artists, the dimensions corresponding.

Engineering Notes.

BIRMINGHAM, STRATFORD, AND LONDON RAILWAY.—The promoters of this line have deposited plans of a Deviation Bill for next session, affecting about 20 miles out of the whole length. The preparing of the engineering work was intrusted to Mr. R. Elliott Cooper, of London, in conjunction with Mr. Winby and Mr. Pritchard, of Birmingham. A small local line has been revised to serve as a first-class main line, with an adequate passenger station and goods accommodation in Birmingham. The new plans show as the steepest gradient 1 in 100. The chief alterations at the Birmingham end are at the Moor-street terminus, where the land scheduled under the new plans is about four acres, or nearly double that of the original station. For the goods traffic, a block about five acres in extent is to be acquired. From Earlswood Reservoir, however, to Stratford-on-Avon, a distance of some 14 miles, the centre line of railway is diverted in some instances upwards of half a mile from last year's plans.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—The opening address of the thirty-fifth session of this society was delivered on Thursday evening in last week by the President, Mr. C. T. Walrond, A.M.Inst.C.E., at the Society's offices, 12, Delahay-street, Westminster. The programme for the session is as follows, the meetings being held on Thursday evenings at 7 p.m.:—Jan. 3, "Caissons and Dock Gates," A. W. Ackermann; Jan. 17, "Checking Engineering Calculations," A. Hanssen; Jan. 31, "Engine-room Practice at Sea," W. M. Binney; Feb. 14, "Waste-Preventing Cisterns," E. H. G. Brewster; Feb. 28, "Testing the Strength of Materials," A. S. E. Ackerman; March 14, "Lifts: Hydraulic and Electric," S. à Court; March 28, "Wire-Net Making," A. A. Myall; April 11, "Laundry Machinery," H. Coward; April 25, "Chain-Making," W. Cooper Penn; May 2, "Railway-Bridge Design," Walter Beer; May 9, annual dinner.

THE BLACKWALL TUNNEL. — At Tuesday's meeting of the London County Council, it is reported that the number of claims in respect of properties taken for and injured in the formation of the Blackwall Tunnel had been 231, and the total amount claimed £439,667. All of them had been settled (with the exception of eight) for £317,318. The eight claims unsettled amounted to £7,766, and it was estimated that those would be got rid of by a payment of about £5,000. The Council acceded to the request of Sir Alexander Taylor, the Principal of the Royal Indian Engineering College, Cooper's-hill, that two of the students might be allowed on the works of the Blackwall Tunnel, with the object of gaining experience in the construction of tunnels by means of compressed air, especially as the Government of India would probably have a tunnel made under the river Hoogly at Calcutta.

GLASGOW.—The bridge committee of the town council held a meeting on Friday, at which the estimates for the rebuilding of the Glasgow bridge at Jamaica-street were considered. Twelve offers were sent in, out of which the three lowest were selected and sent to the measurer to be checked, with a view to the ultimate decision. These three estimates were: Messrs. George Lawson and Son—foreign granite, £76,600, and British granite, £78,000; Messrs. Morrison and Mason—foreign or British granite, £81,176 5s.; and Messrs. James Goldie and Son—foreign granite, £91,896 16s. 8d., and British granite, £93,988 2s. 2d. It was decided to recommend to the town council that the offer of Messrs. Morrison and Mason be accepted, the bridge to be built of British granite, and the good material in the old bridge to be used in the construction of the new bridge.

SOCIETY OF ENGINEERS.—The following have been elected by ballot, as the council and officers for 1895, viz.:—As president, Mr. Wm. George Peirce; as vice-presidents, Mr. Chas. Claude Carpenter, Mr. Samuel Herbert Cox, and Mr. George Maxwell Lawford; as ordinary members of council, Messrs. W. Worby Beaumont, Joseph Bernays, R. W. Peregrine Birch, William Bradford, John Corry Fell, Charles Gandon, Henry O'Connor, and Stephen Sellon; as hon. sec. and treasurer, Mr. Perry Fairfax Nursey; as hon. auditors, Messrs. Alfred Lass, F.C.A., and Samuel Wood, F.C.A.

Building Intelligence.

Edinburgh.—Dedication services took place last week in connection with the new Evangelical Union Church at Dalry-road, Edinburgh. The building, which has just been completed, at a cost of £5,000, gives accommodation for 500—four hundred on the ground floor, and a hundred in an end gallery. The style adopted is Late Decorated Gothic, treated in a simple manner. The main gable is filled with a traceried window, which has been filled with stained glass as a memorial. The angle of the building next Murieston Crescent is emphasied by a tower and spire, in the lower part of which is arranged the staircase to the gallery. The materials used in the construction are pink Hailes stone for the rubble facework of the walls, with Doddington for the external and moat stone for the internal hewn work. The internal wood finishings throughout are of yellow pine, the ceiling being treated in the form of a barrel vault with moulded ribs and battlemented cornice. The building has been erected from the plans and under the superintendence of Messrs. Frank W. Simon and Tweedie, Hanover-street, Edinburgh.

London.—The Bath Club, opened this week in Dover-street, Piccadilly, is a distictly new feature in the club-land of London. The cost of the site, building, and furnishing has been about £70,000, including a capital swimming-pond hall to the rear of the premises in Berkeley-street, overlooking the grounds of Devonshire House. Besides the gymnasium bath, there is a very complete series of Turkish, Russian, and other baths with Sudatorium, Tepidarium, Frigidarium, and steam douche; wave and sitz baths attached. These will all be reserved for ladies on three mornings in each week. The building in Dover-street is fitted up with all the convenience and accommodation of a first-class club, with dining-rooms for both sexes, provision for breakfasts being made a special feature of in connection with bathing facilities. A very good billiard-room adjoins the swimming-bath and smoking; card and private dining-rooms for guests are provided. On the upper floors, facing both thoroughfares, there are located about forty bedrooms for the use of members. The main part of the principal building consists of the mansion known as 34, Dover-street, and the internal decorations, in a sort of French Renaissance, forming the original treatment of the house, have been adopted. Mr. Collings B. Young, of Cockspur-street, is the architect, and the contractors were Messrs. Allen and Sons, of Kilburn.

Nicholaston. — The Parish Church of Nicholaston, near Swansea, was reopened for Divine worship on the 6th inst. This little church, one of the smallest in Glamorganshire, measuring only 50ft. from east to west, and seating but 50 persons, has been practically rebuilt at a cost of *over* £6,000. The east end and reredos and chancel windows are of polished pink alabaster. The church is paved throughout with polished Numidian and Devonshire marbles. The roof is of oak, richly carved and decorated. The rest of the joiner's work throughout is of Teak. We have already illustrated the angel cornices in chancel, also the east end. The sculpture throughout has been executed by Mr. W. Clarke, of Llandaff, under the direction of the architect, Mr. G. E. Halliday, of Cardiff.

Washwood Heath, Saltley.—On Saturday the opening of the second section of St. Mark's Church, Washwood Heath, took place. The first portion, the chancel, was built five years ago, at a cost of £700. The church has now been extended by the building of two bays of the nave, with north and south aisles. The building is faced inside and out with red front bricks, with Bath-stone dressings. The roof has massive wood principals, and is tiled. The style adopted is the Decorated. With the recent additions the church will accommodate 240 adults, and when completed 470. The work has been carried out by Messrs. Sapcote and Sons, from plans prepared by Mr. J. A. Chatwin, of Birmingham, architect. The cost of the second section is £1,500.

West Derby.—A group of Roman Catholic Poor-Law Schools, erected as a memorial to the late Bishop O'Reilly, was opened on the 13th inst. They are certified for 192 children, and have cost £10,000. The building measures 238ft. by 113. The building is faced with brickwork relieved by red Ruabon brick string-courses, arches, &c., and red Rainhill stone. Messrs. Sinnott, Sinnott, and Power, of Liverpool, were the architects, Mr. R. J. J. Irwin, of Liverpool, was the clerk of the works, and Messrs. R. Wearing and Sons, West Derby, the contractor.

Wolverhampton.—The new Grand Theatre was opened on Monday week. The building is situated in Lichfield-street, to which it has a frontage of 123ft., while the depth to Berry-street is 122ft., and a passage 8ft. wide on either side isolates it from the adjoining buildings. The architect is Mr. C. J. Phipps, F.S.A., of London. In order that a view of the stage may be obtained from all parts of the auditorium, the proscenium opening has been extended to the width of 33ft. A number of entrances and exits have been provided, and a fire-resisting curtain, weighing seven tons, has been fitted to cut off the auditorium from the stage, while the doors entering upon the stage are also made of iron plates. Seating accommodation has been provided for over 2,000 persons, and running round the back of the seats on each tier is a promenade which will provide standing room for several hundred more. The stage is 65ft. wide by 41ft. 6in. deep. The decorations have been carried out by Messrs. Geo. Jackson and Sons, of London, the tone of colour adopted throughout being white and gold, with claret-colour embossed paper for the walls, and a lighter shade of plush for the curtains and other upholstery.

CHIPS.

Mr. W. Jones, F.S.I., county surveyor of Anglesey, has given his award in the arbitration between the Llangefni local board and Mr. Lewis, as to land acquired for sewerage purposes, assessing the damages at £145.

The Master and Fellows of Peterhouse gave a dinner on Friday last to celebrate the presentation to the college of the portrait of Professor Dewar, painted by Mr. Orchardson, R.A., and exhibited this summer on the walls of the Royal Academy.

The Mayor of the Borough inaugurated on Monday the new scheme for the water supply of King's Lynn, by cutting the first sod of the new wells in the lower chalk. The wells are situated on a range of low chalk-hills, seven miles east of the town. They are to be about 100ft. in depth, with galleries running north and south. It is from the same chalk-hills that Sandringham House now obtains its water supply. To the town it is to be constant, and to the extent of 1,000,000 gallons per day. A supply will be afforded villages in the adjacent district of the Marshland.

The Callender Bitumen and Cable Company, Limited, of London and Erith, who are the contractors for laying the underground mains in Tunbridge Wells, commenced operations last week.

A new church is about to be built at Abersychan, Mon., to seat 300. Mr. Halliday, of Cardiff, is the architect.

The members of the Bristol Clerks of Works' and Builders' Foremen Association held their second annual dinner on Saturday night at the Grand Hotel, Broad-street, Bristol. The Dean (Dr. Pigou) presided, and the company numbered about 80. There were two vice-chairs, occupied by Mr. A. Scull and Mr. W. Woodrow.

A new post-office is about to be erected for the Horseley Heath portion of the parish of Tipton. The building will be of red Ruabon brick and terracotta, with a frontage to Horseley Heath and Horseley-road of about 100ft.

A memorial stained-glass window was unveiled in St. Peter's Collegiate Church, Wolverhampton, on Saturday. The window represents the prophets Enoch, Malachi, and Simeon, and the prophetess Anna.

A volunteer drill-hall has just been completed at Hednesford, Staffs., at a cost of £1,000. The hall, which is of brick, is situated in the Gasworks-road. Capt. Williamson has designed and planned the building, which was built by Mr. Mason, of Hednesford. It comprises a drill-hall, 70ft. by 40ft., with a band gallery, officers' and sergeants' rooms at the end, and an armoury above the latter. The hall is 17ft. 6in. high to the wall plate, and 36ft. to the ridge, the roof being supported by ironwork and provided with skylights.

The Court of Appeal of Aix confirmed on Friday the judgment of the Mentone Tribunal of Commerce by which an English Company, registered in London under the name of La Construction (Limited), and working at August, Cap Martin, was declared bankrupt under French law. The Official Receiver has failed to establish his point, and there only remains to him to accept the judgment, by which English companies will be liable in future to be wound up by French law, or to apply to the Court of Cassation.

Correspondence.

THE MODERN THEATRE OF THE CONTINENT.

To the Editor of the Building News.

Sir,—Mr. E. O. Sachs evidently thinks that I have recently attacked the Paris Opera House as an architectural abortion. This is not exactly the case, as I have a sincere admiration for the many qualities that make it (perhaps excepting Semper's works at Vienna and Dresden) the finest of the 19th-century theatre designs.

In the discussion, however, of my paper on "Modern Architecture" at the A. A. on November 9, Mr. B. F. Fletcher expressed the opinion that 1,000 years hence the Houses of Parliament in London, and the Opera House in Paris, would be found to be equally beautiful with the Parthenon at Athens. This led me to say that before such a lapse of time I fancied that both the 19th-century buildings named would be perceived to be abortions, and would be pulled down rather than be permitted into a category of comparison with the Parthenon.

The Paris Opera House may be king among the mongrels of modern architecture; but when compared with the perfect forms, just beauty, and natural grace of the Temple of the Virgin, Goddess of the Arts, I do not think misconception, or its synonism, abortion, is an inappropriate desciption of its Rococo character and unclassic design.

In short, I did not attack the Opera House any more than the Houses of Parliament, which is equally an architectural misconception; but Mr. Fletcher's suggestion, which I do not think Mr. Sachs will endorse, that these buildings are equal in beauty to the Parthenon, was an attack which I was only concerned in repelling.—I am, &c., Beresford Pite.

20, Hanover-square, W.

ARCHITECTURAL BOOKS.

Sir,—As you have done me the honour of printing my paper on Architectural Books, read before the Society of Architects, in your last number (Dec. 14), will you kindly allow me to point out through your columns that on page 816, first column, line 38 from the top, the word "modern" should follow study, an omission which occurred on the printer's proof handed to you, and which makes a *great* difference in the meaning of the sentence in which it occurs.—I am, &c., Herbert Batsford.

94, High Holborn, W.C., London, Dec. 18.

THE BROMPTON ORATORY.

Sir,—It would be just to record that I was appointed joint architect with the late Mr. H. Gribble, and that the working plans were digested and the works carried out to the completion of the roofs by Mr. Gribble, and—Yours, &c.,

I. T. Walford.

110, Buckingham Palace-road, London, S.W.
Dec. 18.

FLOORS IN HOSPITALS.

Sir,—I have seen your report in issue of 30th inst. on the paper read for the Architectural Association by Mr. Keith D. Young, F.R.I.B.A., on Hospitals and Infirmaries, and the discussion which it brought about, and have waited for somebody more competent than myself to come forward and offer an opinion on the subject.

I am glad to see the greater attention which is now being paid to floors in general, which, according to my idea, are next in importance to the drainage and sanitary arrangements. Indeed, if not properly constructed in the first instance, they will be a source of constant trouble both to clients and architects thereafter, and in a great measure affect the comfort and well-being of the patients.

As a manufacturer of both parquet and terrazzo floors, and as the introducer of the latter and patentee of the most perfected form of block flooring (hydrofuge) in present use, I am intimately acquainted with both kinds of floors, and may be permitted to say a few words on the subject. At the least, my opinion would have the merit of being unbiassed, as I am equally interested in both.

Mr. Young's remarks would imply that it is impossible to produce a hard wood floor block fashion that will not shrink or tilt; but if that were possible, he would give it the preference, and only accepts terrazzo as a *pis aller*.

It is, therefore, hardly necessary for me to dwell upon the fact that if a fair smooth, hard, wood-block floor, free of the defects mentioned by Mr. Young can be produced, little doubt exists that the majority of people would give it the preference over stone, or stone-floor substitutes for ward-floor purposes, as the changes in the atmosphere from cold dry to warm moist, which frequently happen during the winter, cause a surface like this to become dewed over by condensation, and then collect dust and organic matter.

Independent of coldness, hardness, and dustiness, as compared with wood floors, there is a cold and uncomfortable appearance in terrazzo floors when used for living apartments in this country, and little feeling of comfort to be derived therefrom, which to a great extent must react upon the well-being of both patients and nurses.

As to the objection of open joints and tilting of the blocks, given a fair chance and a little forethought and experience, it is quite possible to produce a block floor that will not tilt. The cause of tilting is two-fold—either the floating of the foundation is rough, and there is too great a thickness of asphalte used, or else the bitumen is not of the right description. If these two points are carefully considered, no tilting will occur. It is also possible to further counteract this risk by distributing the weight over a larger surface. This I am doing now by using continuous metal tongues, which bind the blocks together independent of their direct attachment to the foundation by means of my iron dovetail channels. I do not see much objection, either, to have a hard-wood batten across the head and foot of the beds to carry the legs, as an additional protection. This batten could be securely glued and screwed to the floor, and being moulded, with rounded ends, there could be no lodgement for dust or germs.

The cause of the unsatisfactory state of the foundation is often through its being floated at too early a stage of the building operations, thus becoming much worn with traffic over it, a very common occurrence; or of use of insufficient or bad cement; in fact, it seems to be the prevalent idea with foremen that anything will do for a block flooring. Whilst, if it is a question of a first-class job, just the reverse is the case. Another cause leading to want of success is the use of plasterers' sweepings in the concrete, which some months after completion causes swelling and bulging of floors, which is erroneously attributed to the flooring. This, of course, would apply with equal effect to terrazzo floors. The other objection raised—viz., swelling and shrinkage—is more difficult to treat with; but given that care which a specialist devotes to the work on which his reputation and livelihood depend, it can be overcome by careful preparation of the material, skilful labour in laying, and, above all, by judgment on the part of the architect. Architects should make it clear to their clients, and insist upon having the building and concrete foundation thoroughly well seasoned in cases where a good floor free from blemishes is of such importance as it is in a hospital.

Of course, I fully understand there are cases in which the smaller of two evils has to be elected, and where it pays the proprietor better to complete and let and then make good any defects rather than lose a tenant or half a year's rent; but, generally speaking, there is too great an impatience to get a building finished. I have over and over again been asked to lay block floors a day after the concrete foundation has been floated. Under such circumstances swelling and subsequent shrinkage is unavoidable.

Care should also be taken that all hot-air ducts or pipes under floors should be properly isolated, and best not carried under floors, as they cause unequal movement in the case of wood floors, and in terrazzo lead to cracks in places adjoining the ironwork. Slabs of marble or other suitable material might be used immediately in front of, or under front of, fireplaces. Thus the floors would not be subjected to direct strong heat of fires or radiators. It will probably be said, notwithstanding, occasionally a joint may start here or there; nay, even the whole of the floor may imperceptibly shrink all over. An individual open joint can be as readily made good as a crack in mosaic or other materials, and as to a very slight shrinkage all over the floors, that will take place in hot dry weather. If proper precautions have been used, the hardly perceptible open joints will readily be closed hermetically by the periodical use of beeswax or paraffin wax with the necessary brushings, and with the advent of damper or cooler weather will close up of their own accord.

As to small defects, I think there is barely any material used that has not some—e.g., it is impossible to construct a terrazzo floor without at times little pieces scaling out with wear, more especially if unsuitable material, such as Derbyshire spar or stone of similar cleavage, soft statuary or perished marbles are used. If good materials are used, this will not affect the wearing property of these floors. Indeed, Roman cube mosaic in this respect offers greater advantages, as there is less liability of portions of the floors becoming detached, or in the event of any becoming, from some external cause, detached, to their being overlooked.

I quite agree that terrazzo or mosaic floors are quite as good floors as can be had for operating theatres, corridors, or wherever there is traffic that requires prompt and easy cleansing by a hose or otherwise, but I do not think it an ideal floor for a ward any more than for a living-room; and assuming equal care has been bestowed on a hard-wood as on a terrazzo floor, the balance of advantages is in favour of the former. There need be no more lodgment of dirt or infectious matter than there is on terrazzo, or for a matter of that, any other floor, and as to comfort, both actual and sentimental, wood floors are more suited to the requirements and habits of this country than stone floors, although in hot countries like Italy, terrazzo and ordinary brick floors are used, and in summer are perfectly refreshing to the senses. I have often heard that waxed floors are so liable to be damaged with medicines, chemicals, or water being spilled on them. If the liquid is wiped up immediately, and the floor brushed, or, in a more serious case, scraped with a small scraper that any nurse could handle, there need be no more difficulty than there would be with a marble terrazzo floor, which in a bad case, like the upsetting of an inkpot, would require the attendance of a labourer, and rubbing down; in fact, doing what the nurse would do with a scraper on a wood floor; it would also require general cleansing with water, which is certainly more objectionable than cleaning with spirit of turpentine, which would suffice for a wood floor.—I am, &c., Joseph F. Ebner.

Sir,—I am anxious that the correspondence on fireproof construction should not degenerate into a disquisition on the merits of rival patents, and I would not trouble you with a further letter on the subject did not Mr. Fawcett's reference to my last communication demand a reply.

With regard to the fireproof flooring adopted in the new buildings for the Institute of Civil Engineers, Mr. C. Barry, the architect, in declining our tender, said he did so because the estimate of Messrs. Fawcett and Co. was lower, and added that he hoped to have an opportunity in the future of adopting our system.

With reference to the principle involved in *severance* and an *air-current*, I am of opinion that tiles as at present used—I refer to no particular patent—do not supply it. The tiles, the concrete, the steel joists, and the plaster ceiling are all *united*. Hence the heat is communicable to all the parts, tempered only by currents of air in small channels, which channels are nipped into very small proportions under the lower flange of the steel joist, where alone it is needed. This is very different from a suspended fireproof ceiling separated 3in. from the joist, which ceiling cannot communicate heat to the floor above, except through a moving atmosphere.—I am, &c.,

T. Lewis Banks.

71a, Queen Victoria-street, E.C., Dec. 12.

* * *

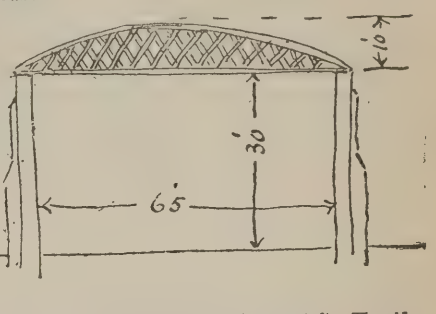
A meeting of the Manchester Association of Students of the Institution of Civil Engineers was held on Wednesday, when Mr. C. H. Wordingham, A.M.Inst.C.E., read a paper describing the Manchester electric-lighting works. These have been designed by Mr. John Hopkinson, F.R.S., and are on the five-wire system. Mr. A. Ross, president of the association, occupied the chair.

The ratepayers of Blackpool have rejected at the poll, by a large majority, what is known as the Gynn scheme, one of the largest undertakings ever proposed by the corporation. The scheme included the purchase and laying-out of the North Cliff at a cost of over £60,000. The land will now be bought by a local syndicate.

Intercommunication.

QUESTIONS.

[11266.]—**Acoustics.**—I am designing a hall for general purposes—public meetings, concerts, theatrical entertainments. It is 110ft. by 65ft., and has a gallery at one end and a stage at the other. The section is as follows:—



There is a wood lattice principal at every 10ft. The side walls have a window in each bay, and these walls are flat, with the exception of a pilaster 2ft. wide projecting a few inches at each principal. I believe these wood principals will break up any reverberations of sound which may be likely to occur, and that the hall will be a good one for acoustics. Will any of your readers tell me if I am correct, and that the above hall will be a good one in which to speak and sing?—Acoustics.

[11267.]—**Masonry.**—Will some reader kindly give the name of the author for a good book on masonry, giving particulars of setting out, measurements of stonework, and labours upon same?—G. T. S.

REPLIES.

[11258.]—**Wall Sinking.**—The building, which is not erected yet, will be 18ft. by 52ft.; it is to be a provision store, with a cellar of 26ft. long, two floors, and roof above; 16ft. of front (shop windows) will rest on girders (iron). Can you advise me further if it is necessary?—F. M. Pentecost.

[11263.]—**Sewer.**—By Section 4 Public Health Act, 1875, this surface-drain is a "sewer," by taking the sewage of more than one house. By Sections 15 and 19, the local authority are to keep in repair all sewers belonging to them, and to cause such sewers to be kept so as not to be a nuisance or injurious to health. By Section 13 all "sewers" vest in the local authority.—J. Ainsworth Settle, Bolton.

[11263.]—**Sewer.**—The drain referred to is clearly a sewer under the Public Health Act.—H. L.

[11264.]—**Golf.**—Linseed-oil well rubbed in several times recommended.—J. A. Settle, Bolton.

[11264.]—**Golf.**—In all my experience I have used vaseline for the heads of brasseys and drivers. Oil should not be used for shafts, but try White's best furniture polish. American bungwee is very good also.—P. W. G.

[11265.]—**Society of Antiquaries.**—To become a member of this society a form of nomination must be obtained through a member, as no forms are issued to the public, nor are lists of members given away. Having obtained this form the candidate must get the signatures of several Fellows, and if elected will have to pay £8 as an entrance fee and three guineas per annum. I may add that architects are not looked upon with favour by the society.—H. L.

CHIPS.

The work by David, known as "Portraits des Dames Bataillard," painted in Brussels between 1815 and 1820, has been acquired for the Louvre.

The parish church of St. Donats, Bridgend, has just been reopened for divine worship, after having undergone careful reparation. Mr. Halliday, of Cardiff, was the architect.

At a meeting of the Property Holders' Union of Great Britain held at Gateshead, on Friday, Mr. Matthew Storey, of Jarrow-on-Tyne, was appointed secretary, in succession to the late Mr. Rotherford. The annual conference will be held at Bradford next spring.

Col. Hasted, inspector to the Local Government Board, held an inquiry at the town hall, Eccles, on Friday, into the application of the town council to borrow the sum of £3,329 for works of private street improvement in various parts of the borough.

The death is announced of Mr. Henry Thring Shayer, of Shirley, Hants, the landscape painter, at the age of 70 years. His father, the still-more widely-known artist, died at Shirley 15 years since, at the ripe old age of 92.

Judgment was given on Friday, in the Court of Appeal, by the Master of the Rolls and Lords Justices Lopes and Rigby, on the application of the Rector of Marylebone, to compel the Vestry to make a rate for the repair of the parish church and the St. John's Wood Chapel. Justices Mathew and Day had refused to make such an order, but they directed the Vestry to hand over the fees received by the Burial Board for the repair of the buildings. That judgment was affirmed, and no order was made as to costs.

Legal.

NUISANCE BY WATER.

In the crowded life of cities and towns, buildings are so closely pressed together that it is often very difficult to provide for the rights of adjoining owners and occupiers in the way of drainage and overflow of water. There have been numerous cases arising out of these conflicting rights, and in the recent action of "Gill and others v. Edouin" (*Times*, Dec. 5), some useful principles were laid down by Mr. Justice Wright. It was a claim by the lessee of a house in the Strand against the lessee of the Strand Theatre for damages for injury done by the overflow of water upon their premises. The facts showed that upon a part of the defendant's place there was a flat roof over an area, upon which the four surrounding houses discharged rain-water by the usual pipes, and from which the water escaped by means of an ordinary gully through another pipe into the drain. This gully somehow or other got stopped up, and in consequence, water flowed through a window into the plaintiff's premises. It was argued that as the roof was upon the defendant's premises, it was his duty to look after it, and to keep the gully clear. In other words, it was contended that the defendant was bound to receive and pass on the water from the adjoining houses, and he came within the principle that anyone who by artificial means has collected water upon his premises, which he allows to flow over on to the land of an adjoining owner, is liable in trespass for the damage done.

Mr. Justice Wright admitted that *primâ facie* an owner of land had a proprietary right not to have his premises invaded by injurious matter coming from his neighbour's land otherwise than in course of nature. But this general principle was liable to several exceptions, as when the owner used his land in the ordinary manner, and damage happened to his neighbour without his negligence, or where the plaintiff consented to the defendant's collecting water on his land, and there was no proof of actual negligence. The judge held that in this case the defendant only used this roof and its gully in the ordinary way, and, more than that, the whole thing was equally for the benefit of the plaintiff, who drained his roofs through the same pipe. So the defendant would not be liable except upon plain proof of his negligence causing the damage, of which the judge thought there was not sufficient evidence. In fact, the plaintiff failed to to prove that it was the duty of the defendant to keep this gully clear for the benefit of his neighbours, and that he had failed to do so.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

E. A. B.—Highway.—Footpath.—Paving.—The footpath should be properly made and laid by the urban highway authority. But it need not be paved with stone flags necessarily. If the path is grossly neglected after notice, it would become a public nuisance, for which there would be a remedy by indictment.

Cistern.—By-laws.—Old Buildings.—I do not consider that these regulations can be applied to old houses, under the circumstances stated by the sanitary inspector. But the water company may be able to make the same requirements.

Long Subscriber.—Rates.—Assessment.—I really cannot answer these six complicated questions in this column, but must refer you to a local solicitor used to such matters, or to one of the textbooks on the law of rating.

Querist.—Waggons.—Contract.—I think the clause would apply to both parties. But even without it, your then position could not be prejudiced by their giving notice, which could not be allowed to have a retrospective effect.

P. B.—Valuer.—Architect.—License.—I consider that, as has been already stated, no such license is required.

C. W.—Party-Wall.—Difference.—Award.—This appears to me to be valid, as far as I can judge from what is here stated. It is, of course, subject to the appeal provided by the statute.

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The Chorlton board of guardians have under consideration a proposal by a committee that plans for cottage homes, including workshops, schools, an administration block, and a swimming-bath be invited by public competition, and that a first prize of £75 be offered for the best design, £50 for the second best, and £30 for the third. The plans to be the property of the guardians.

LEGAL INTELLIGENCE.

Contracts with "Clubs."—Gould and Brand v. Piccadilly Club and Others.—The Lord Chief Justice, with whom was a special jury, tried on Friday this action brought by Messrs. Gould and Brand, a firm of builders, against the Piccadilly Club, W. J. Bonham, the secretary of the club; J. R. Douglas, and Messrs. Gillow and Co., to recover the sum of £2,425 17s. 8s. for work and labour done and materials provided by them at the defendants' request at 128 and 129, Piccadilly, in accordance with the drawings, specifications, general conditions of contract, and bill of quantities duly certified by Messrs. Boehmer and Gibbs, the architects. The defence was that credit was given to the "club," who did not appear ("Piccadilly-chambers, Limited," having entered an appearance to the action on behalf of the club). The case arose out of the alterations made at 128 and 129, Piccadilly, in order to prepare the premises for the Piccadilly Club. Messrs. Gillow had leased the property from the "Sutton" estate, and in March, 1892, they sold the houses in question to Mr. Douglas, who had been connected with the New Travellers' Club, the price being £41,000. Messrs. Gillow afterwards made advances to Mr. Douglas, but the plaintiffs' contract was with Mr. Bonham "for the Piccadilly Club." It was, however, alleged on the plaintiffs' behalf that the sale to Mr. Douglas was a mere form, and that Messrs. Gillow were always principals in the matter, financing him when necessary. Mr. Brand, one of the plaintiffs, was called and examined at great length, and, in cross-examination, he said that when he signed the contract he took no trouble to inquire particularly as to whom his contract was with. He had, however, heard previously that Messrs. Gillow and Mr. Douglas were really the "club." At the suggestion of his Lordship, counsel consulted together with a view to a settlement, and eventually Mr. McCall, Q.C., said that Messrs. Gillow, while denying that there was any ground for suggesting that they were ever "principals" in the matter, thought that a letter written in November, 1892, might make them morally liable, although not legally so, and they therefore consented to pay the plaintiffs £1,500 in full discharge of the debt and costs. The record would be withdrawn, and the names of Mr. Douglas and the Piccadilly-chambers (Limited) should be struck off. There would be judgment for Mr. Bonham, and the plaintiffs were to pay him 50 guineas for costs. The Lord Chief Justice remarked that the case had already been tried before Mr. Baron Pollock in April last, and went to the Court of Appeal in June. It was more than probable that, had the case been fought out now, it would have again gone to the Court of Appeal. Most of the trouble had arisen through the plaintiffs signing a contract without inquiry, and without ascertaining clearly in black and white with whom they were contracting.

Re Wm. Stubbs.—This first meeting of creditors was held in this case on Friday, the debtor trading as a contractor at Phœnix Wharf, Commercial-road, Lambeth. The accounts showed unsecured liabilities £5,206, and debts fully secured £104,243, the assets being returned at £23,107, including an estimated surplus of £20,966 from the securities held by creditors. The debtor made no proposal, and it was stated that his affairs would be wound up in bankruptcy. An accountant was appointed trustee of the estate, together with a Committee of Inspection.

Re John Knight.—The bankrupt, a builder at Marsham-street, Westminster, applied, on the 13th inst., for his order of discharge. He attributed his failure to want of capital, loss on a contract entered into with the London County Council, to heavy interest on money which he was compelled to borrow in consequence of alleged delay in obtaining payment from the Council, and other causes. Proofs amounting to £1,884 had been made, and the total unsecured indebtedness amounted to £2,270, or thereabouts. The trustee reported that a dividend of about 3s. in the pound was likely to be paid to the unsecured creditors. There was no opposition on the part of creditors, and the discharge was granted subject to a minimum statutory suspension of two years.

Tenants' Liabilities.—In the City of London Court, on Friday, before Mr. Commissioner Kerr, an action was brought by Mr. Albert Saunders, Great St. Helen's, E.C., against Mr. Charles Ruffell, Denmark-road, Camberwell, to recover the sum of £28 for work done to his house under the requirements of the Public Health Act. The defendant was the plaintiff's tenant of a house in Denmark-road, Camberwell, and while the defendant was in occupation the plaintiff was served with a notice by the sanitary authorities to do certain repairs. Those had been done, and the defendant refused to pay the bill, although he was responsible. The defendant's case was that the repairs constituted structural improvements, and, therefore, the defendant was not liable. Furthermore, the plaintiff, by letter, agreed to do any repairs to the drains that were found to be necessary. That letter was written by the plaintiff before the defendant signed the lease of the premises. The defendant had now been called upon by the plaintiff to pay for doing drain work, including alterations to a water-closet. Mr. Commissioner Kerr said it seemed monstrous that tenants should pay for putting landlords' property in sanitary repairs. After further evidence, the learned Judge said it was evident that the plaintiff could not make the defendant pay for repairs to the drains, as the plaintiff had undertaken to do that in his letter. But he could not say that repairs to a water-closet could be included in repairs to a drain. The defendant would, therefore, have to pay for the cost of putting the water-closet in order, and the amount would be fixed by a surveyor to whom he would refer the matter.

Damages against a Vestry.—Beall and Buss v. Shoreditch Vestry.—In an action heard by the Lord Chief Justice, on Saturday, the plaintiffs sued the Vestry of St. Leonard, Shoreditch, to recover damages for injury to five houses in Tuileries-street, Shoreditch, of which they were tenants in common. The plaintiffs' case was that the defendants, in the course of altering and enlarging a sewer, did not take reasonable care to prevent any damage to the property in the neighbourhood, with the result that there was a subsidence, to the great detriment of the plaintiffs' houses. The plaintiffs alleged that the sewer was constructed in too long sections; that sand and gravel were excavated and carted away instead of being used to fill up the sewer trench; that the trench was not properly filled up; delay in the construction of the works; that the trench was not properly timbered; and that the houses were not properly shored up. The defence was that the works were carried out under the defendants' statutory powers, with all reasonable care, and that, therefore, they were not liable. The damage, it appeared, was caused by water percolating through the soil, which, it was said, could not be prevented.—The jury returned a verdict for the plaintiffs for £198 6s. Judgment accordingly.

An Architect and his Fees.—Lee v. Thunder.—This case came before Mr. Justice Wills, sitting without a jury in the Queen's Bench Division on the 13th inst., it being brought by Mr. F. Lovell Lee, architect and surveyor, to recover 2½ per cent. commission on the proposed cost of a building, of which he prepared the plans and specifications, and also to recover £74 which he had paid to Mr. Verity, quantity surveyor, for work done at defendant's request. The defence was a denial of the retainer, and there was a counterclaim in which it was alleged that the plaintiff failed to deliver the plans within a reasonable time. Also that the plaintiff had represented that the cost of the building would not exceed £3,500, whereas it was afterwards shown that it would exceed that sum, and therefore that the plans were useless. The plaintiff suggested to defendant that certain land in the Fulham-road could be utilised for middle-class flats. Defendant requested the plaintiff to get out a rough tracing of the proposed building. A month later, in February 1893, plaintiff arranged with Mr. Verity to make out a rough estimate of the quantities on the terms that if the matter fell through nothing was to be paid. Mr. Lee, having obtained from Mr. Verity an approximate estimate as to the quantities, at £3,700, gave it to defendant, who expressed himself satisfied with it, and then intimated that if his client would agree to it, he would, and that Mr. Lee was to go on preparing the plans. Instructions were given about the time for the contract of sale to be drawn up and executed, and such contract was drawn up and executed some time in March. By June Mr. Verity had completed his quantities. Plaintiff said that he did not consider himself employed up to the time the contract for sale was prepared. On several occasions he told defendant that he could not prepare the working drawings, specifications, and quantities on mere speculation, but that he should require payment on the usual terms. Defendant replied that if the scheme went on he should be engaged as the architect. On February 23rd defendant told him he intended to purchase himself. He then prepared the party-wall notices, and defendant signed one and gave it to him (witness) to serve. In April or May he was laid up for some little time, and could not proceed with the plans. On June 27th the defendant requested him to try and sell the property for him for £1,000, as he did not propose to build himself. He tried to sell the property, but did not succeed. He had employed Mr. Verity, and paid him £74. Cross-examined: He did not do a considerable amount of work on speculation. The plan was slightly altered, as the rough sketch contravened the Building Acts. Plaintiff did not take out the quantities as he was not a quantity surveyor, and could not do it. Giving a preliminary estimate and taking out quantities were very different things. Mr. Ernest George Verity, quantity surveyor, said that the proposed building could have been erected for £3,700. Cross-examined: He looked to Mr. Lee as the person to pay his account, because Mr. Thunder had authorised him to get the whole thing done.

He never applied to Mr. Thunder for payment. He did not make his original estimate by the cube, but by measurement. Mr. Robert Griggs, an architect and surveyor, said he had examined plaintiff's drawings and Verity's estimate, and considered it a *bonâ fide* estimate at which the work might reasonably be expected to be carried out. The plans showed that the flats were for middle-class people. Sixpence per cubic foot was a reasonable price for such a building. For defendant, Mr. Charles King, builder, Blackfriars-road, deposed that he had examined the plans some months ago. He had priced up the quantities in accordance with the plans, and his figure was £4,548 17s. 10d. Sevenpence-halfpenny per cubic foot was the ordinary price for buildings of the class. Mr. J. A. Osborne, M.S.A., manager to Messrs. Stocker, architects, 99, Cheapside, considered 8d. per cubic foot as the proper price to take on such a building as the proposed. Mr. Stubbs, an architect carrying on business in Regent-street, said that he had had a large experience in the erection of flats. The plaintiff's final plan did not comply with the requirements of the Metroplitan Buildings Act. The flats could have been built at 7d. per cubic foot, but not for less. He should have estimated the cost at 8d. per cubic foot. Mr. Isaac Mason, architect and surveyor, thought that 7d. per cubic foot would be a fair price to estimate the cost of the flats. Mr. Arthur Tattersall, auctioneer and house agent, Hammersmith-road, and the defendant, having given evidence, his Lordship, in giving judgment, said that some of the evidence called for the defendant was not reliable. Mr. King's evidence, to his mind, was totally unreliable. No evidence had been called by the defendant to satisfy him that the plaintiff's estimate was not a fair and reasonable one. Everyone knew perfectly well that when once litigation was embarked in, any quantity of that kind of evidence could be obtained. Witnesses could be procured without any difficulty to differ not only to the extent of 20 or 25 per cent., from the witnesses of the opposite party, but, if necessary, by 75 or 200 per cent. He thought the plaintiff had made out his case, and, therefore, gave judgment for him for £166 10s., with costs.

Roadway Apportionments. — The Clacton Local Board v. Young and Sons.—This appeal, heard on Friday by Mr. Baron Pollock and Mr. Justice Grantham, dealt with a question which has arisen between the local board of Clacton-on-Sea and the owners of land on the shore, who are building houses there fronting the sea, as to the apportionment of expenses incurred in laying out the new property. Messrs. Young are owners of a row of houses lately erected, fronting the sea, with a broad footway before the houses and between the houses, and a roadway 36ft. wide to be laid out between the path and a green sward or lawn between the roadway and the sea, of which sward the board are owners. The question had arisen as to the apportionment of the expense. As to the expense of the broad footway between the houses and the road, the local board sought to throw the expense on the owners of the houses. This the owners resisted, claiming that the expense should be divided, and the magistrates so held, but stated a case to raise the question. Mr. Baron Pollock, in giving judgment, said Clacton was a new watering-place, and the question had arisen as to the apportionment of the expenses. The board desired to throw the expense of the footway on the owners, but the magistrates thought that it ought to be apportioned between the owners and the board. In his judgment that decision was correct. It depended on section 10 of the Private Street Works Act of 1892. It was a new street, and it was proper that the expense should be apportioned among all the owners of property abutting "upon the street." The appeal, therefore, must be dismissed. Mr. Justice Grantham agreed. Appeal accordingly dismissed, and decision of magistrates affirmed. Leave to appeal refused.

Lodging Money.—At Lincoln County Court on the 17th inst., Chas. Draper, Carholme-road, Lincoln, sued H. and W. Close, contractors, Lincoln, for 10s., five weeks' lodging money. In September the plaintiff was engaged by the defendants at Heighington, and sent in a claim for 2s. lodging money at the end of the first week. The foreman refused to pay it, but on plaintiff refusing to continue on the job, told him to return and it would be all right. On finishing the job, he again applied for lodging money, and was discharged. Three members of the local branch of the Society of Joiners, named Holmes, Bellamy, and Willows, gave evidence in support of Draper's claim. He was taking less than the society's rate for an average workman. George Smith, foreman to Messrs. Close, said he engaged the plaintiff for the Heighington work, and told him that he would have to live there, but no lodging money would be allowed. He was put on to work for eleven weeks as a favour. Mr. Wm. Henry Close, the managing partner of the defendant firm, said he was president of the Lincoln Master Builders' Association. The dispute as to lodgings had nothing to do with Draper's dismissal, which took place because he was considered incompetent. His Honour, Sir Sherston Baker, in giving judgment, said this was a special contract; that the plaintiff was warned that he would not have any lodging money, but if there had been no special contract the rules applied only to average workmen, and he was by no means certain that the plaintiff came under that head. He found no fault with plaintiff for bringing the action, which was largely due to the obscurity of the rules. Judgment for defendants, with costs.

Making-up New Roads. — Bromley Local Board v. Lansbury.—In the Queen's Bench Division, last week, Mr. Justice Grantham and Mr. Justice Lawrence gave judgment in this case, an appeal by the Bromley Local Board in an action tried at the Bromley County court. The local board sought to enforce a charge under the Public Health Act, 1875, of £42 10s. 5d. in respect to Nos. 28 to 30, New Homesdale-road, Bromley, upon the estate of the late Thomas Lansbury, the amount being an apportionment of the cost of making up the road, which was laid out in 1878. In 1884 an arrangement was come to between Lansbury, a frontager, and the local board that the new road should be made up to the satisfaction of the surveyor of the board, and should be kept in repair by the frontagers for six months, and that the board should then adopt the road. This arrangement was carried out, but the board did not, after the expiration of the six months, give the usual notice of adoption under section 152 of the Public Health Act, 1875. Subsequently, the road fell into disrepair. In 1888 the board served Lansbury and the other frontagers with a notice, under section 150 of the Act, requiring them to make up the road. This notice was not complied with, and accordingly the board executed the necessary works, afterwards serving the frontagers with notices of apportionment of expenses, and ultimately commenced this action. On behalf of the board it was contended that the case came within section 152 of the Public Health Act, 1875, and that, therefore, the board had no power in 1884 to take over the road, because all the requirements of section 150 had not been complied with. On the other hand, it was argued for the defendant and held by the County-court judge that the case came within section 146 of the Act, which section gives the local authority power to agree to the making of a new road without requiring any of the particular things specified in section 150 to be done. The County-court judge therefore held that the board was bound by the arrangement come to in 1884, and could not now throw the cost of further repairing the road upon the frontagers. Judgment was accordingly given for the defendant. The local board appealed. Mr. Justice Grantham said that it was impossible to doubt that the local board had treated the road as a new road under section 146, and that it was to their interest to so treat it. Lansbury acted on this decision. It had been said that the agreement with the board was not under seal, and therefore not binding; but that really was immaterial, for the question was whether the work done by Lansbury under the agreement had been accepted by the board, and the County-court judge had found as a fact that that was so. They could not interfere with that finding, and the appeal would, therefore, be dismissed. Mr. Justice Lawrance concurred.

A Glasgow Railway Arbitration Case.—Decision was given recently in an arbitration case in which the trustees of the New City-road Congregational Church claimed £3,150 from the Glasgow District Subway Company for alleged damage to their property in connection with the construction of the subway. The members of the Arbitration Court were Sheriff Lees, oversman; Mr. Barr, C.E., and Mr. Mayberry, arbiters. The arbiters having met, and being unable to agree on the sum that should be awarded, the case devolved on the oversman, who has found the claimants entitled to a sum of £1,057 2s. Mr. W. R. Copland, C.E.; Messrs. Robert Murdoch and Muir, builders, and others gave evidence in support of the claim; and Messrs. David Guthrie and Barlas, builders, and Mr. Turnbull, C.E., along with others, gave evidence for the Subway Company.

Re E. A. Cracknell.—The bankrupt, an estate agent and surveyor, carrying on business in Marylebone, has applied for his order of discharge. The receiving order was made in June last, the liabilities being returned at £8,857, and assets nil. The Official Receiver reported that the bulk of the liabilities were contracted in connection with speculative building and financing operations, which the bankrupt entered into without sufficient capital. Mr. Registrar Giffard said the bankrupt had not taken warning from a previous failure in 1882, but had continued his speculative career, having no regard for his creditors, but hoping only to make a fortune by rash and hazardous ventures. The discharge would be suspended for five years.

Sky Signs Defined.—Messrs. Gooch, of Brompton-road, were summoned by the London County Council to Westminster Police-court, recently, day, for retaining sky signs without a licence. Mr. Townsend, surveyor in the office of the superintending architect of the Council, said that what was complained of was a framed name board resting on the parapet wall, and supported by iron stays to the roof. Witness also treated as sky signs a number of raised wooden letters, which were 2ft. 6in. above the ordinary line. All the projections were visible against the sky. Mr. Cluer, for the defence, contended that there was a sloping roof behind, and that the name board and numbers went no higher than the roof at its highest part. Mr. De Rutzen said he had adjourned these summonses in order to see whether the defendants would make any application for a license, as he thought it essentially a case for a compromise of some sort. He thought, also, that the board and figures were a sky sign within the meaning of the Act. Mr. Cluer: I ask for a nominal penalty in each of the six summonses. Mr. De Rutzen: Very well, I will make it a fine of 1s. and 15s. costs in each.

CHIPS.

Among the candidates for the urban district council for Grays, Essex, is Mr. Charles Cobham, F.S.I., until recently the surveyor to that authority.

The Hall of Modern Sculptures at the Luxembourg is about to be increased in length. The adjoining picture-galleries, which are already crowded to excess, will also, it is said, be considerably enlarged.

The widow of the late Mr. John Gregory Crace, the well-known decorative artist, died on Friday, after a short illness, at Palace-court Mansions, Bayswater. Mrs. Crace was in her 80th year.

At the last meeting of the Common Council for the City, the Bridge House Estates Committee recommended the payment to Mr. John Wolfe Barry of the sum of £12,000, as an additional remuneration as engineer of the Tower Bridge. The consideration of the report was adjourned.

The new science and art schools adjoining the Guildhall at Wrexham were opened on Friday.

The monthly report of the Labour Department states that, owing to seasonal causes, some falling off in employment in the various branches of the building trades is reported, particularly among the painters. The percentage of unemployed was 4·2 in November, which compares with 3·7 in November, 1893. Little change has taken place in the condition of the furnishing and woodworking trades. The proportion of unemployed has fallen from 4·6 per cent. in October to 4·5 per cent. in November. Nine new disputes arose in the building trades, none being of any magnitude or importance.

The Institution of Electrical Engineers held their annual meeting on Friday night in the hall of the Institute of Civil Engineers, Mr. Alexander Siemens in the chair, when Mr. R. E. Crompton was elected president. The report gave a good account of progress in finances, and the number of members is over 2,300.

A brass has just been placed in the crypt of St. Paul's Cathedral to the memory of the late Colonel James Augustus Grant, C.B., C.S.I. The tablet contains a portrait medallion in alto-rilievo, surrounded by Scotch fir-tops, the badge of the Grants, while on the lower portion there is a perspective view of the Victoria Nyanza, commemorative of the discovery of the source of the Nile. Messrs. Barkentin and Kraal carried out the work.

Judge Gwilym Williams has offered a prize of £10 for the best plan of a chapel at the Llanelly National Eisteddfod.

The foundation-stone of a new mission-room in connection with St. Silas's Church, Lozells, Birmingham, was laid on Friday. Until recently an iron structure on a site at the corner of Nursery-road and Wellesley-street has been used as a mission-room, and it is now proposed to erect a building to the designs of Mr. J. P. Osborn, of Birmingham, architect, to accommodate 350 persons, at an estimated cost of £1,000.

The new dental hospital and school in Chambers-street, Edinburgh, were inaugurated on Thursday, the 13th inst. The property was acquired for £4,000, and has been remodelled, at a further cost of £2,000, from plans by Messrs. Simon and Tweedie, of Hanover-street, Edinburgh.

The local board of Milnrow, near Rochdale, have adopted a scheme for completing the sewerage of the district prepared by their surveyor, Mr. Charles Rothwell. The estimated cost is £8,400, exclusive of £486 for way-leave, and the length of new sewers will be nearly six miles.

One of the loftiest chimneys in New York State is that erected at the Eastern Power station of the City Railroad Co., situated on the banks of the East River at Brooklyn. It is circular on plan, built of brick, and rises to a height of 296ft., and contains a circular shaft 17ft. in diameter.

WATER SUPPLY AND SANITARY MATTERS.

Chester.—Mr. Clerke, M.Inst.C.E., on behalf of the Local Government Board, held an inquiry at Chester on the 6th inst. as to an application of the corporation for sanction to borrow £25,000 for the installation of the electric light in the city. It is proposed to erect the generating station on Tower Field Gardens, on the west of the Chester and Holyhead Railway embankment, near the Water Tower; and the site chosen for a distributing station is situate at the back of Hamilton-place. Without provision for street lighting the estimated cost of the scheme, which has been formulated by Dr. John Hopkinson, is just under £20,000; with it the estimate will be just over £25,000. The area of supply is the whole of the city of Chester. There was no real opposition.—Mr. Clerke also inquired into the application of the Cheshire county council for sanction to borrow £11,000 for the purpose of acquiring the military portion of Chester Castle, and carrying out certain much-needed improvements in the assize courts; £4,734 is to be paid for the prison, £4,900 for improving the Crown Court, and £1,430 for providing surveyors' and accountants' offices. To this proposal, again, there was no opposition.

Portishead Local Board.—At a special and final sitting of the Portishead Local Board, held on the 11th Dec., the clerk intimated that the formal sanction of the Board of Trade to the construction of the outfall of the proposed sewer on the Crown foreshore lands had been received. The surveyor was instructed to complete the contract drawings, specifications, &c., and advertise for tenders for carrying out the proposed sewerage works. The chairman and members of the board approved a testimonial acknowledging "The thorough and efficient services of the surveyor, Mr. T. J. Moss Flower, since his appointment to the office of surveyor and inspector on the formation of the board"; and bearing testimony "To the ability which Mr. Moss Flower has shown in framing and promoting the sewerage scheme for the urban district of Portishead, which has been approved by the Local Government Board, as well as to the skill and judgment shown by him in the general conduct of his duties." The testimonial was sealed, and signed by all the members present.

Rhyl.—The memorial stones of the sewerage works and marine lake, now being constructed at Rhyl, at a total cost of £250,000, were laid on Friday. The new system of sewerage replaces one reconstructed fifteen years since, at a cost of £14,000; this work, which will cost between £30,000 and £40,000, is now being carried out from designs, and under the superintendence of, Mr. Baldwin Latham. The pumping system has been adopted, providing for a continuous flow of the sewage, and doing away with the difficulties attending the tide-locked system. The sewage of Rhyl will be conveyed by gravitation to a reservoir measuring about 30 yards square, constructed of concrete. Here machinery is provided to raise the normal flow of sewage and storm-water to a high-level reservoir, and the contents will eventually be discharged at a long distance from the shore, and upon the first hour of the receding tide. All the sewer-pipes have been water-tested, so as to guard against contamination of the subsoil. The pumping will be carried on by six gas-engines in duplicate. The contractor is Mr. Jacob Biggs, of Birmingham. The new lake works, of which Mr. Baldwin Latham is also the engineer, consist in the conversion of what was previously known as the Mudland into a marine pleasure lake. The site of this lies between Wellington-road and the Chester and Holyhead Railway. Parallel with the river Clwyd a bank has been formed between the railway viaduct and the Foryd foot-bridge. This embankment is protected from the sea by a stone pitching. The water will be let in at a point near the viaduct, and will be changed at frequent intervals by means of a double outlet culvert which runs through Foryd Bridge embankment. The depth of the water in the lake will only be 4ft., with a depth along the margin of 2ft. In the centre will be an ornamental island of two acres in extent, on which it is proposed to erect refreshment rooms; the island will be laid out with shrubs, trees, and flowers. The lake will have a water surface of about 40 acres. The work will cost about £8,000. The embankment has already been constructed by the contractor, Mr. George Law, and the whole work will be ready for next season.

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A mechanics' institute at New Hartley was opened on Saturday. It adjoins the colliery entrance, and consists of a reading-room 27ft. 6in. by 21ft. 6in., a billiard-room of like dimensions, and library 11ft. square. Mr. Ornsby, C.C., was the architect.

The Government have made a grant of £10,000 towards the architectural completion of the University College of Wales, Aberystwith, conditionally upon £5,000 being raised by friends of the institution. The latter sum has been subscribed to within £800.

Our Office Table.

The Home Secretary has appointed Mr. D. Cubitt Nichols, M.S.A., one of the three members of the Tribunal of Appeal constituted under Section 175 of the London Building Act, which comes into force on the 1st prox. The council of the Royal Institute of British Architects have appointed Mr. Arthur Cates, and the council of the Surveyors' Institution their president Mr. T. Chatfeild Clarke. The Home Secretary, pursuant to the provisions of section 179, has fixed the remuneration of each member by way of fees, and according to a scale to be in force for one year only.

The exploration of the site of the recently-discovered Roman villa at Darenth, Kent, referred to in our issue of the 7th inst., p. 808, is still being carried on. The buildings extend far beyond the apparent limits shown by the first diggings. The arrangement of flues remains in many cases in a perfect condition. On the east side is a small room about 12ft. by 7ft., in which the rows of piles, each formed of tiles laid one upon another, are clearly defined. Upon these piles the floor of the room rested. Like many other Roman villas in Britain, this one was provided with glazed windows, and one large pane has been found in addition to many fragments. The large bath, on the west side of the house, is some 3ft. below the general level of the other rooms, and measured originally about 50ft. by 20ft., with a descent of cemented steps at one end. No pavements of ornamental design have yet been found, and only one small bronze plate filled in with coloured enamel, but there are a number of worked objects of deer horn.

The United States Minister in Constantinople, reporting on the exploration of the ruins of Niffer, near ancient Babylon, mentions that the work is undertaken at the cost of the Babylonian Exploration Fund, founded at Philadelphia in 1888. Some 200 Arabs are employed under the direction of Dr. Peters, of the University of Philadelphia, and "in the number of tablets, brick, inscribed vases, and in the value of cuneiform tents found, this American enterprise rivals, if it does not excel, the explorations of Layard at Nineveh and Rassam's excavations at Abu Habba." Dr. Hilpricht, also of the University of Pennsylvania, who was originally connected with the exploration, remains in Constantinople at the request of the Turkish Government, to translate the inscriptions and arrange the tablets and other objects excavated. Many tons of these, including tablets, vases, inscribed brick and sarcophagi, have arrived at the Constantinople Museum, and the Sultan has promised that Pennsylvania shall receive one of all duplicate antiques. So far, 20,000 tablets of clay and stone have been discovered, on which are inscribed promises to pay, deeds, contracts, and records. "About 150 Hebrew, Mandic, Arabic, and Syrian inscribed bowls have been dug up. These are more than all the museums in the world possessed before. They have also found hundreds of Babylonian seal cylinders, and about 1,000 vases of alabaster, marble, and other stone, with votive offerings of lapis lazuli, magnesite, and agate. Many hundred vases, toys, weapons, instruments, and household objects in iron, bronze, and clay were discovered."

The annual examination in sanitation, held under the auspices of the Worshipful Company of Carpenters, took place at Carpenters' Hall on Friday and Saturday last. The number of candidates presenting themselves exceeded that of all previous years, being upwards of 40. This in itself is evidence that the value attaching to the Carpenters' Company's certificates is increasing year by year as the high standard required by the examiners becomes more widely known. That the candidates are not drawn only from London and the home counties is proved by men coming from Staffordshire, the South Coast, and even Scotland to obtain this certificate. The Company have again been fortunate in securing the services of Professors Banister Fletcher, Henry Robinson, T. Roger Smith, Mr. F. C. Penrose, F.R.S., P.R.I.B.A., Dr. Wynter Blyth, and Mr. Ernest Turner to act as examiners. A list of the successful candidates, with the questions set at the examination, will be found in our advertisement columns.

The whole question of how best to protect iron and steel from corrosion in roofs, bridges, pipes, and other constructional work resolves itself, according to the reader of a paper before the American Society of Mechanical Engineers at their Montreal conversazione a fortnight ago, into several "Dont's"—*i.e.*, Don't have any scale on the metal. Don't paint it with anything but pure linseed oil and oxide of lead or graphite paints. Don't forget that frequent inspection and care are very necessary. Don't let the cost and interest accounts be the governing factors in the case of protecting any metal structure on whose continuity and strength human life and safety depend. In comparing the two paints recommended, it was claimed that a properly-made graphite paint should prove more durable and a better protector than oxide of lead. Graphite has a strong affinity for metal surfaces, and even where light colours are desirable, graphite paint should be used as a priming coat. Again, graphite is impervious to the action of heat, cold, sea air, acid or alkali fumes, which are more or less destructive agents to lead paints.

A solution of 50 parts of commercial alizarin in 1,000 parts of water, to which a solution of ammonia has been added, drop by drop, until a perceptible ammonia odour is developed, will give to fir and oak a yellow-brown colour, and to maple a red-brown. If the wood is then treated with a 1 per cent. aqueous barium chloride solution, the first named become brown, and the latter a dark brown. If calcium chloride be used instead of barium chloride, the fir becomes brown, the oak red-brown, and the maple a dark brown. If a 2 per cent. aqueous solution of magnesium sulphate be used, the fir and oak become dark brown, and the maple a dark violet-brown. Alum and aluminum sulphate produce on fir a high red, and on oak and maple a blood-red. Chrome alum colours maple and fir reddish-brown, and oak Havana brown. Manganese sulphate renders fir and maple a dark violet-brown, and oak a dark walnut brown.

CHIPS.

A marble bust of the late Duke Ernest of Saxe-Coburg and Gotha has just been placed in the corridor at Windsor Castle. It has been executed for the Queen by Mr. Glassby.

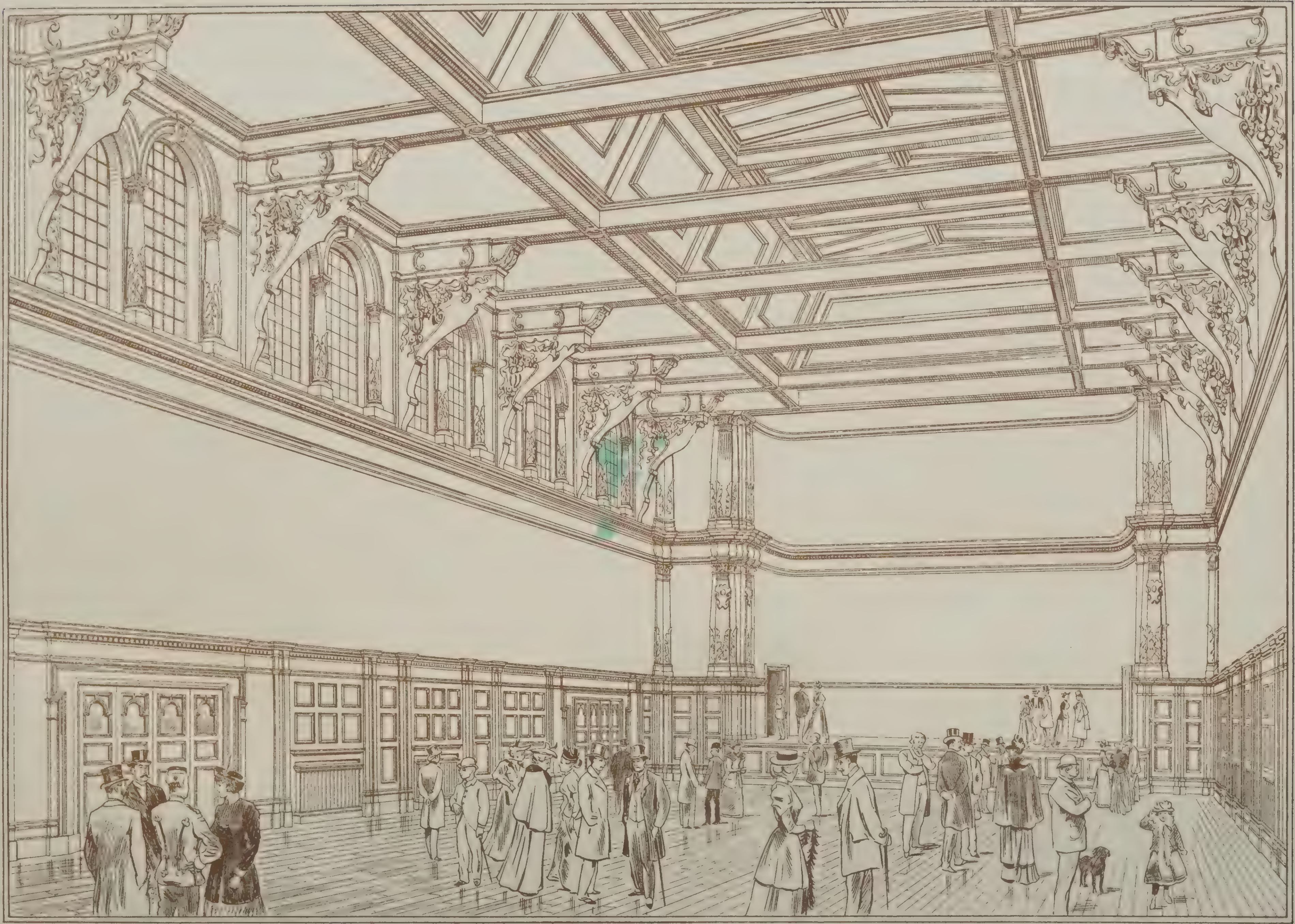
Memorial tablets have just been erected to Lord Chancellor Campbell and his wife, Baroness Stratheden, in the south aisle of Jedburgh Abbey, near to the vault in which they are interred. Near the top of the tablets are the arms of the two families, and underneath an inscription. The tablets are of a slate-coloured marble, and are the workmanship of Mr. Rhind, sculptor, Edinburgh.

The foundation-stone of a new church at Pontygwaith was laid on the 11th inst. This church is being built at the entire cost of Mrs. Llewellyn, of Baglan, and will seat over 300 persons. Mr. Halliday, of Cardiff, is the architect. Mr. Haines, of the same town, is the contractor.

At the forthcoming great Liberal demonstration at Cardiff, when the Earl of Rosebery will be the chief speaker, a huge temporary building is to be erected in the Cattle Market to hold 10,000 people. The plans have been prepared by Messrs. J. P. Jones, Richards, and Budgen, Cardiff, in consultation with the architects to the National Liberal Federation, Messrs. Harris and Harris, of Birmingham and London.

At the offices of the local board, Moss-lane East, Manchester, on the 13th inst., Colonel J. O. Hasted, R.E., an inspector under the Local Government Board, held an inquiry into the application of the Moss Side Local Board to borrow a sum of £9,140 for works of sewerage and street improvement, the laying-out of a playground, the erection of a destructor, and other purposes. Mr. W. R. Acton, surveyor to the local board, explained the plans for the destructor, which is estimated to cost £4,040. This portion of the scheme was strongly opposed.

The first sod of the new Snowdon Railway was cut on Saturday. This new mountain line starts from Llanberis Station, and is on the London and North-Western Railway system. The line will be five miles in length, and is to be completed in July next. The gauge will be 2ft. 7½in., the curves never being sharper than four chains (264ft.) radius, and the gradients never steeper than 1 in 5½. The Abt system will be adopted in the main. The rack rail between the ordinary rails will be composed of solid double cast-steel cogs. The locomotive will engage two double pinions in the rack, four teeth being thus in gear at the same time. A train will consist of a locomotive and two carriages of the tramway type, and seated for fifty persons. Sir Douglas Fox and Mr. Duncan Fox are the engineers, and Messrs. Holme and King, of Liverpool, are the contractors.



THE GREAT HALL

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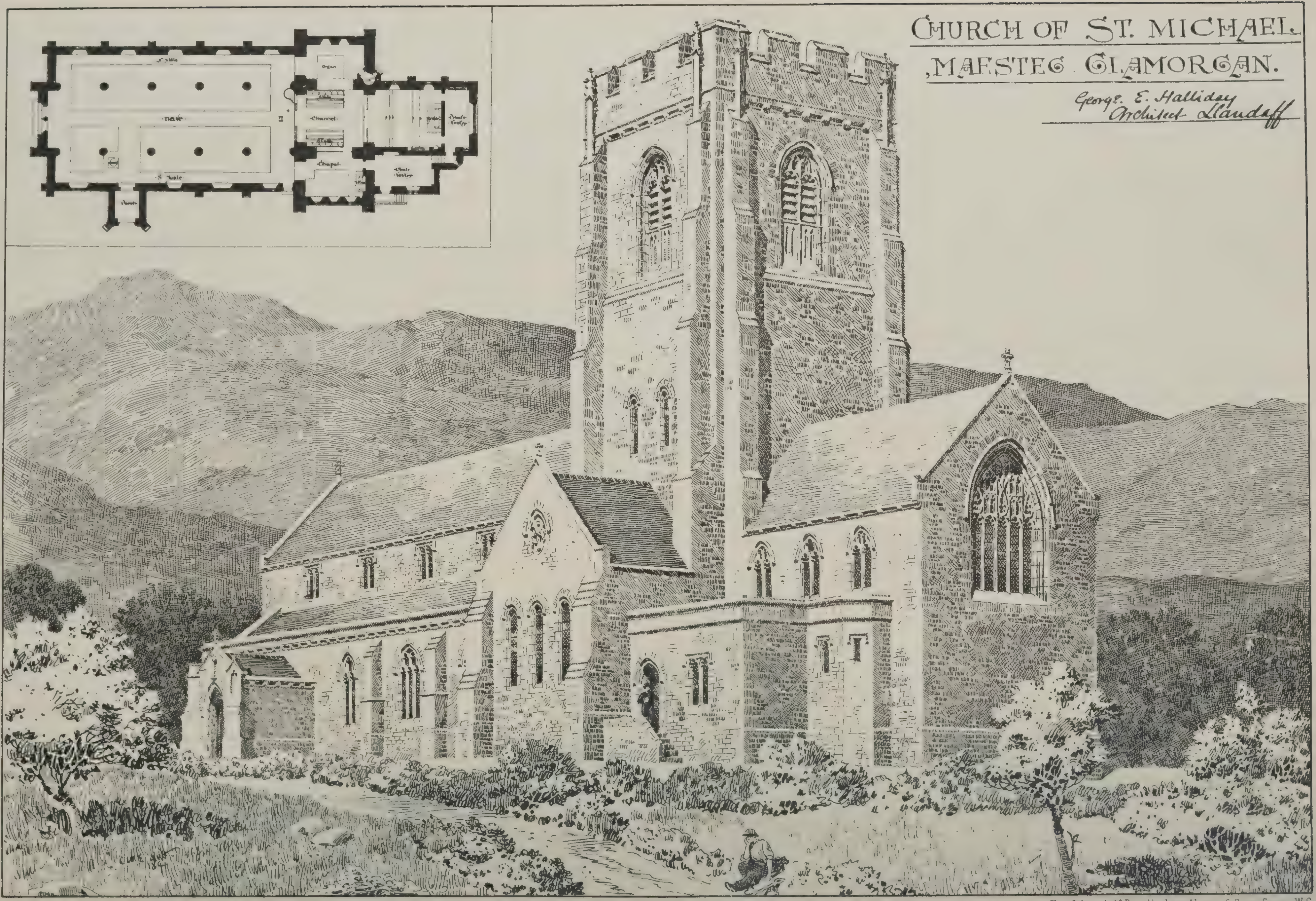
THE · BISHOPSGATE · INSTITUTE · C·HARRISON·TOWNSEND·F.R.I.B.A·ARCH^{T}.

CHURCH OF ST. MICHAEL.
MAESTEG. GLAMORGAN.

George E. Halliday
Architect Llandaff



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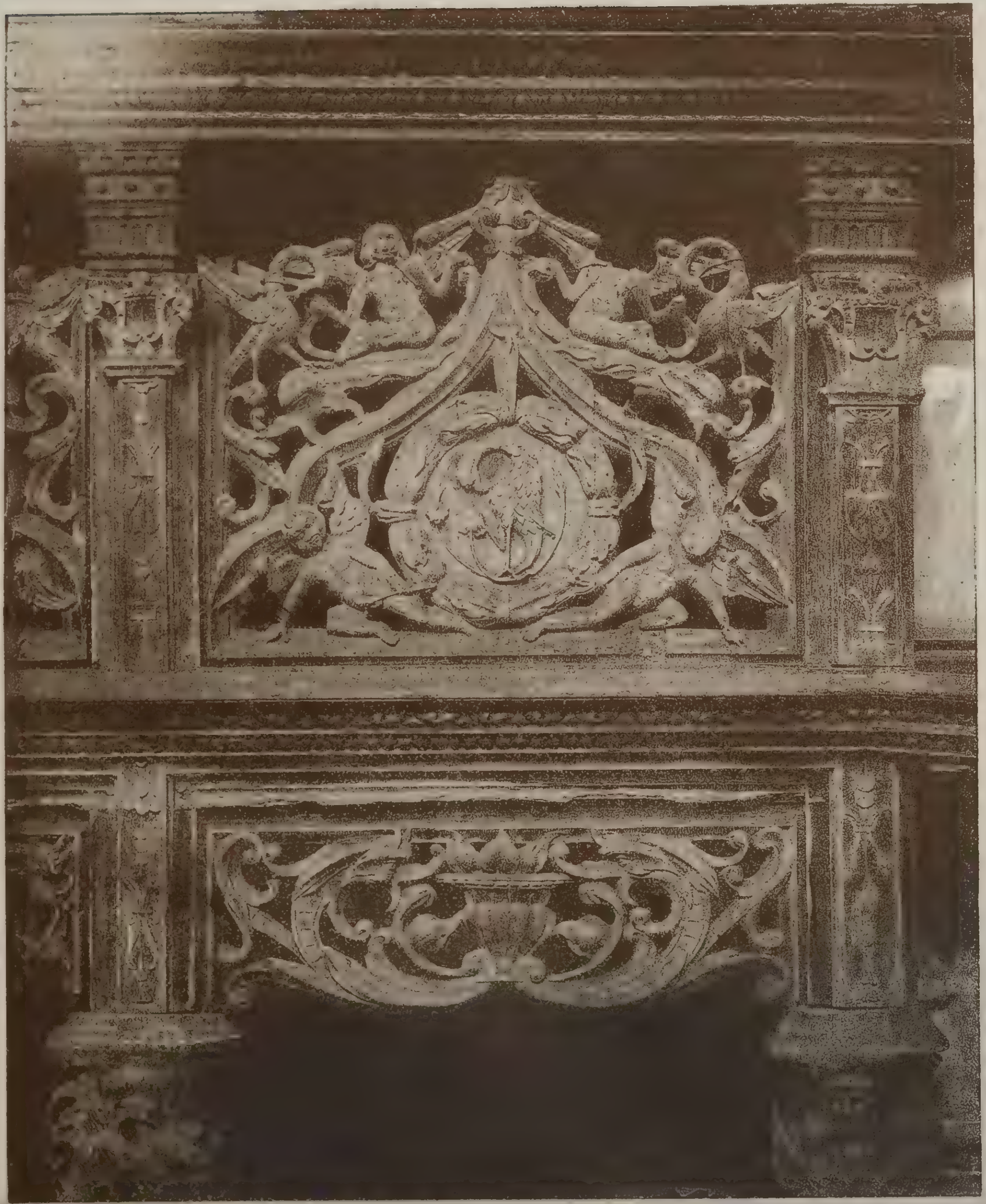

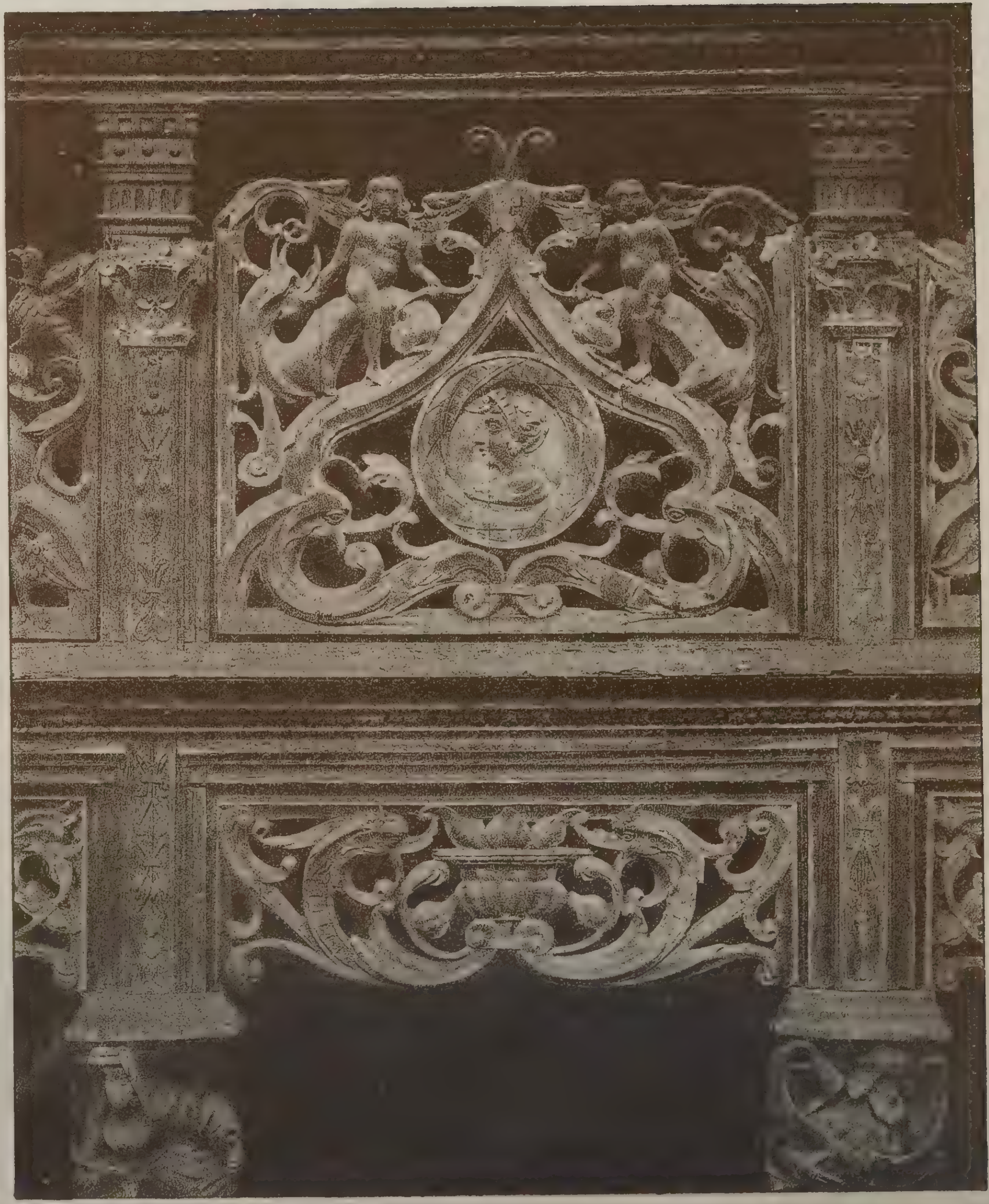

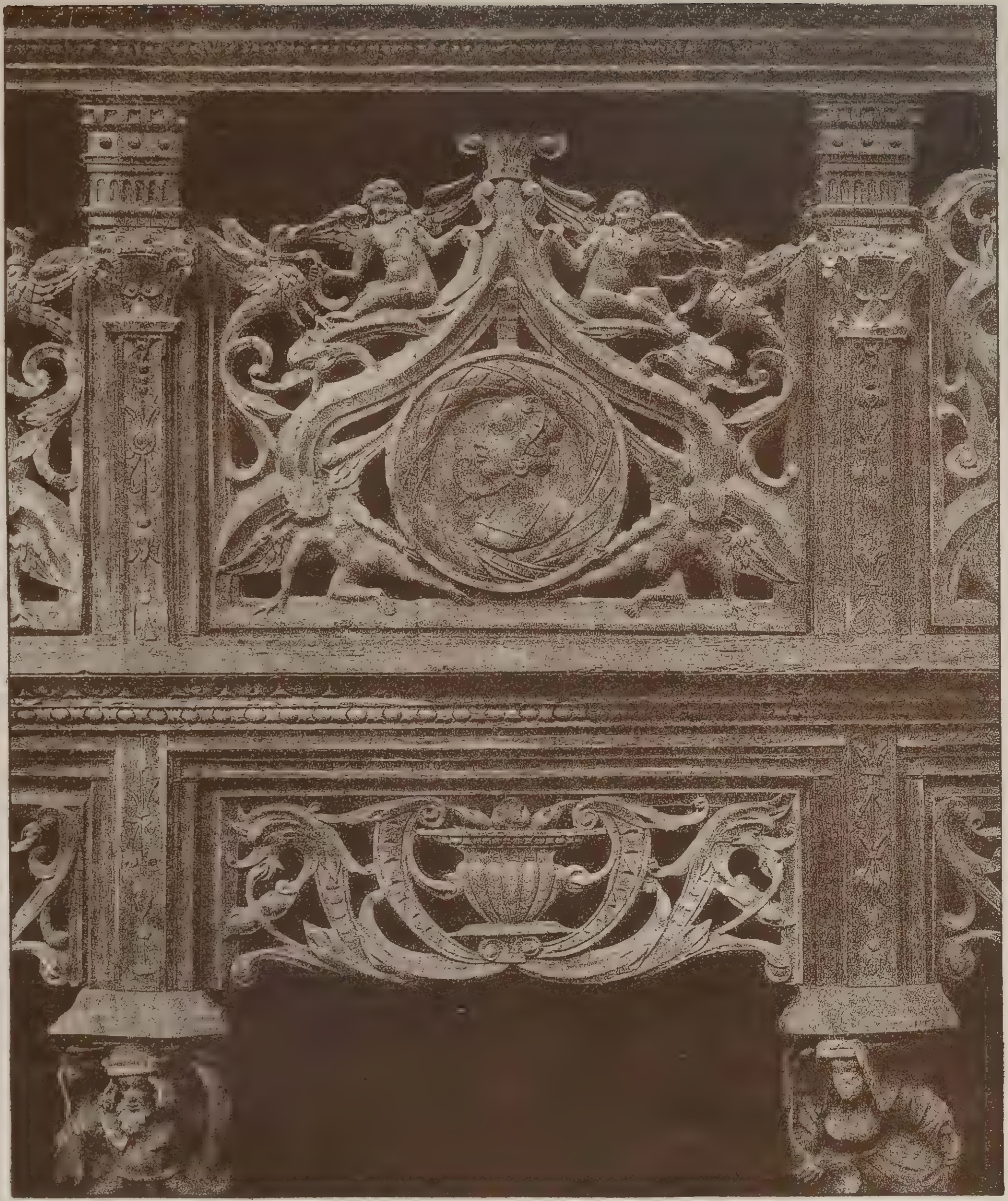

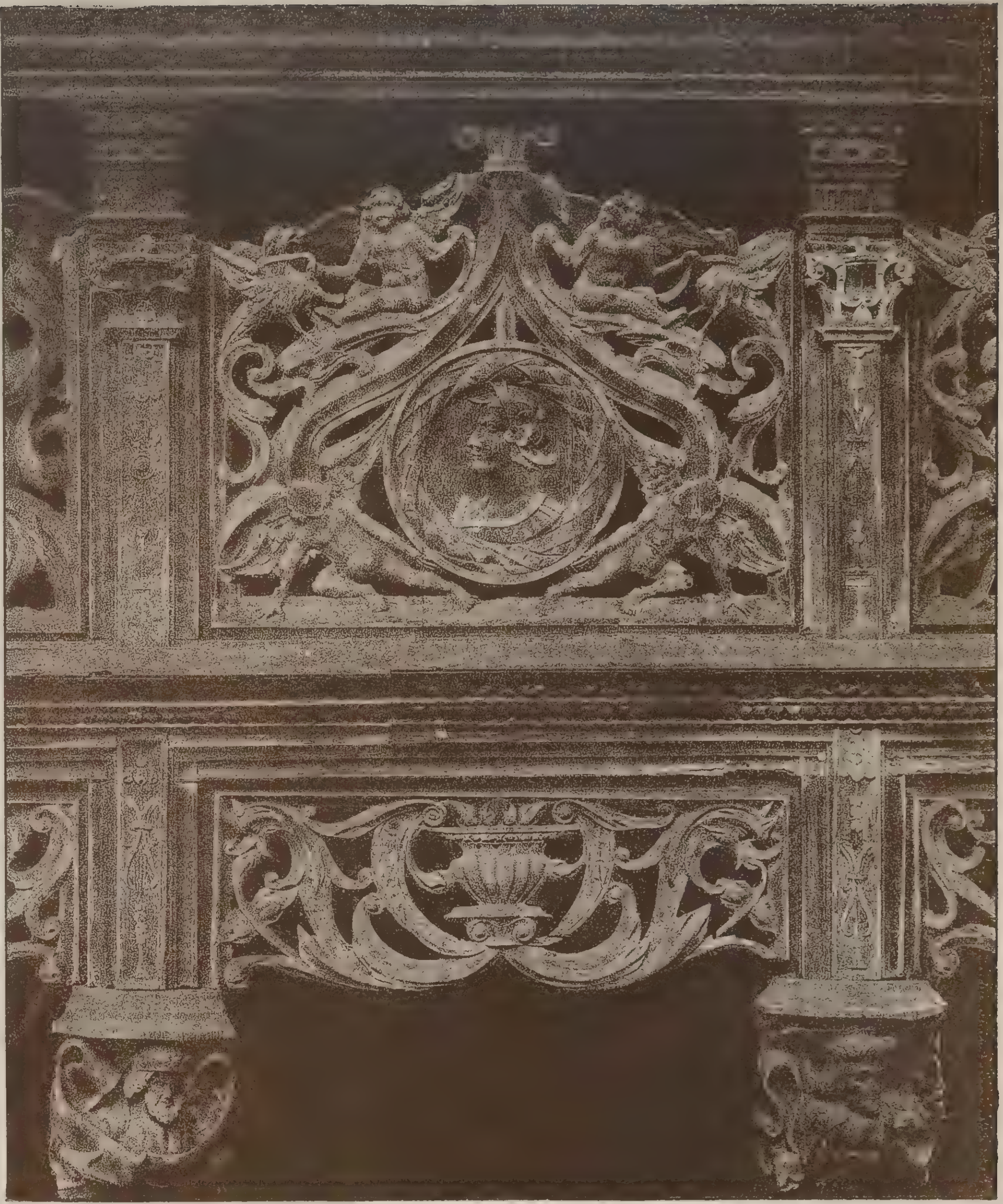

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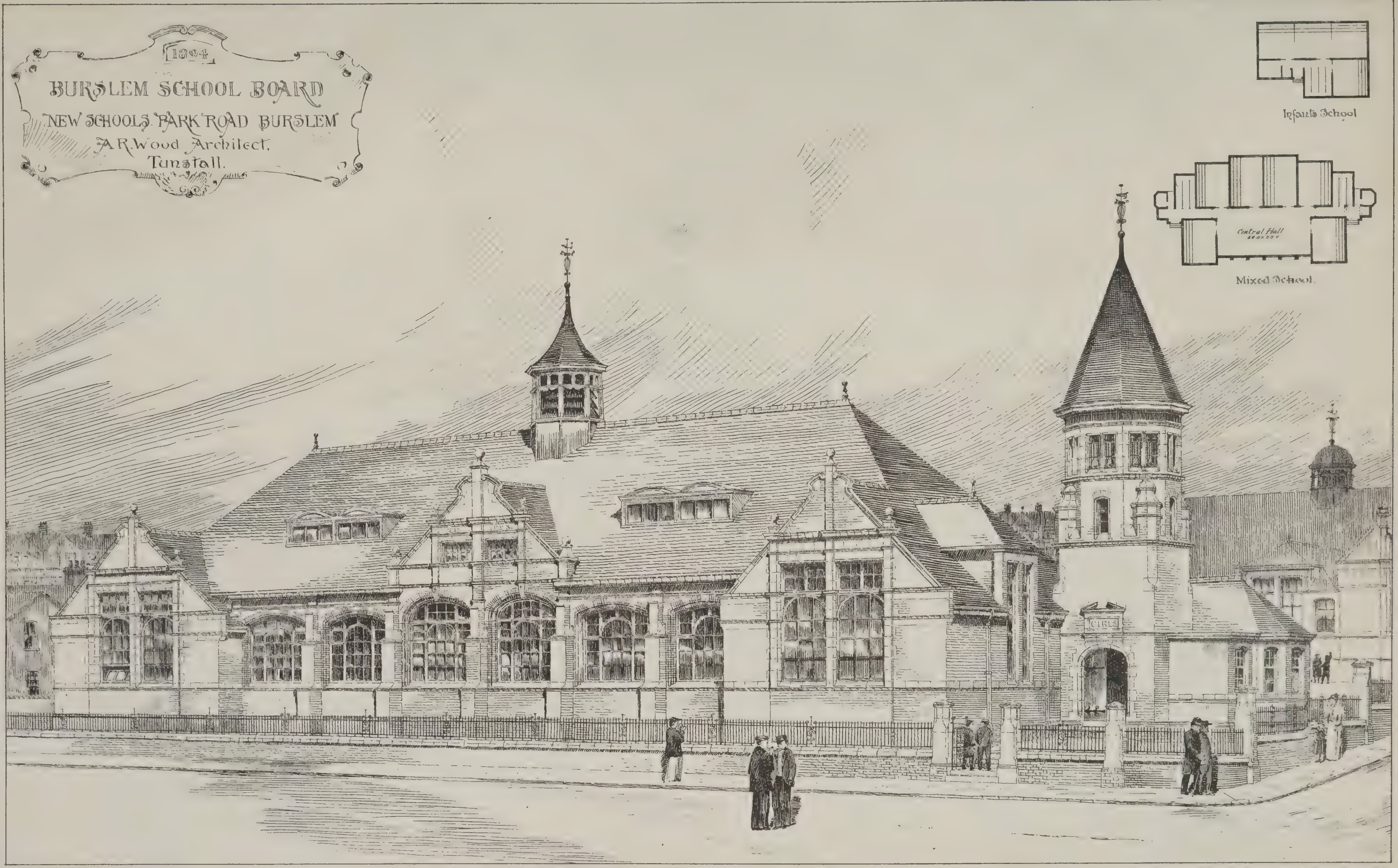
1894
BURSLEM SCHOOL BOARD
NEW SCHOOLS. PARK ROAD BURSLEM
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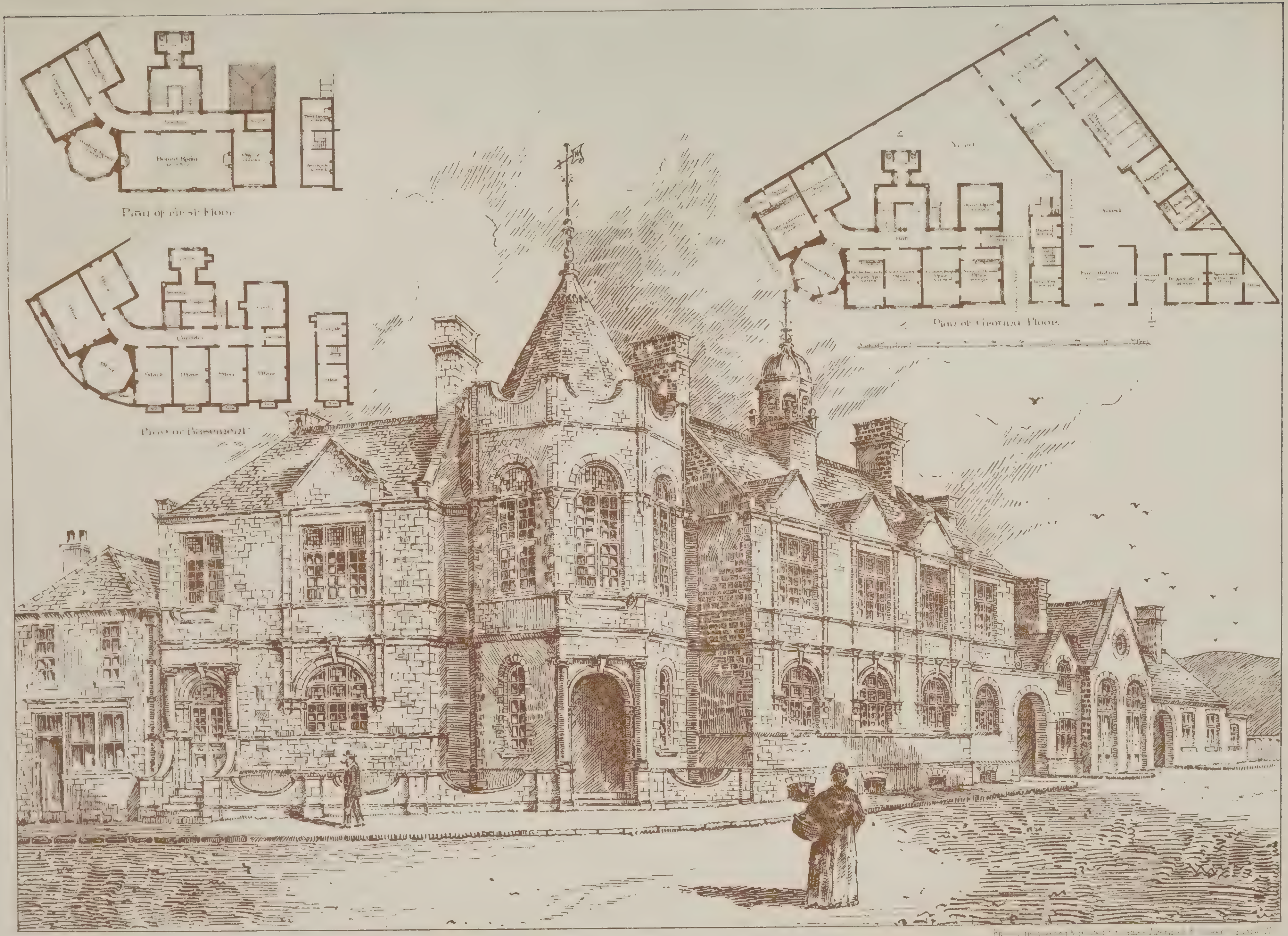
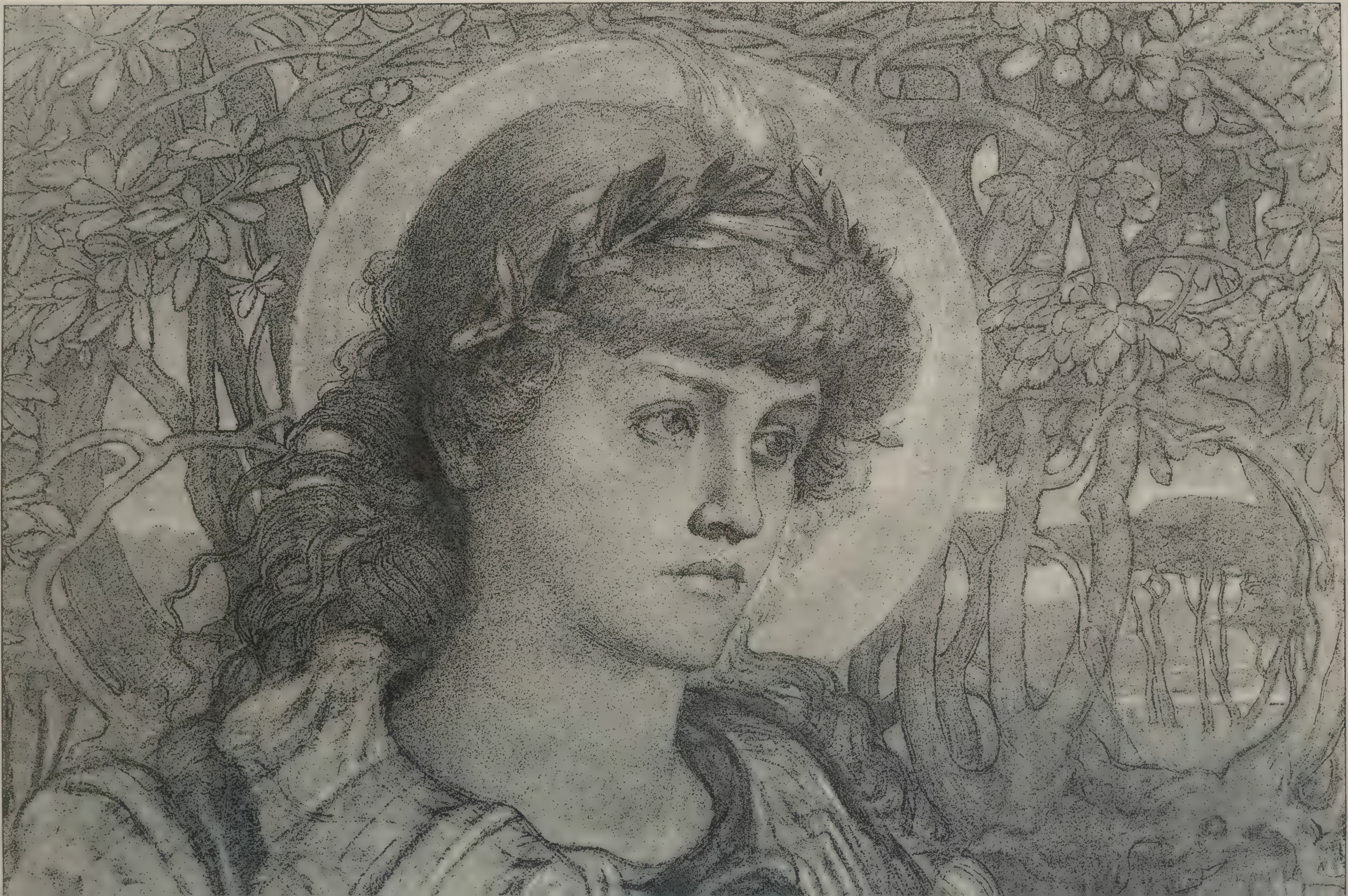
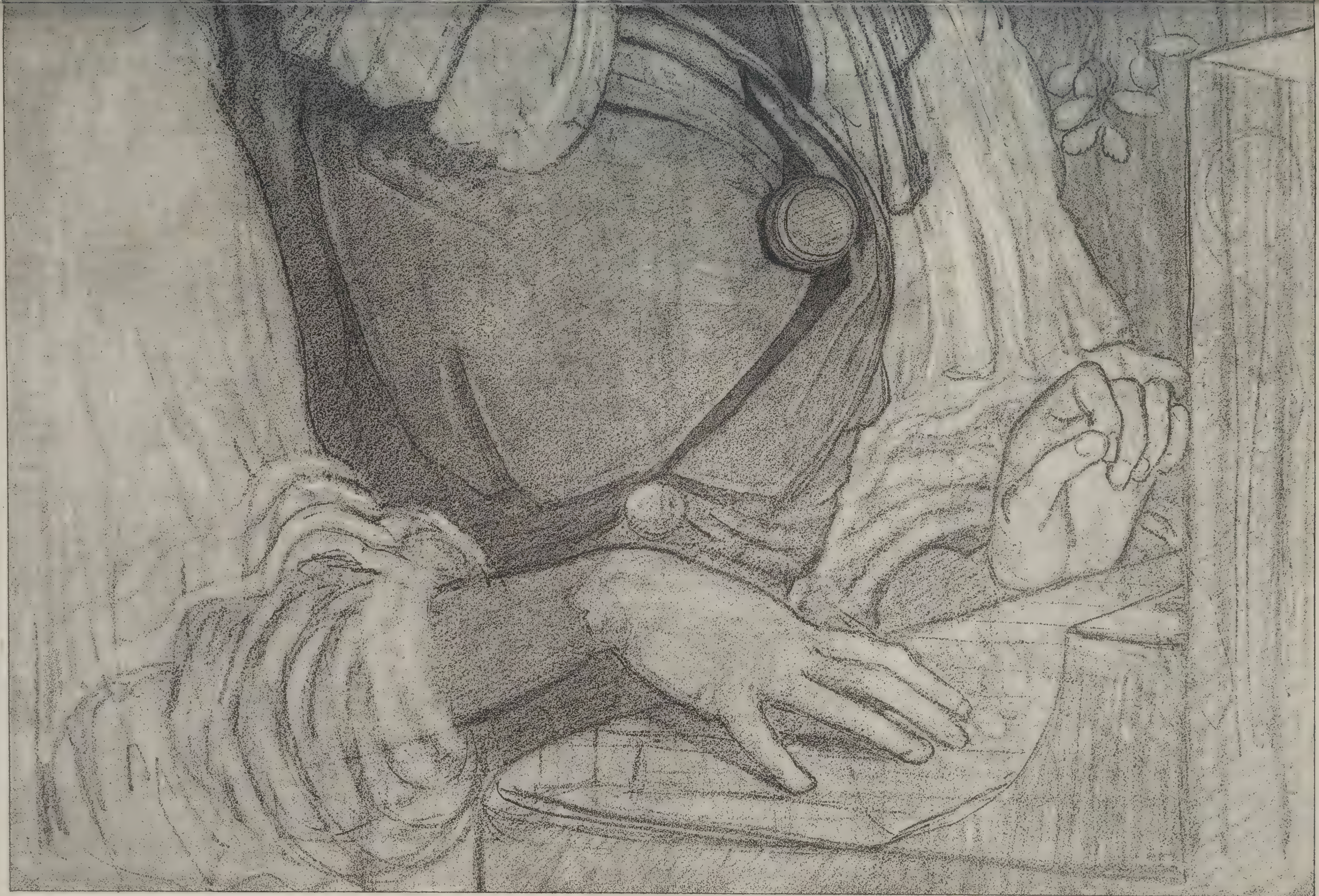
Tunstall.
Infants School
Central Hall
Mixed School.
GIRLS



LOCAL·BOARD·OFFICES·LITTLEBOROUGH· MESSRS CLARK & HUTCHINSON ARCHTS





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St. Cecilia · A Decorative · Panel · By · L. Fairfax-Muckley ·

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FRIDAY, DECEMBER 28, 1894.

"FOR THE PRESENT DISTRESS."

THE spirit of Webster, the lexicographer, was once announced as being present at a spiritualistic séance. He was asked what he had to communicate, and in reply, the message was rapped out, "It is tite times." Such a statement would be superfluous now. For years past, it has needed no ghost from the grave to tell us that. Agriculture, commerce, and the professions, as we well know, are all in a bad case, not only in England, but on the Continent and in America. The curious thing is, that nobody seems able to say exactly why. If we had had seven years' famine, we could understand it. But food was hardly ever so cheap. Corn gets lower and lower in price, and as for manufactured goods, they are poured in upon us from factories at home and abroad, as if from self-acting machine like the never-ceasing salt-mill at the bottom of the sea. Sixty thousand acres of farming land, it is said, have gone out of cultivation in Essex alone. The labourers who used to be employed on them have left, not—as townsmen used to assure us—because they found country life so dull, but because there was no work for them, and, therefore, no wages. They, and countless thousands like them, have been driven up to London by stress of circumstances, and either remain unemployed or make employment scarcer for others. Mechanics in general are suffering in the same way. The profits of trade have fallen, like the profits of agriculture. When business is bad, building for business purposes soon stops, and architects, contractors, and workmen all feel the difference. Even the lawyers are complaining, for actions are few. People no longer wax fat and kick. If they quarrel, they try to keep out of the courts. They cannot afford bills of costs, and so they settle their differences in humble ways by compromises or arbitration.

This state of things has now lasted long. Young men have grown np, and middle-aged men have grown old, since Mr. Gladstone remarked, in still-remembered words, that trade was "increasing by leaps and bounds." Like vaulting ambition, it seems to have overleaped itself, and to have come down on the other side. No longer now, as some 40 years ago, is England first and the rest nowhere. That was how matters stood in 1851, when the Prince Consort conceived the idea of a Great Exhibition, and the respectable Paxton dreamed of a great greenhouse to put it in. How the papers puffed him up, and how the British public thought him an inspired architect, is a matter of ancient history. The "new style" was supposed to have arrived. Iron and glass were to supersede everything else; and the Crystal Palaces at Sydenham and Muswell Hill were the ultimate outcome of the belief. It would be interesting now to have the opinion of their shareholders about the Paxton style of construction. It answered well, however, for the temporary purpose it was first applied to. The Exhibition of 1851 was a wonderful success. It drew the attention of all the world to England's supremacy in manufacture, and was an unequalled national advertisement. Orders came in from every quarter; and then, by slow degrees, it came to be seen in every quarter that what we could do, other people could do also, if they tried. They did try; they have been trying ever since, and many of them have succeeded. We are being beaten in our own line; and where we are not being beaten, we are closely competed with. Ours was once, so to put it, almost the only shop in the village. Now half the villagers have opened shops of their own; they buy little from us; and they take away the custom of those who would have bought. Where this will end, there is no saying. At present, with nearly all civilised nations in the same line of business, we seem to be approaching a state comparable to that of the Scilly Islanders in the last generation, who, as some facetious traveller affirmed, depended for their livelihood on taking in each other's washing.

We all wish to see the working classes prosperous. But prosperity implies both good wages and constant work. It is not prosperity when work diminishes as wages rise. Now wages have risen so much, or what amounts to the same thing, production has become so much more costly in some trades by reason of strikes, shorter hours, and vexatious regulations, that work in these trades has almost ceased. It has gone from England to the Continent, where hours are longer, and wages are lower. For an instance, look at the plate-glass trade, and ask any large dealer how much British plate is made now. Then, again, work goes abroad because the English workmen cannot, or will not, get out of his groove. He has too often been turned into a machine, and a machine he now wishes to remain. All the preliminary models for one of the most important patents of recent times had to be made in America, because, as the patentee, who is an Englishman, has publicly stated, he could not find men in this country who would take the trouble to prepare them. American workmen, he found, were deeply interested in anything fresh, and entered into it with all their heart and soul; but here men preferred to keep on in the same jog-trot way from infancy to age, and did not want to be bothered with having to think. It is not only the workmen, however, who have no love for new ideas. The manufacturers have minds of the same order. An English chemical factory, say, in the colour business, will retain the services of perhaps one, or two, or three scientific chemists. A German factory of the same rank will employ from 40 to 50; university men, with the very best scientific training. It will provide each of them with his own separate laboratory, fitted with the most perfect appliances; it will leave him free to work, not in routine and drudgery, but in original research for the purposes of the business; and it will give him sufficient inducements to go on making discoveries that may sooner or later be turned to account. This is how it is that the words "made in Germany" on an article are fast becoming a recommendation, and not a reproach. This is how it is, for example, that though England is so rich in the materials from which Portland cement is made, and Germany is so poor in them, yet German cement ranks abroad as of the first quality, and English only as of the second.

These things do not account for the whole of our depression in trade; but they do account for a considerable part of it. Unless England is to be what Holland is, we shall all have to keep down the Dutch part of our nature—the slow, sleepy part of it, which is satisfied with traditional methods, and hates to rouse itself to anything new. In the mean time, we ought to cut our coat according to our cloth. This is not a period for laying needless burdens on anybody. The rich are, in general, not nearly as rich as they were, and the middle classes are verging on poverty. Yet the whole tendency of legislation has lately been to inflict unnecessary and unproductive expense upon them. The enormous cost of our sewer system, with its very unsatisfactory results, is a case in point. But there are many others. We are being more and more forced by legislation to do everything in the most permanent and substantial manner. This is all very well if we can afford it. But in times like these we cannot afford it. They are driving us to ask whether solidity and permanence are really so essential to all sorts of buildings as we have been accustomed to believe. Look at the life-history, as one may term it, of a London street. If it is a street in the City—it is constantly being pulled down and put up again bit by bit. Expensive structures are built—or were till lately built—on leases which had only 15 or 20 years to run, and built, in some cases, with the knowledge that they would certainly be pulled down at the end of the term, to allow an extension of some adjoining property. Is there really any need that such temporary work as this should be done in a style fit to last for centuries? Is it not rather a piece of extravagance for which all of us, in the long run, are directly or indirectly the poorer? And if we look at a street or a square in the suburbs, we shall find that it, too, is in a state of perpetual change. Its buildings, indeed, are not always in process of being demolished. But they are undergoing a constant process of degradation. They begin, perhaps, as detached houses at high rents, with good gardens, and everything handsome about them. Then, as population increases, they are added to and subdivided. The gardens are built on; the houses get closer and closer together. What used to be quiet roads become busy thoroughfares. Here shop-fronts begin to jut out from what were formerly private residences. There, again, in the back streets, the residences are turned into lodging-houses, and the lodging-houses into separate tenements. The first tenants, or the class they belonged to, have gone further out of town, and the neighbourhood has sunk—as the outskirts of towns always tend to sink—to a lower level. When everybody knows this to be the regular course of things, is it worth while to build in a "rising neighbourhood" as if it would still go on rising and never decline or fall?

What is wanted in bad times is that buildings, like other things, should become less and less expensive. But the whole tendency of present-day legislation is to make it more and more so. Cheap building is frowned on everywhere, though cheap building need be neither unsanitary nor inartistic. Some of the most picturesque structures all the world over are the least costly ones. There is more beauty in an old thatched cottage than in a mile of surveyors' architecture, and the more stringent are the rules in any town about matters of construction, the more ugly and more vulgar that town is almost sure to be. We do not advocate temporary work everywhere: we simply counsel a return to the practice of highly civilised nations, like the Greeks, who built temporary structures for everyday purposes, and monumental ones for great national works. If we did not squander so much money on "the vain attempt to give a lasting lot, To things ignoble, born to be forgot," we should have more to spare for those which are really deserving of perpetuity.

There is another tendency of the day which, before long, will be far from making bad times better. It is that of inflicting all sorts of expenses—some necessary, and some needless—on the owners of property, in the cheerful belief that they are rolling in riches, and that they can and will pay out of their own pockets for whatever the Legislature likes to demand from them. At the moment, it may appear as if they would, for the simple reason that housebuilding of late years has been somewhat overdone. But, as architects know, recent legislation is rapidly stopping it. People will not continue to invest their money in housebuilding if housebuilding is going to carry a double share of the national burdens. The consequence is that rents will go up, though it is to the interest of most of us, under present circumstances, that they should rather go down.

Whatever makes buildings dearer to produce, will in the long run make them dearer to hire. House-property, at the best, is a very troublesome and uncertain investment. The percentage it yields is seldom, perhaps, more than half what it seems to yield. Tenancies nowadays are short; vacancies are long; repairs and re-decorations are increasing. Every fresh-comer racks his brains to think what concessions, or additions, or improvements he can screw out of his landlord, and no improvements will keep up the value of property for many years, or arrest the decline of a neighbourhood. And when, on the top of all these vexations, the public takes a fancy to look upon every landlord as a kind of habitual criminal, who is to be subjected to as many artificial pains and penalties as possible, it is only natural that people of moderate capital should grow less and less willing to assume such an unpopular character. Such legislation may be directed only at landlords; but amongst the first people it strikes are architects, contractors, and workmen in the building trades. Nor will it affect them alone. As fewer houses are built, everybody who occupies a house will either have a dearer one or a worse one, or will have his private fads and fancies less attended to than they are at present. If capitalists could be forced by law to build, it might be otherwise; but till then, it would be as well, before putting exceptional burdens on building-owners, to consider whether, as the Americans say, they "will stay put." Unless they do, it were a mere waste of time to take them off one section of the community and lay them on another.

The wise men of Gotham once determined to set up a public swimming-bath. It was a laudable purpose, and the population entered into it heart and soul. Outside the village there was a pond, which only needed to be deepened at one end and made shallower at the other to be the very thing they wanted. Now, the Gothamites always prided themselves on being plain, practical people, who took the most direct and obvious way to whatever they desired. So they all turned out one morning, with pans and pannikins, tubs and pails. All day long they worked at dipping out water from the end they wished to be shallow, and pouring it in at the end they wished to be deep. At sunrise they came for their first bathe. To their amazement, they found the same old pond they began with,—neither deeper nor shallower; and they agreed that witchcraft had undone in the night everything that their industry had accomplished in the day. One is sometimes tempted to believe that the Gothamite is still in the land, and has yet to learn that other things besides water are sure to find their level.

"OLD MASTERS" ON THE CONTINENT.—XIII.

By Charles L. Eastlake

(Keeper of the National Gallery).

AMONG German painters whose lives extended from the 15th to the 16th century the name of Matthäus Grünewald is in this country comparatively unknown. The contemporary of Holbein, of Dürer, and the elder Cranach, he failed to achieve such a reputation as, through the number or excellence of their works, has preserved the memory of his more distinguished compatriots and fellow artists. Of his life and professional career little or nothing is known. Even the dates of his birth and death are doubtful. Sandrart, writing in the 17th century, gives us no biographical details respecting him beyond the facts that he resided, chiefly at Mayence, in seclusion, and that he had made an unhappy marriage. Yet the old author must have held Grünewald's abilities in high estimation, for he refers to him as a most distinguished painter, and describes him as the "Correggio of Germany."

According to some writers, Grünewald was born at Frankfort, while others believe that Aschaffenburg was his native place. It is certain that he settled for some time of his life at the last-mentioned town, where he came under the patronage of Cardinal Albrecht, Archbishop of Mayence.

The authenticated works of this painter are not numerous, and considerable difference of opinion prevails respecting some which were formerly associated with his name. A portrait of the Emperor Charles V., formerly in the Belvidere Collection at Vienna, and now transferred to the new museum in that city, is doubtfully ascribed to Grünewald. In the Frankfort Gallery, two wings of an altarpiece bear his monogram. They are executed in grisaille, and represent figures of St. Lawrence and St. Cyriacus. Characteristic as these are of Grünewald's style, they are exceeded in importance by a shrine which he painted early in the 16th century for the high altar of a church at Isenheim. This interesting work is now deposited in the Museum at Colmar. The shrine was inclosed by double doors, each painted on both sides. The innermost pictures illustrate the Life of St. Anthony. Externally, the shutters present a composition representing Madonna with the Infant Christ in her arms seated before a beautiful landscape above which Heaven seems to open, and a host of angioletti descend in a glory to pay their homage. On the inside of the outer wings are depicted the Annunciation and the Resurrection. On two of the side panels appear figures of St. Anthony and St. Sebastian, each standing on a small but richly-carved pedestal, and each lighted by a window in the background. There seems to be no doubt that all the above-mentioned paintings are the work of Matthäus Grünewald; but a Crucifixion painted on the exterior of the shrine differs so much from the rest in sentiment and technique that critics do not assign it wholly to the painter's hand.

Another notable picture by this master is the group of St. Maurice and St. Erasmus, now in the Alte Pinakothek at Munich, which has been selected for illustration with this article. According to tradition, the Emperor Maximin in the second century summoned his Theban legion from the East to reinforce an army which he proposed to lead into Gaul. This legion was commanded by a Christian officer who, when the army halted near the Lake of Geneva, refused to participate in some idolatrous rites, which had been ordered by the Emperor, and, in consequence, was martyred, together with his faithful followers.

Whether in allusion to his name, or because he was supposed to have been born in Africa, St. Maurice in old German art is sometimes represented as a Moor, and Grünewald has followed this custom in his picture. The swarthy saint is clad in steel armour, damascened with gold and enriched with jewels. On his head is a chaplet of gold and gems. His left hand rests on his sword, and he extends his right towards St. Erasmus, who stands near him in episcopal vestments. The bishop wears a large white and gold mitre, and a cope of gold brocade over a richly-coloured robe and white surplice. In one hand is a crozier of elaborate design and workmanship: in the other he bears the emblem of his martyrdom. Behind the two saints are seen a priest and a soldier, the latter—one of St. Maurice's Legion—is of dark complexion, like his master, and quaintly attired; in the background hangs a green curtain.

The realistic detail of ecclesiastical costume and Mediæval armour would always make this picture interesting. It is true that the principal figures, which exceed the size of life, are ill-proportioned, and somewhat ungainly in pose; but in German art of this period, a sense of grace and physical beauty seldom found expression. The works of Matthäus Grünewald occupy a middle place between the old archaic style of painters who preceded him and the more naturalistic school which followed his period. Without possessing the genius and originality of Dürer, or the exquisite skill of Holbein, he seems to have been one of the first artists of his country who broke away from traditional conventionalities, and endeavoured to interpret nature truthfully, with due regard to the actual conditions of light and shade, gradation of colour, and fidelity of effect. In the work which has just been described, these peculiar characteristics are not prominent. But, even here, a comparison of the altar-piece itself, with the wings believed to have been painted by Lucas Cranach, with representations of St. Mary Magdalene, St. Chrysostom, St. Martha and Lazarus, enable an experienced eye to judge in what respect Grünewald differed from his contemporaries, and maintained his individuality.

SANCTA SOPHIA, CONSTANTINOPLE.*

THE interesting volume on this famous church, which has been produced jointly by Mr. W. R. Lethaby and Mr. Harold Swainson, will be valued by all students of the Byzantine architecture. The authors have entered into the subject of their labours with untiring industry and zeal. Mr. Lethaby and his coadjutor have wrought their versatile knowledge and pencil into the service of describing and critically examining this most wonderful of the edifices reared since the Parthenon. When Justinian completed this great church after the destruction by fire of the original building of Constantine, he is said to have exclaimed, "I have surpassed thee, O Solomon!" But, as Fergusson remarks, Justinian's great work was much larger, and covered ten times the area of the Jewish Temple. Its fame as a great architectural triumph has called out the panegyrics of great historians and poets, including our own Gibbon, whose eloquent and classical description of Sta. Sophia is probably known to most readers. Messrs. Lethaby and Swainson observe, their "first object has been to attempt some disentanglement of the history of the church, and an analysis of its design and construction; on the one hand we have been led a step or two into the labyrinth of Constantinopolitan topography; on the other, we have thought that the great church offers the best point of view for the observation of the Byzantine theory of building." As far as we can judge from a cursory glance of the volume, the authors have done something to clear the early history of this marvellous building from certain doubts and myths. The translation of historical documents and records has been the work of Mr. Swainson, whose literary acumen and learning have been of undoubted value to the work.

The first and second churches of Sta. Sophia are discussed in the first chapter, upon indubitable authorities, whose names appear as foot-notes. Among them we see a reference to Zosimus, whose description of ancient Byzantium and its reconstruction under Constantine was written about a century after the event. This ancient writer describes the city as lying upon the crest of a hill, part of the isthmus that is made by what is called the "Horn" and the "Propontis"; also the circular forum, and alludes to the enlargement. Dr. Mordtmann, another recent writer, has thrown much light on the extent of the city and its buildings. It was in 328 that Helena is said to have discovered the true cross and other relics at Jerusalem, and this event seems to synchronise with Con-

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* The Church of Sancta Sophia, Constantinople. By W. R. Lethaby and Harold Swainson. London: Macmillan and Co.

stantine's choice of Byzantium. It has been generally conceded by all historians, Theophanes, Glycas, Callistus, and others, that Constantine founded the first church dedicated to the Second Person of the Trinity as the Divine Wisdom. This church was destroyed by fire. That the present Sta. Sophia occupies the site of the first church has been questioned. The authors think it does. The first edifice was of medium size, and had its entrance at the east, the sanctuary end of the present, which is about 250ft. in length. The pre-Justinian church was burnt on the 15th January, 532, and the reconstruction commenced on the 23rd of the following month, according to Zonaras. Theophanes says the work took five years eleven months and ten days in building. An earthquake destroyed a great portion of it in the 32nd year of Justinian's reign. The fall of the dome by earthquake took place in 558; but it was restored and again consecrated five years afterwards by Eutychius. Theophanes describes the emperor and patriarch riding together, and bearing the Gospel with them, while the people chanted "Lift up Your Gates." Among contemporary descriptions of this church after restoration the poem of Paul the Silentiary is the most important. The poem begins with a eulogy on the emperor, and is in long Homeric hexameters. Every part of the church is described in the poem in gorgeous imagery—the apse and exedras, apse bema, exedras semidome, narthex, the four piers and pendentives, the dome, the marbles, &c. The Silentiary's poem is given in full in the third and fourth chapters. The ambo, one of the chief features, is particularly described. Minute and interesting details are furnished on the ritual arrangements, and interior parts, into which we cannot here enter. The writings of Du Cange, in his commentary on the Silentiary's poem, has been used, and this chapter is probably the most interesting to the ecclesiologist. In Justinian's time the number of clergy were 525, but it was increased in the age of Heraclius to 600. The ritual of the services, as that of the celebration of the Mass, the Adoration of the Cross, is fully described. The next chapters refer to relics, treasure, and lighting. A very beautiful-gemmed processional cross is illustrated, having a swinging fringe below the arm of cross. Also a few very unique examples of lamps and coronæ, one of which is the polycandelon or disc for 17 lamps in the British Museum, and a Coptic polycandelon for four lamps of handsome design, brought from Egypt by Professor Flinders Petrie. Chapter X., on "Building forms and the Builders," is a dissertation on the growth of Byzantine architecture. Here Mr. Lethaby descants on the many beauties of this building, as illustrating the development of the style, which was chiefly one of brick used in the finest manner, especially in domical vaulting. M. Choisy has shown that the builders constructed their vaults without centres, and that the method is not derived from a Roman source, but is Asiatic—"the Greek spirit working on Asiatic elements," and this is true enough. Justinian's great work was essentially Greek in feeling and conception. The pendentive dome is certainly of Eastern origin, as Fergusson and others have shown clearly. The remarks on the original form of the church, illustrated by sketches and diagrams of the plan and vaults, generally bear out Choisy's theory. A high tribute is bestowed on *L'Art de Bâtir* for its clearness and freshness of sight and logic. We have no space now to enter into the interesting question of the lines of construction and curvature of the Byzantine vaults which is here discussed. The very beautiful gradation in the intersection of the vaults is pointed out. M. Choisy's method is to make the curve of intersection over the diagonal in plan a segment, all smaller sections of which are segments of circles; but Mr. Lethaby points out another, and perhaps truer method, in which the vault surfaces gave the conditions of the problem, the intersections finding themselves. Several illustrations in the text are here given. In a work of this pretension we might have looked for better illustrations and views; but the authors have chiefly confined their labours to a descriptive and critical examination of this great edifice of Mediæval Greek architecture.

DESIGNING OF STEEL BRIDGES, THEORETICAL AND PRACTICAL.—XII.

When the span of a bridge girder exceeds eighty, or for a maximum, one hundred feet, the bearing area is increased *pro ratâ*, and the friction between the surfaces of the bed-plates becomes correspondingly augmented, in spite of all efforts to adequately maintain the lubrication of the sliding parts in contact. With the increase in the length of the girder, the expansion or elongation of it similarly becomes greater, and experience has demonstrated that at this point, the sliding surfaces must be abandoned, and preference given to one or other of the more delicate adjustments, now in use among engineers and bridge builders, in examples of bridges of large span. Among the earliest of these is the plain roller method with upper and lower bed-plates, which is still a good deal used. Before, however, adverting to the practical details of the construction and working of this adjusting arrangement, it is necessary to inquire a little into the theoretical conditions which govern its application. It is no longer a question of the contact of one surface upon another, as in the case of sliding plates, but one of the contact of a bearing surface, presumably horizontal, upon a given number of cylindrical rollers, which to some extent complicates the relations between the parts touching one another. It is well known that theoretically, circles are supposed to touch one another, or other bodies situated in one plane, at a single point, in the same cross section of the cylindrical mass. There is no doubt, however, in practice that the actual area of contact which depends upon the amount of pressure or impact exerted upon the cylinder or sphere, the nature of the material, and the limit of its elastic resistance, is of considerably larger dimensions than those of a mere spot. If we take a ball—a billiard ball will serve as an illustration—and allow it to fall upon a hard even surface, covered where required, with a wet coat of coloured paint, a spot of a very appreciable size will be found on the ball, clearly indicating that the force of impact caused the ivory ball to become, to a certain extent, flattened by the contact. In all probability, a very similar result attends the application of heavy impactive loads rapidly traversing the bearings of the girders, with respect to the rollers, which, besides their rotary motion, have to transmit the whole load live and dead to the supports. As the rollers are continuously supported throughout their entire length, and subjected to a uniformly vertical pressure, their is no question of any stress arising from leverage. The right proportions for the diameter of the expansion rollers of bridge girders were not arrived at until practice and experience had pointed out the many disadvantages which resulted from their being made a great deal too small, as they generally were, when first introduced. As a consequence dirt found its way into the roller frames, and as there were no means of cleaning them, they soon rusted and became completely jammed. Examples of rollers being thus rendered useless, have occurred in numerous localities. Among others, at Birmingham, Liverpool, Exeter, Hammersmith, and at the Boyne railway bridge in Ireland. When once the main girders were adjusted on their bearings, the bed-plates, rollers, and all other parts of the adjusting arrangement were frequently bricked up or otherwise concealed from view. They might be occasionally oiled or lubricated in some desultory sort of manner; but usually no notice was taken of them until the state of the abutments or piers upon which they rested but too plainly indicated that the bearings required attention.

FIG. 1.

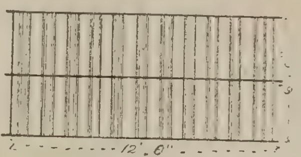


FIG. 2.

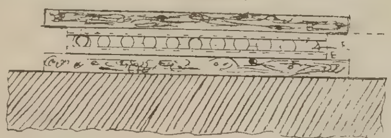


FIG. 3.

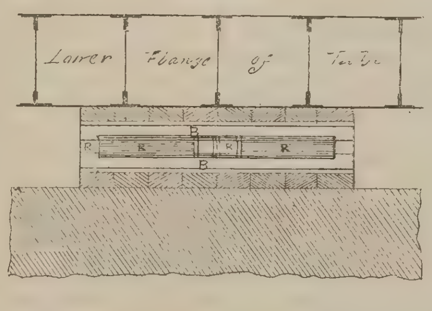
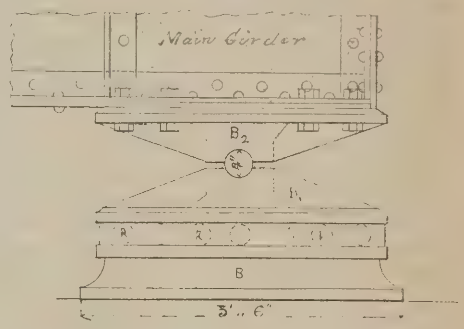


FIG. 2a.



In countries where the extremes of temperature are not very widely apart, the actual amount of the expansion of bridge girders agrees fairly well with that ascertained by calculation. In the case of the Britannia bridge a very close result was obtained. The main spans of the Britannia bridge were, previously to being fixed *in situ*, temporarily supported on a bed of hard wood resting upon stone supports specially constructed for their reception. In this position, the area of each bearing was 120sq.ft., and the load upon it amounted to 630 tons, or exactly 5¼ tons per unit of area. Over the land towers, the expansion and contraction at the bearings of the great tubes is arranged as shown in cross section in Fig. 3. Upon the solid masonry is laid a timber platform of creosoted pine 12ft. by 6ft., and 3½in. thickness, which carries a cast-iron bed-

FIG. 3a.

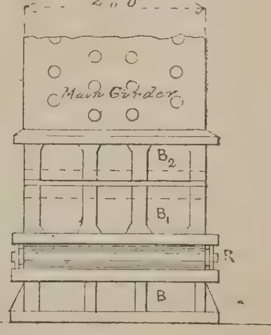


plate B of the same superficial dimensions. Twenty-two cast-iron rollers 6in. in diameter, but only half the width of the bed-plates, and therefore set in a double frame. Figs. 1 and 3 are free to revolve between the lower and the upper bed-plate B which rests upon them. On the upper surface of the top bed-plate, another platform of creosoted pine is laid, and a thick *couche* of lead putty insured a perfectly uniform bearing. It is worthy of notice, as evincing a condition which has no relevance to any other type of bridge of construction: that the temperatures of the interior and exterior of the tubes vary very considerably. The range in the interior is from 26° to 76° Fahr., while over 120° has been registered with the sun shining on the outer surface. While, therefore, plate and open web girders are more exposed to the direct action of changes in temperature, they, and especially those belonging to the former class, are not exempted from lateral expansion, which assumes the form of a slight bend or warp.

In actual practice various rules have been given by engineers for the safe working load on rollers, depending to some extent upon the nature of the load brought upon them, as well as upon its actual intensity. These are, as might be expected, all functions of the diameter of the roller. If a bridge be exposed to the continual repetition of heavy loads, whether at a moderate or high rate of velocity, it is advisable to take a lower value for the safe working load upon the rollers, than in the example of structures of a slighter construction. Let P equal total safe load in tons, d the diameter in inches, and L the length of the roller also in inches, then we have for the heavily loaded bridge—

$$P = L \times \sqrt{d} \times 0{\cdot}26 \quad \ldots\ldots\ldots\ldots (1)$$

and for the lighter—

$$P = L \times \sqrt{d} \times 0{\cdot}32 \quad \ldots\ldots\ldots\ldots (2)$$

These formulæ will not strictly apply to rollers whose diameters are less than two inches, and as a matter of practice, it is better never to adopt a smaller diameter. For diameters not exceeding four, and less than two inches, the equations (1-2) may be written, using the same notation—

$$P = L \times \sqrt{d} \times 0{\cdot}53$$

The use of rollers bound together in frames and placed between an upper and lower bed-plate, somewhat resembling a pair of parallel jaws, as shown in Figs. 1, 2, and 3, has been in the more modern days of bridge building, improved by the addition of a pivot or hinge fixed underneath the mass centre of the bearing area of the girders. This arrangement is represented in Figs. 2^a and 3^a, and is clearly of a more intricate and complicated character, both as regards the number of its component parts and details of self adjustment than those already described and illustrated. Upon the support is bolted or fixed down by any convenient method the lower cast steel bed-plate B, Figs. 2^a and 3^a, and upon its planed surface the steel rollers R R are free to move together within their frame. An upper bed-plate, B_1, transmits the actual load uniformly over the separate rollers. In the central part of this bed-plate B_1 there is a circular socket provided, which receives the lower half of a turned steel pin 4in. in diameter. Resting upon the upper half of the pin is a third bed-plate B_2, which is bolted to the lower boom of the main girder. It will be thus seen that the steel pin has to bear the whole of the load upon one end of the main girder, which is however, brought upon it in a somewhat different manner to that which obtains with respect to the rollers R R between the bed-plates B and B_1. The area of contact between the plate B_1 and the circumference of the rollers is practically small, but in the case of the pin, is comparatively large, since the bearing of the socket of the upper plate B_2, which is precisely similar to its other half, B_1, as it might be termed, extends nearly over its semicircumference. At the other or fixed end of the main girder in Figs. 2^a and 3^a, the steel pin is also used; but the rollers are dispensed with, and consequently there are only a pair of saddles or bed-plates, the lower of which is securely and permanently bolted down to the abutment.

The pressure brought upon any cross section or linear unit of a roller must be such as not to incur any risk of permanent deformation or to give rise to any degree of "permanent set." It must be kept well within the working factor of safety of the limits of elasticity of the material. In fact any temporary deflection or flattening at either the upper or lower surface must be of a very slight amount. It must be borne in mind, that even in girders of very large span, not only is the absolute rotary motion of the rollers very slight, but they are under the great disadvantage of being subjected to a very serious load. In other words, they turn under a very large pressure, which for want of uniformity, a by no means unusual attendant upon rough and ready work, might gravely interfere with, and impair the expansive adjustment of the whole system. It is quite possible to imagine the flattening, that is the unit area of contact, so extended as to cause the roller to be unable to turn, and if this should happen with only one roller, it would be quite sufficient to stop the whole motion of the others, and thus jam up and render useless the contents of the whole roller frame, together with saddles, pivots, or bed-plates.

It is evident, from what has been stated respecting the exceedingly small amount of motion imparted to the rollers, that even when they were restricted to the limits we have already assigned to girders of large span, but a comparatively small part of their whole circumference ever came into contact with either the upper or lower saddles. From this the corollary was apparent, which led to the conclusion, that the sides or vertical part of the circumference—to use an expression which will distinguish those parts of the roller in contact with the saddles, and those which are not—were of little or no use. It has therefore been proposed to do away with the sides of the roller, and employ a rocker in its place, and as we shall point out, the rocker, which represents the most modern or *fin de siècle* arrangement for the longitudinal expansion of girders, is really nothing more than an evolution from the roller. For reasons we shall adduce we are very doubtful whether, with the exception of an almost inappreciable saving in metal and length of frame and bed-plate, there is any valid reason for substituting the rocker for the roller. As will be seen from Figs. 4^a and 5^a, the movement of the rockers, or the rollers, as the old name is used still for the latest innovation, resembles a great deal more the throw of an eccentric on a crankshaft than the regular rotary motion of a completely spherical body.

FIG. 4^a.

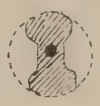
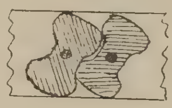


FIG. 5^a.



Let the dotted circle in Fig 4^a represent the elevation of an ordinary expansion roller, the size of which is of no moment, as we are at present investigating only a general development of a previous form. While preserving the diameter, that is the depth of the roller when in its normal position, which is one of perpendicularity to the bearing area of the principal girders, the same dimension becomes considerably reduced in a plane at right angles to the former. In Fig. 4^a the shaded portion shows the evoluted rocker, which has very much the appearance of a double T-headed rail, except that the radius of the upper and lower table portions are far too sharp, and the thickness of the middle or web part a great deal too much. It is not necessary, nor can we spare the space, to reproduce the pivot or saddles which are connected with a system of rockers. They are substantially the same as those shown in Figs. 2^a and 3^a. It will be seen from these illustrations and those in Figs. 4^a and 5^a, that while the rollers rotate round a fixed axis, and that their revolutions could be continued until a far greater amount of expansion or contraction was provided for than could ever be required, the rockers, Figs. 4^a and 5^a do not rotate, but simply swivel or steer round their axles. They thus clearly have a certain amount of "throw" right and left, which must necessarily coincide with the maximum elongation or shortening of the girders of the bridge. It is doubtful when the rockers "lock up," as shown in Fig. 5^a, whether there is not a greater liability for them to become jammed and thrown out of use than what is incurred by the older full cylindrical pattern. The nicer and more delicate the arrangement for theoretically determining, and presumably fixing, the lines of the forces or stresses acting upon any part or parts of an architectural or engineering structure, the greater the probability of those forces and stresses following the directions rigidly delineated for them. At the same time, this fixation of moments is attended by an enormous concentration of both load and stress, which unquestionably very severely strains parts of a bridge girder or roof truss, which under different conditions of design and construction might be far less heavily taxed. Local stresses of a violent and "per saltum" character are to be avoided in the designs of all structures, and although we are long past the age of the old cast-iron girders, both of the Warren and the disproportionate flange types, yet the lesson their failures taught us are not to be lightly disregarded, because we now design better, construct better, and have a better and more reliable material at our disposal.

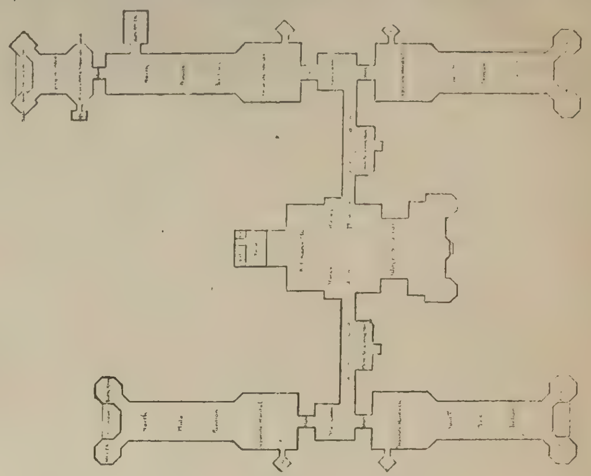
NEW INFIRMARY, SELLY OAK, FOR THE KING'S NORTON UNION.

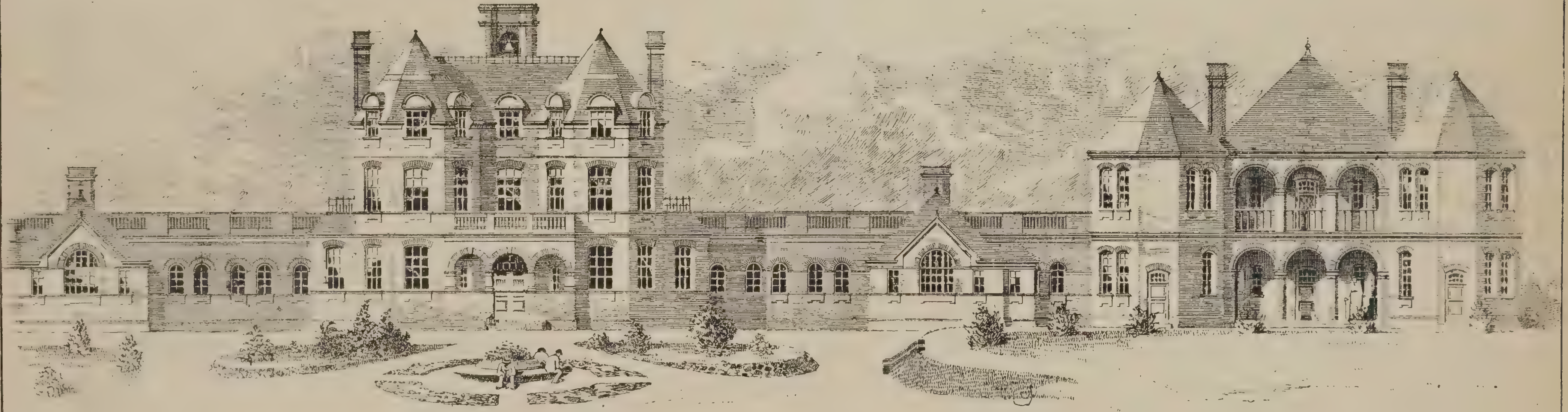
THESE new buildings are to be erected at Selly Oak, near Birmingham, on land adjoining the present workhouse, for the accommodation of 262 patients, from the designs of Mr. Daniel Arkell, architect, Birmingham, whose plans were selected in the recent competition. The style may be characterised as a free treatment of Queen Anne, and the elevations are to be built in red brick, with Codsall stone dressings. The roofs will be covered with red Broseley tiles. The building is to be in five main blocks, and built fireproof, and consists of male and female pavilions with lying-in ward running north and south, the administrative department being in the centre, thus dividing the male from the female side of the infirmary, all being connected by a wide main corridor, open verandahs at the ends of the pavilions giving a picturesque effect to the structure. On each side of the administrative department are provided receiving wards, one for males and one for females; also spacious staircases, with lifts to carry patients from ground to first floor. The floors throughout the building are of polished oak on concrete, supported by rolled-steel girders. Hydrants will be fixed in the corridors in case of fire. The guardians have accepted the tender of Mr. J. Rowbotham, builder, of Small Heath, Birmingham, at £17,987, for the erection of the new buildings. The works are to be commenced immediately.

BRITISH BUILDING STONES.—XVI.

BEFORE leaving the London clay, some reference to its chemical composition is necessary, for other important deposits, such as the Weald and Oxford clays, have the same substance as a base common to all, the variations being produced by the addition of iron, potash, soda, magnesia, and other substances. These, however, in true clays seldom make up more than one-fifth the entire mass. When clay is mixed with a large quantity of sand it is "loam," when the addition is lime it is "marl." Clay, then, generally consists of at least three-fourths hydrated aluminium silicate. This compound substance constitutes the entire bulk of a pure clay, such as kaolin, and it is represented by the formula $Al_2O_3.2SiO_2 + 2H_2O$. What does this formidable array of letters and figures mean? As these papers are written solely with the object of making the composition of building stones quite plain to the readers of the BUILDING NEWS who are not chemists, an explanation of this formula become imperative. On referring back to "British Building Stones.—IV." already published in this journal, it will be found that Al_2O_3 represents alumina, SiO_2 silica, and H_2O water. It is also stated that alumina is a compound of aluminium and oxygen, silica a compound of silicon and oxygen, and water a compound of hydrogen and oxygen. Clay is therefore composed of oxygen, aluminium, silicon, and hydrogen. All these are simple substances, or chemical "elements," which means that by no process known at present can they be broken up into other substances. Aluminium is a tin-white metal as hard as silver, and only about one-fourth its weight. It enters into combination with oxygen to form alumina, which, in chemist's shorthand, is expressed by the symbols Al_2O_3, the first set of figures in the imposing formula given above. Aluminium is never found "native," or "isolated" in nature, but always in combination with other substances; and it was only as recently as 1827 that the metal was first produced in a pure state. Its compound with oxygen, "alumina," is, however, found in the form of "corundum," of which there

NEW INFIRMARY FOR THE KINGS NORTON UNION.





FRONT ELEVATION FROM THE ROAD.

Daniel Arkell
Architect
Birmingham

are several varieties. The precious stones—ruby, sapphire, topaz, and emerald are all crystallised forms of alumina coloured by metallic oxides, and in this state alumina is second in hardness only to the diamond. Emery powder is crystallised alumina blackened by admixture with magnesite. It may be asked what conceivable connection there is between the metal aluminium now so commonly used for small picture-frames and other fancy articles, and the colourless hexagonal crystal known as corundum? Just this: that the chemist can take the corundum crystal and break it up into two substances—one the white metal referred to, and the other oxygen. This disposes of the first ingredient in clay. The next to be considered, silicon, is a very common substance, and one which makes up one third by weight of all known rocks. It is never found isolated, but always in combination with oxygen. It is then called silica, or silicon dioxide, with the formula SiO_2. When it is said that silicon makes up a third of all rocks, it is not meant that every rock contains this proportion of that substance; but that if the 25 miles thick of rocks which go to make up the earth's solid crust had all their silicon extracted, then their weight would be decreased one-third. Chemists tell us that aluminium is a metal, and they tell us what silicon is not, for they call it a non-metal. All substances in the universe—that is, elementary or simple substances—are now divided into "metals" and non-metals only. The latter are sometimes called metalloids. The term "gas" used to be applied to some of them; but as the word "gas" does not convey any idea of the properties of the substance so called, but merely states what its condition is at ordinary temperatures, the use of this name is now abandoned by chemists as being valueless, except to describe matter in that condition when its molecules are moving with great velocity amongst one another and frequently "colliding." Silicon is a non-metal, and when isolated—that is, made to stand alone—and few elementary substances can stand alone without the aid of oxygen—it is a brown amorphous powder, which burns readily in the air on being heated, and forms silica (SiO_2). The finest crystals of silica are produced in Nature's laboratory: these are known as "quartz." When ground down, broken, and rolled by running water into grains more or less fine, the result is sand, and this, when deposited in seas or lakes, and hardened by pressure or the infiltration of some cementing substance such as ferric oxide, is called "sandstone." On referring back to the Building News Quarry List No. 374, it will be seen what an important part silica or quartz plays in the building up of some stones; for it is stated there that 98 parts in every 100 by weight of Craigleith stone are pure quartz. This disposes of two of the constituent substances of clay, and the third will now be considered—viz., water (H_2O). The reader may probably say, "Everyone knows all about water; why take up time describing what is so well known?" Yet, at the risk of telling some readers what they may already know, a few facts about this very common substance will be given here. Pure water is never found in nature, and even when produced in the laboratory by distillation it is only relatively pure. Water, invariably found with other substances in solution, is at ordinary temperature a liquid, at 32° Fahr. a solid, and above 212° F. a gas known as steam. The temperatures spoken of here are those of "Fahrenheit's" scale, indicated by "Fahr."; for in many works on chemistry other scales, such as "Centigrade," indicated by "C.," and "Réaumur," indicated by "R.," are used. Centigrade has its freezing-point at 0, and so has Réaumur; both, therefore, correspond with the 32° of Fahrenheit. The boiling-point of Centigrade is 100°, that of Réaumur 80°; these correspond with the 212° of Fahrenheit's scale. It is, therefore, necessary, when temperatures are mentioned, to indicate what scale they are measured by, and authors very often, unfortunately, forget this. So far, then, water is found as a solid, a liquid, and a gas, its condition being determined by the amount of heat or energy it contains. Now, the heat of boiling water is often spoken of as something fixed and definite; but how few really know that water may be made to boil at all temperatures from 32° Fahr. upwards by reducing or increasing the pressure on its surface? As long as water is boiled in an open vessel at about the level of the sea, its temperature continues at 212° Fahr., no matter what heat is placed under it! Water placed in the receiver of an air-pump will, when the air is exhausted, boil violently at 33° Fahr., and continue boiling until the surface is frozen over. Boiling, then, is merely a rapid reduction of any liquid to a vapour, taking place at all temperature when the vapour from that liquid exerts a pressure greater than the atmosphere, or whatever external pressure the liquid may be subjected to at the time. Ordinary atmospheric pressure in these islands at the level of the sea is $14\frac{3}{4}$lb. to the square inch. To overcome this pressure, and thus make water to boil, sufficient heat must be imparted to it, and the quantity so imparted is represented by 212° in Fahrenheit's scale. The temperature of boiling water, therefore, in an open vessel depends on atmospheric pressure, and this depends on the elevation of the place above the sea-level. At Quito, in South America, which is 9,540ft. above the sea-level, atmospheric pressure is so reduced that water boils at 194° Fahr., no matter how fierce a fire is made under it. An important property of water is its sudden expansion in freezing. When the temperature of water at the freezing point (32° Fahr.) is raised, the water contracts, and continues to contract until 39·1° Fahr. are reached, or 7·1° Fahr. above freezing. This is "the temperature of maximum density," above this point, water expands until at 46° Fahr. it regains its volume at the freezing point; thence it continues to expand with a rise of temperature. A cube foot of water at 32° Fahr. weighs 62·418lb., at 39·1° Fahr. 62·425lb., and at 212° Fahr. 59·64lb. Water is the only liquid which has a point of maximum density higher than the freezing point; it increases its bulk by $\frac{1}{11}$th in freezing, and it does so with irresistible force. So far the physical properties of water have been examined; but the most important—viz., the chemical have now to be considered. If wires from the positive and negative poles, the carbon and zinc of any ordinary battery, are dropped into a vessel of water, to which a little salt has been added, bubbles of gas will pass upwards through the water from the end of each wire; if this process is continued all the water will, in course of time, be converted into gas. It is found that oxygen gas rises from the positive pole, and hydrogen from the negative pole of the battery. It is also found that the gases are disengaged in the proportion of one volume of oxygen to two volumes of hydrogen. The gases thus separated may be again made to combine to form water by passing an electric spark through them, and so water can be separated into its two constituent gases, and these again be made to combine to form water as often as may be desired. The power of water as a solvent is another important property to be considered here, as it affects most directly the composition of all rocks. Sugar and salt may be dissolved in water, and though no filter will remove these from the water, yet they are not chemically combined with it. Similarly, water will dissolve iron and other metals in course of time. A wrought-iron bolt $\frac{1}{2}$in. dia., removed from a gutter of the conservatory which stood behind the Albert Hall, Kensington, was found dissolved away by rain-water, the head and nut remaining the original size, whilst the bolt itself was reduced to a wire not more than $\frac{3}{16}$in. thick. Water holds almost every conceivable substance in solution, and unless substances exist in a state of mechanical division or suspension, they cannot be removed by any ordinary filter. This water, absolutely pure to the eye, may contain carbon, magnesia, iron, lime, sulphur, and various other substances in solution, and which can only be detected and removed by chemical analysis. Water takes up and dissolves only a fixed quantity of any substance at certain temperatures. For instance, 100 parts of water at 60° Fahr. will dissolve and hold a solution about $\frac{1}{700}$th part of lime; but if the water is raised to boiling heat, it can hold only little more than half the quantity in solution. Consequently, when water holding lime in solution, such as clear sparkling water pumped from wells in the chalk, is supplied to kitchen-range boilers, the latter, with the pipe leading from them, will become furred up or choked with a deposit of calcium carbonate. The exact quantity of lime held in solution by water at 60° Fahr. is ·1368 parts in 100, and by water at 212° Fahr. ·0752 parts. Water at 32° Fahr. dissolves 1·7967 volumes of carbon dioxide, and at 60° 1·0020 volumes. Many substances which are practically insoluble in pure water dissolve in water with an excess of carbon dioxide (carbonic acid). The calcium, magnesium, and ferric carbonates are attacked and dissolved in this way. Pure ammonia, a colourless compound of hydrogen and nitrogen (NH_3) is very soluble in water, and in this state is sold as liquor ammoniæ, generally of ·880 specific gravity. It contains 27·3 grains of ammonia in a hundred of the liquid, boils at 62 Fahr., and contains 382 volumes of the gas in one volume of the solution. The liquor ammoniæ is used for fumigating oak. There is no law regulating the solubility of any substance in water, and as this cannot be calculated beforehand, it must be ascertained empirically in every case. Water was found to be a compound of oxygen and hydrogen. What are these substances? Taking oxygen first, it is the most widely diffused element in the world, one-half the entire solid crust of the earth being oxygen. Water contains 90 per cent. by weight, and the atmosphere 20 per cent. of it. In water the oxygen is in combination with the hydrogen; in the atmosphere it is not in combination with its nitrogen—it is mixed only. As a gas, oxygen is colourless, tasteless, and inodorous. It is that substance in the air which supports combustion, the chief value of the other constituent being to dilute it. In pure oxygen, substances burn with greater brilliancy, and more rapidly than in the air; iron wire, watch-spring, and even nails all burn with great rapidity and brilliancy in it. Oxygen combines with all the other elements except one—fluorine—to form substances called "oxides." Ozone is oxygen in an altered and allotropic condition—a change brought about by passing silent electric discharges through the dry gas. It is thought that this has the effect of condensing the gas, as three volumes of it are converted into two volumes of ozone. This latter is remarkable for its peculiar smell—hence the name. The remaining element to be considered—viz., hydrogen, also a gas at ordinary temperatures—is the lightest substance known. It is, like oxygen, colourless, tasteless, and inodorous. Unlike oxygen, it is inflammable, and when burnt in the air it combines with the oxygen to form water. Though hydrogen is inflammable, it does not support combustion, and if men could breathe in a gas-holder filled with this gas, they could safely use naked lights in it, as the gas could not burn without oxygen. This at first sight seems strange; but a little consideration will show that this is so, for if hydrogen gas burned of itself without oxygen, when a lighted taper is applied to a gas-burner the flame would travel along the pipes to the holder. If by any means air got into the gas-holder, and this mixture of air and gas was supplied to a gas-burner, then the instant a light was applied the flame would flash along the pipes to the holder, and cause an explosion which would shatter it to pieces. Coal-gas is not pure hydrogen; the flame of this would be quite invisible. About one-half coal-gas is hydrogen, and the remaining half marsh-gas, with carbon monoxide and olefines. Returning to the formula representing kaolin or pure clay, it is seen that four *elementary* substances enter into its composition. Chemists know of about 64 such substances, and these, singly and in combination, go to make up every substance in the known universe. These 64 substances are called "elements," for they cannot be broken up into any other substances. Many of them are only chemical curiosities. Eleven of them go to make up 99 parts in every 100 of all known rocks. These "elements" are here set down with their "symbols" and "atomic weights." (1) Oxygen, O = 16; (2) Silicon, Si = 28; (3) Aluminium, Al = 10; (4) Calcium, Ca = 40; (5) Magnesium, Mg = 24; (6) Sodium, Na = 23; (7) Potassium, K = 39; (8) Carbon, C = 12; (9) Iron, Fe = 56; (10) Sulphur, S = 32; and (11) Chlorine, Cl = 35·5 nearly. The first three elements already described—viz., oxygen, silicon, and aluminium—make up 85 parts in 100 of all the rocks; none of the remaining eight make up as much as 5 parts. Of the others, Nos. 4, 5, 6, 7, and 9 are metals solid at ordinary temperatures, and Nos. 8, 10, and 11 are non-metals solid at ordinary temperatures, except the last, chlorine, which is a gas under similar conditions. Oxygen (No. 1) combines in turn directly with all the others, except chlorine, and this combines with all to form "chlorides." Calcium (4) is a yellow metal, harder than lead, ductile, malleable, tarnishing in moist air (that is, it rusts or oxidises), decomposes water, and, when heated, burns with a white light, combining with oxygen to form lime, which is called, in scientific language, calcium monoxide, and has the formula CaO. It is understood in every case that the atomic weight is signified by the symbols of the elements. so that if "CaO" is written in full it would show the relative weights of lime and oxygen in the compound, thus: $Ca = 40$, $O = 16$, or $CaO = 56$. What is this 56? It may be cwts., lbs., ozs., or any other weight, the whole expression meaning that in 56 parts by weight of lime there are 40 parts of the metal calcium, and 16 parts of oxygen gas. If the 56 is taken to represent cwts., then they will contain 40 cwts. calcium, and 16 cwts. oxygen, and so on, the percentage of calcium being always 71·43. Calcium is a most important chemical element to the builder, as it furnishes, in combination with carbon and oxygen, the whole material of many important building stones, and without it the manufacture of lime and cement would be altogether impossible. When water is thrown on lime the latter absorbs the water, and a dry powder called "slaked lime" is obtained. This is known scientifically as Calcium hydroxide (CaH_2O_2). If slaked lime is raised to a red heat the water is expelled, and "quick-lime" (CaO) remains. Quick-lime can, therefore, be slaked and unslaked at pleasure. (5) Magnesium is a hard, brilliant white ductile metal, which burns in air, giving out an intense bluish-white light of great actinic power, and therefore valuable as an artificial light in the photography of crypts, or other dark places in buildings. In burning, this metal combines with oxygen to form magnesia (MgO). Referring to the atomic weights given above, it will be seen that in 40 parts by weight of magnesia, there are 24 parts of magnesia and 16 parts of oxygen. Like lime, magnesia slakes with water, forming magnesia hydroxide (Mg,H_2O_2), this occurs in nature as the mineral "brucite." (6) Sodium is a soft, silver-white metal, easily cut with a knife; thrown in cold water it floats, disengaging hydrogen from the water; but in the decomposition of the latter, heat enough is not generated so ignite the hydrogen. If, however, the sodium is thrown into hot water, the hydrogen evolved burns with a yellow sodium flame. Combustion also takes place if the metal is thrown on a paste of thick starch. When the metal is burned in air it unites with oxygen, forming a mixture of sodium monoxide (Na_2O), soda and sodium peroxide (Na_2O_2) caustic soda. Soda is really sodium hydroxide ($NaHO$), Common salt is sodium chloride ($NaCl$). In every 58½lb. of salt there are 23lb. of sodium and 35lb. of chlorine. This substance forms beds of rocksalt in the new red sandstone rocks of Cheshire and Worcestershire. (7) Potassium is a silver-white lustrous metal which floats on water, and is lighter than any other metal, except lithium. This latter floats on petroleum, and is the lightest solid substance known. Potassium at ordinary temperatures is soft enough to be cut with a knife. Thin sheets of the metal exposed to the atmosphere, burn with a violet-coloured flame, and when thrown on water it decomposes the latter with evolution of hydrogen, which burns with the characteristic potassium flame.

Potassium combines with oxygen to form two oxides: the monoxide (K_2O), and the peroxide (K_2O_4), both are found mixed when the metal is burned in dry air. This mixture, if strongly heated, parts with some of the oxygen, and it is converted into the monoxide commonly called potash. Potassium hydroxide, potassium hydrate, or caustic potash, all names for the same substance, is a hard white and brittle mass, melting to an oily liquid. Its aqueous solution rapidly destroys animal and vegetable substances. One part of water dissolves over two parts of caustic potash with evolution of heat; it decomposes fixed oils, converting them into soap. Hence, it is largely used in the manufacture of preparations known as "paint removers." (8) Carbon is found in a free state in nature that is uncombined with any other substance, in two forms, "diamond" and "graphite." Diamond is the hardest substance known; it has never been melted, but it burns readily in air or oxygen until it is entirely consumed, leaving no solid residue—the entire substance is converted into carbon dioxide (carbonic acid). It is scarcely worth while to purchase a large diamond to try this experiment, so the reader had better take the statement for granted. The diamond cannot be made artificially, and how nature made it is not known; but it is tolerably certain the diamond was not produced at a high temperature. Graphite is a greyish-black substance with a metallic lustre, and is found in nodules or lumps in granites and other igneous rocks. That found in the Borrowdale green slate of Cumberland was once extensively used for making "lead" pencils. This deposit is now worked out. A coarser graphite is used as the ordinary black "lead" for cleaning stoves and other ironwork. There is no "lead," however, in the pencils, or the latter. Graphite from 20 to 30ft. thick is found in extensive beds at Lonora, in California; it is also found in Styria, Bohemia, and other places. Lampblack, gas-carbon, coke, and charcoal are all varieties of carbon more or less impure, and containing hydrocarbon. Carbon burnt in oxygen forms carbon dioxide (CO_2); this is a colourless gas, having a slightly pungent smell and acid taste; it does not support combustion, it extinguishes flame, and animals plunged in it are suffocated (not poisoned). This gas, also called "carbonic acid," is heavier than air, it is fourteen times heavier than oxygen, and may be poured from one vessel into another like water.

A candle-end lighted and fixed on the bottom of a jam-pot will be extinguished if carbonic acid is poured on it. Hence, before men are sent down into wells or other places containing stagnant air a lighted candle should first be tried there, and if it is extinguished, as it will be if there is 4 per cent. of carbon in the air, then it is unsafe to venture there, for if the atmosphere will not support flame, it will not support life. Carbonic acid is found in the atmosphere, and it is produced in large quantities of decaying animal and vegetable substances. It combines with other elements to form "carbonates," one of the most important to the builder being calcium carbonate, which is found crystallised as calcite, or arragonite, and these exist, as has been already stated, in large quantities in all limestones. (9) Iron is so well known as to need scarcely any description. It is seldom found in nature in the metallic state. It occurs, however, in numerous ores in great abundance, which are combinations of iron with oxygen and sulphur. The purest form of commercial iron in ordinary use is piano wire. This contains only a very small percentage of carbon. Cast iron contains carbon, silica, and manganese in varying proportions. It is converted into wrought iron by the removal of these impurities. Wrought iron, with about 1 per cent. of carbon in combination, is called steel. This latter, therefore, holds an intermediate place between cast and wrought iron. Iron combines with oxygen to form ferrous oxide (FeO) and ferric oxide (Fe_2O_3); these, again, combine to form the magnetic oxide, a ferroso-ferric oxide (Fe_3O_4), which is found in nature as "magnetite," a well-known mineral which attracts iron. Ferric oxide is found in nature as red hæmatite. Ferric hydroxide, $Fe_2(OH)_6$, is the well-known iron "rust." It forms the colouring matter of sandstones, tinging them from yellow to deep red. There is another compound of iron with oxygen—viz., ferric acid (H_2FeO_4)—but this is never found in a free state. (10) Sulphur is found in the neighbourhood of volcanoes in the free state in rhombic crystals, with no less than thirty crystallographic modifications. In combination with calcium and oxygen, it is found in glittering crystals in the London clay, and is called "selenite." It occurs in gypsum, and consequently in plaster of Paris, which is made from that rock. It also occurs in baryta (heavy spar, barium sulphate), an important adulterant of white lead. Sulphur combines with oxygen to form sulphur dioxide (SO_2) and sulphur trioxide (SO_3); the former brought in contact with water yields sulphurous acid (H_2SO_3), and the latter sulphuric acid (H_2SO_4). There are other compounds of sulphur with oxygen, but these are of interest only to the chemist. (11) The last important elementary constituent of the rocks on our list is chlorine. This does not occur in a free state, but it is found in large quantities combined with soda to form salt ($NaCl$). Chlorine, when set free, is a greenish-yellow gas, with a disagreeable and suffocating smell; if inhaled when pure, it causes death. It is two and a half times heavier than the atmosphere, and dissolves in half its volume of water. In combination with sodium, potassium, and magnesium, it forms the chief solid components of sea-water. Chlorine is not inflammable, and does not directly combine with oxygen; it readily unites with hydrogen to form a substance represented by the formula HCl, and which has the following names: Hydrogen chloride, Chlor-hydric acid, Hydrochloric acid, Muriatic acid, and Spirits of salts.

COMPETITIONS.

Pateley Bridge.—From several competitive schemes for the sewering of this district, that of Mr. A. E. Preston, of Bradford, has been selected. By its adoption, the sewage of Pateley Bridge and Bewerley will be conveyed by pipes down the valley for a distance of about a mile and a half, where after passing through filter arrangements, it will be disposed of by irrigation. The probable cost of the scheme is £6,000. Application has been made to the Local Government Board for borrowing powers to that amount, and an inquiry is to be held on Tuesday next.

Truro.—The four competitive schemes submitted under mottoes for draining the city and doing away with the contamination of the river Fal are now under consideration by Mr. Baldwin Latham, C.E., who has been instructed by the city council to advise them as to the award of the two premiums offered. At present the drainage and sewage matter from the water closets empty themselves in the navigable river. The following is an estimate of the probable costs, &c., as given by the authors:—

	No. 1, "A1."	No. 2, "Cornubia."	No. 3, "Fide et Spe."	No. 4, "Sanitas."
Estimated cost	£9,000	£13,000	£12,965	£12,915
Precipitation tanks—gallons	150,000	149,000	370,000	675,000
Storage reservoir—gallons	500,000	2,200,000	—	—
Annual working expenses............	£312	£415	£250	£439
Repayment of loan	£487	£706	£705	£702
Total cost per annum to pay off, principal with interest	£799	£1,121	£955	£1,142
Rate necessary......	7d. in £.	9¾d. in £.	8¼d. in £.	10d. in £.

The outfall for No. 1 will be opposite Trethellan Quay; for No. 2, near Mill House; for No. 3, Newham Railway Station Bridge; for No. 4, Lower Newham.

CHIPS.

A steam laundry which has been added to the Staffordshire industrial home for women was opened by the Bishop of Shrewsbury. It has been carried out from designs by Mr. W. O. Rooper, of Stafford.

Paisley town council have by a majority approved of extending the corporation baths given to the town about a year ago. The master of works has been instructed to prepare plans showing a new swimming-pond 75ft. by 40ft., twelve additional hot baths, and other accommodation.

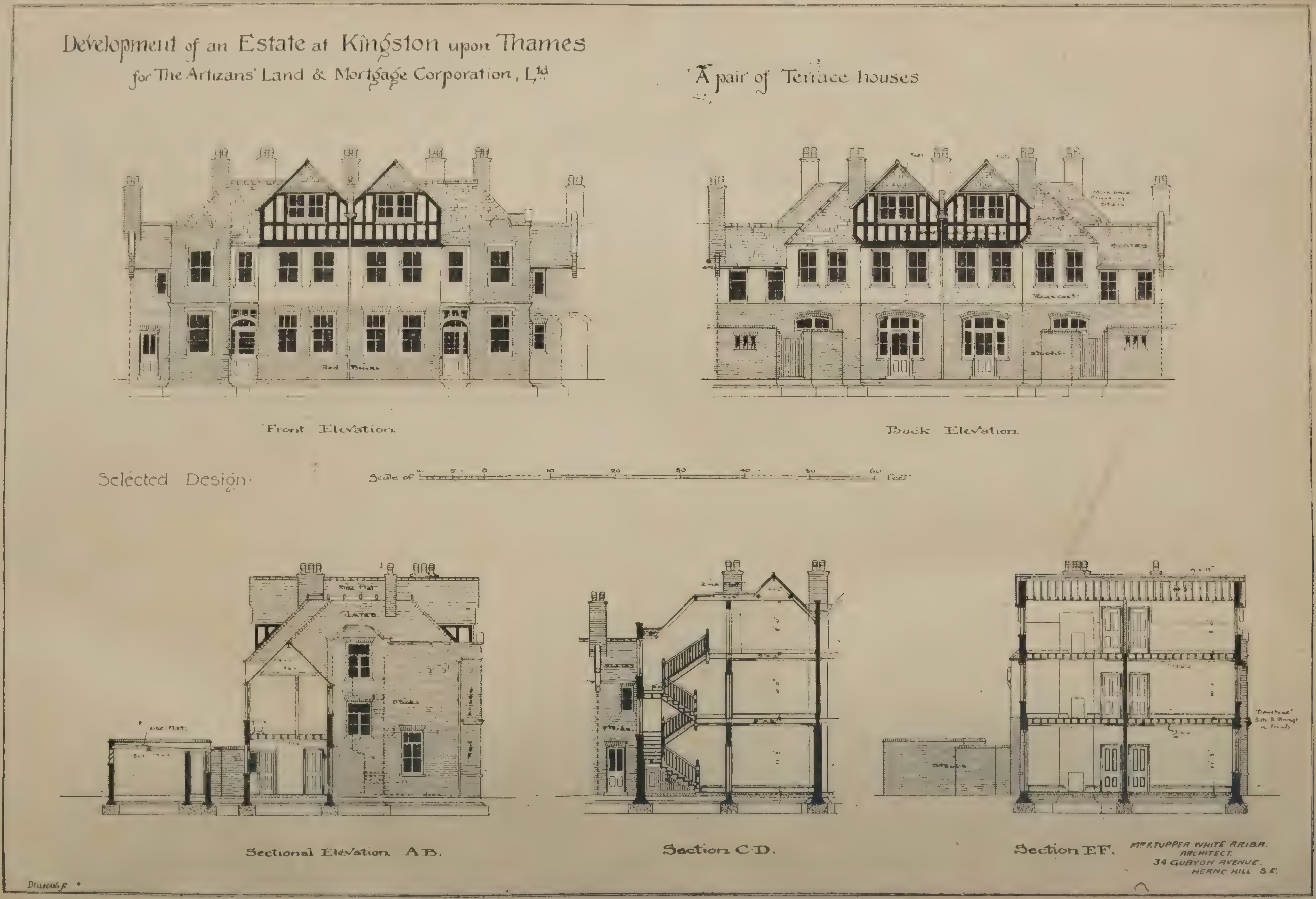
The board schools, Silloth, Cumberland, are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Mr. George Webster, sculptor, Queensferry-street, Edinburgh, has just completed in marble a memorial of the Rev. John Donaldson, M.A., which is to be placed in the church of Kirkconnel, of which he was long minister. The memorial takes the form of a mural tablet, having in the centre a portrait of Mr. Donaldson in high relief. The medallion is inclosed in a panelled frame carved on the marble.

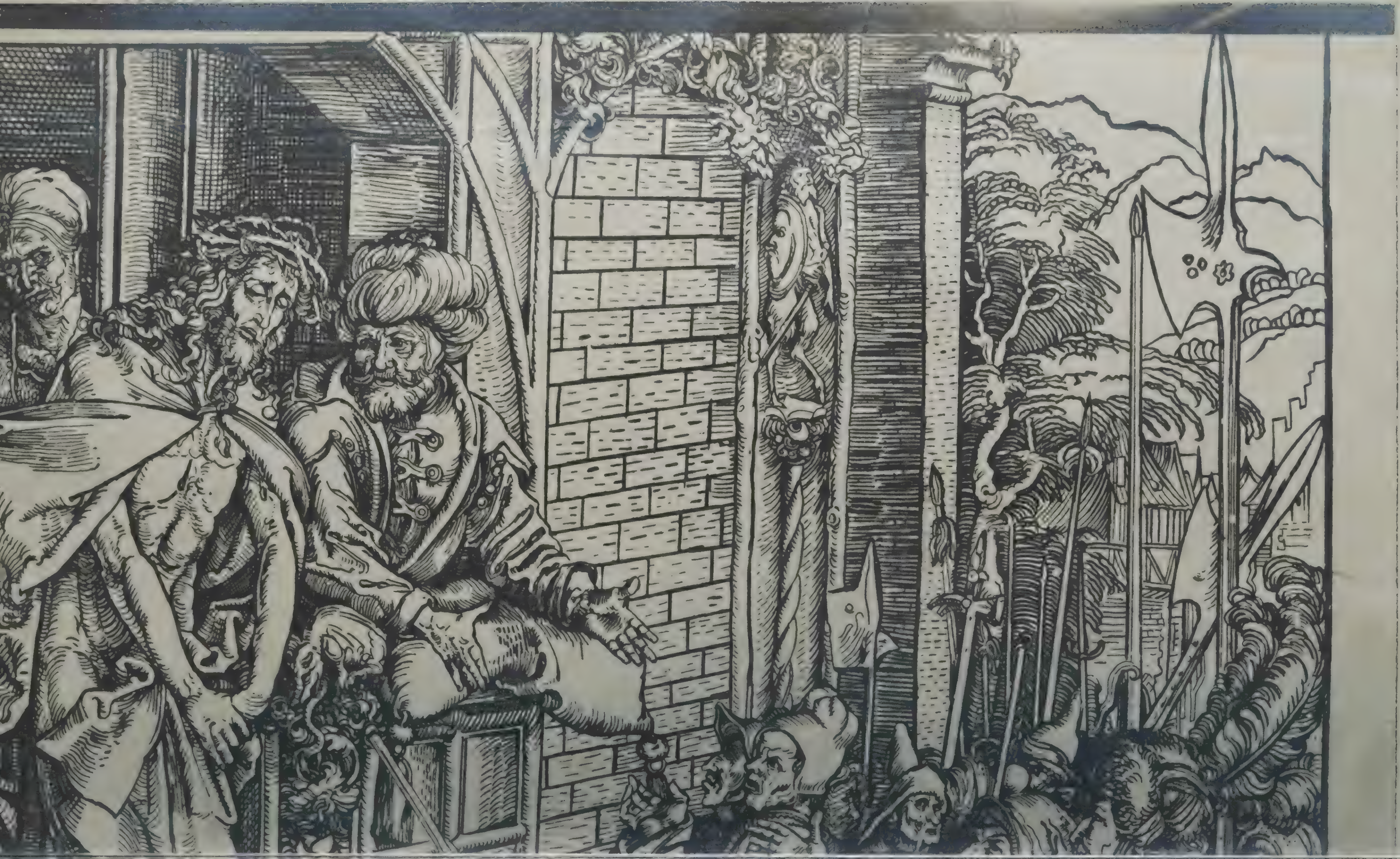
Messrs. Comyn Ching and Co., Castle-street, Long-acre, have been successful in obtaining the contracts for providing and fitting up the elaborate steam and gas cooking apparatus for the kitchens in the new Post Office Buildings in St. Martin's-le-Grand, on the same principle as already supplied by them at the G.P.O. at Birmingham, Newcastle-on-Tyne, and the new Parcel Post Depot, Mount Pleasant, &c.

The district church of Holy Trinity, Ipswich, a meagrely proportioned building erected half a century since, is about to be restored at a cost of £2,000, towards which over £800 has been promised. The works will comprise the addition of a chancel, organ chamber, and vestry, the replacement of the high-backed pews with pitch-pine benches, the rearrangement of the aisles, the conversion of the base of the tower, now a vestibule, into a baptistery, the enlargement of the east window, removal and repair of the organ, and the provision of a new pulpit and reading-desk.

One of the largest of the chimney stacks belonging to the Burntisland Oil Company was thrown down on Friday afternoon. The stack was 160ft. high, and the top portion had become dangerous. The method of demolition proposed to be adopted was to wedge up where the bricks were displaced at the base, and saturate the wedges with paraffin oil, and ignite them. Just as the workers had finished operations, and were approaching to set fire to the saturated wedges, the structure was observed to sway, and it went toppling down on to the refuse heap behind the works.


Development of an Estate at Kingston upon Thames
for The Artizans' Land & Mortgage Corporation, Ltd
'A pair of Terrace houses
Red Bricks
Front Elevation
Slates
Slates
Rough cast
Stocks
Back Elevation
Selected Design.
Scale of 10 5 0 10 20 30 40 50 60 feet
Zinc Flat
Tile Flat
Slates
Stocks
Zinc Flat
Zinc Flat
Stocks
Sectional Elevation AB.
Section C.D.
Section E.F.
Mr F. TUPPER WHITE A.R.I.B.A.
ARCHITECT.
34 GUBYON AVENUE.
HERNE HILL S.E.
Dellagana F.

"Old Masters" on the continent
St Mauritius (St. Erasmus



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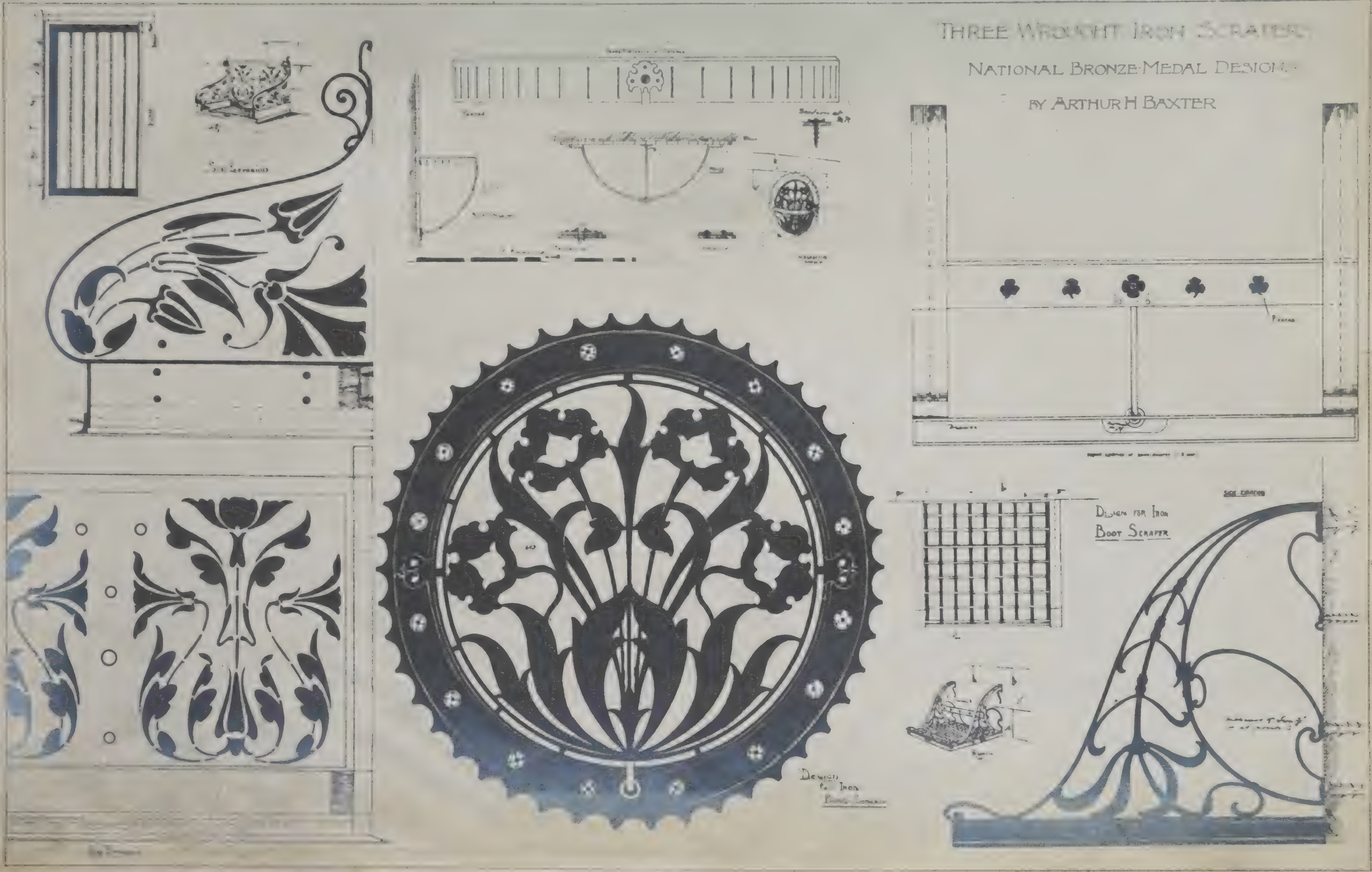
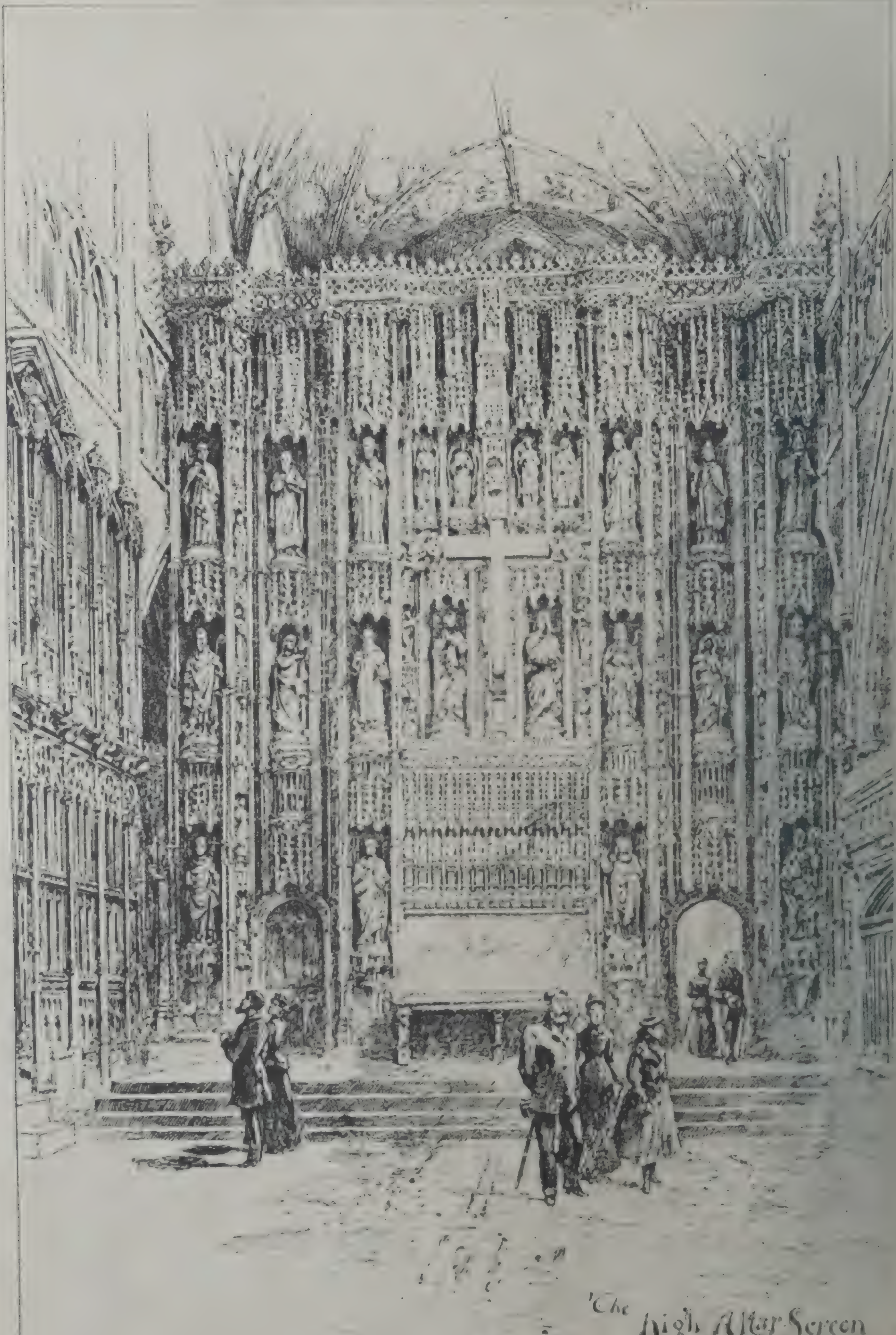
THREE WROUGHT IRON SCRAPERS

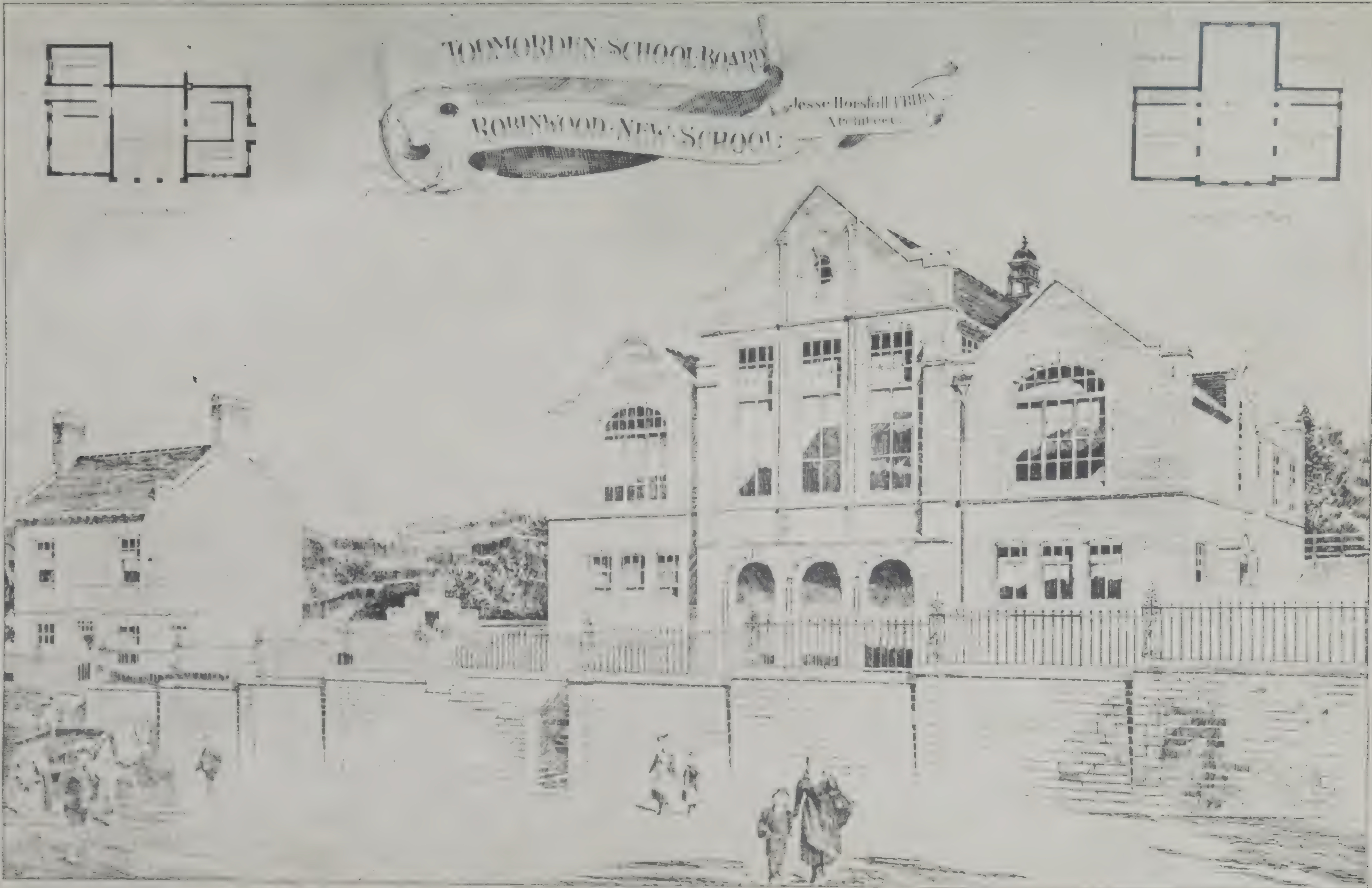
NATIONAL BRONZE MEDAL DESIGN.

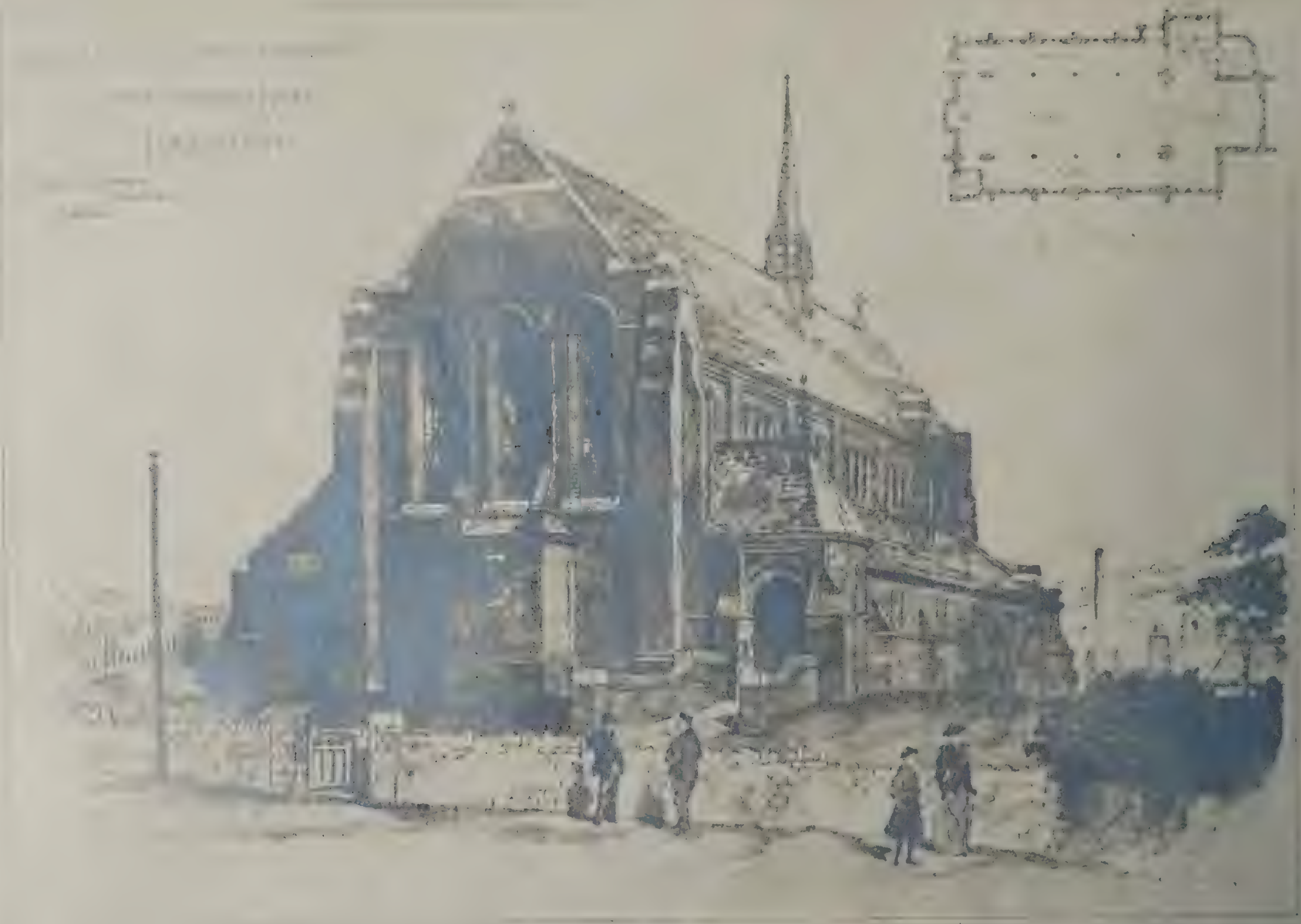
BY ARTHUR H BAXTER

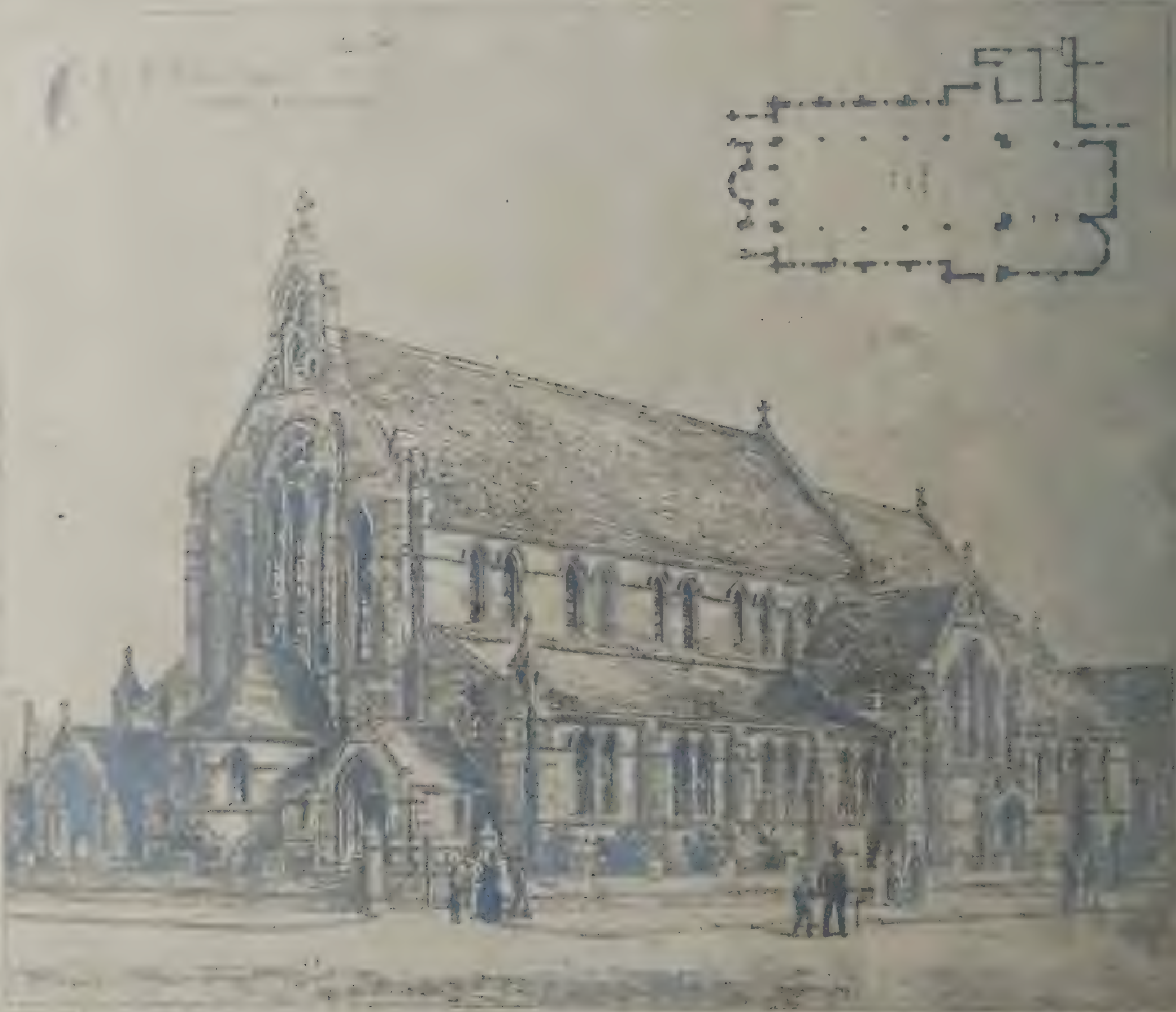




The High Altar Screen
of St Albans Abbey


TODMORDEN · SCHOOL BOARD
ROBINWOOD · NEW · SCHOOL
by Jesse Horsfall F.R.I.B.A.
Architect.





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"ST. MAURITIUS AND ST. ERASMUS."—EXTENSION OF THE MEDICAL SCHOOLS, OWENS COLLEGE, MANCHESTER.—THREE WROUGHT-IRON SCRAPERS.—ST. PETER'S CHURCH, SOUTH TOTTENHAM.—HIGH ALTAR SCREEN, ST. ALBAN'S ABBEY.—ST. JOHN'S CHURCH, ILKESTON.—NEW BOARD SCHOOL, TODMORDEN.—NEW INFIRMARY, SELLY OAK.—NEW HOUSES AT KINGSTON-ON-THAMES.

Our Illustrations.

"OLD MASTERS" ON THE CONTINENT.—XIII.

We illustrate to-day, as the thirteenth of this series of reproductions of notable paintings in Continental galleries, a religious figure-subject by a little-known German artist, Matthaüs Grünewald. The subject is "St. Mauritius and St. Erasmus," with attendant priest and soldiers, and the painting, which is over life size, now hangs in the Old Pinakothek at Munich. Further particulars are given in Mr. C. L. Eastlake's article on p. 884 *ante*.

OWENS COLLEGE, MANCHESTER: EXTENSION OF THE MEDICAL SCHOOLS.

These additions to the medical school occupy a parallelogram bounded on three sides by Coupland-street, Lloyd-street, and Walter-street, and thus represent the furthest possible extension of the college buildings in a north-westerly direction. From motives of economy the outward appearance of the additions has been kept severely plain, the only features which challenge attention being the tower over the entrance and the tall chimney-shaft. While the front buildings of the college are faced entirely with stone, the new addition, like the rest of the medical school, is of white brick, with stone dressings from the Burntwood Quarry. Although harmonising generally with the adjoining buildings, the additions have necessarily assumed a rather distinct character in appearance, owing to the large amount of window light which was a prime consideration in their construction. Almost everything has been set aside to attain this result, and it will be found that the elevations present quite an unusual proportion of window to wall surface. It has been sought by the character of the tower and entrance, and by the special treatment of the gables and parapet, to withdraw attention from what, though necessary to the functions of the building, might have appeared an architectural blemish. The architects of the new extension are Messrs. Alfred Waterhouse, R.A., and Son. We illustrated the college itself, with view, plans, elevations, and details, June 12th, 1874, from the working drawings of the original architect of the work, Mr. Alfred Waterhouse.

THREE WROUGHT-IRON SCRAPERS: NATIONAL BRONZE MEDAL DESIGNS.

These prize designs, by Mr. Arthur H. Baxter, of Leicester, were shown at the recent exhibition held at South Kensington Museum among the medal work of the year. As details for execution in wrought iron, they are possessed of some degree of freshness, and, being somewhat novel in treatment, are suggestive. The circular scraper, shown in the centre of our plate, is of perforated ironwork, and is intended to be attached to the wall by the rivets round the border, the scraper itself being semicircular and supported by a curved rod. The back of the scraper on the left side of the sheet is of perforated ironwork, attached to the wall by bolts in the centre and at the ends; the sides are also perforated, the curved inclosing frame being solid. Below the ornament a brush is carried round on three sides, beneath which is the scraper and tray, the latter being removable for purposes of cleaning. The scraper on the right hand of the drawing is made of wrought iron throughout with the exception of the bar, which is perforated, and has a removable tray, as in the previous design. Plans, views, and details are given with each design.

ST. PETER'S CHURCH, SOUTH TOTTENHAM.

This church is shortly to be erected on a corner site near Broad-lane and Cunningham-road, in a very populous neighbourhood of about 8,000, and in which there is only at present a mission-room for 250. The materials will be red brick and red Dumfries stone, green slates for roofs outside, and pitch-pine timbers panelled and moulded inside. There will be seating accommodation for 800, including the morning chapel, which will be seated with chairs for 74. A special feature has been made of the baptistery, and there will be spacious entrance porches, vestries, organ-chamber, &c. The nave is to be 29ft. wide, and will rise to a height of 49ft. in centre of roof panelling, above which a ventilating trunk will be formed between same and apex of roof. The estimated cost is £7,500. The architect is Mr. J. S. Alder, of Palmerston-buildings, Old Broad-street, E.C.

THE HIGH ALTAR SCREEN, ST. ALBAN'S ABBEY.

This drawing of the great screen behind the high altar of St. Alban's Abbey Church was exhibited at the Black and White Exhibition held in the St. James's Gallery, King-street, W., by Mr. F. G. Kitton, and a reproduction of the picture figures in Mr. Ashdown's "St. Alban's, Historical and Picturesque," a work to which we have previously referred. The statues, erected at the cost of Mr. H. Hucks Gibbs, under the direction of Sir Arthur Blomfield, A.R.A., were executed by Mr. H. Hems, and will be found illustrated in the Building News for Nov. 19th, 1886, and some others appeared in our issue of June 28th, 1889. Lord Grimthorpe's autograph design for the treatment of the crucifix in this screen was published by us on Nov. 22nd, 1889. The present drawing will enable the reader to see how the statuary takes its place in the composition, and it shows the vacant rood—which narrow-minded bigotry has so far succeeded in preventing the benevolent from furnishing with the figure of the Crucified Saviour of Mankind. The apostles and prophets and angels occupy the niches assigned to them, but the central object of the entire scheme and *raison d'être* of the whole thing remains absent in this senseless fashion to satisfy individual bias.

ST. JOHN'S CHURCH, ILKESTON.

This church is intended to meet the wants of a rapidly-increasing district at the southern end of the borough, and the first portion, comprising nave, south aisle, and porch, has recently been erected. The building stands on a prominent site overlooking the Erewash Valley, the land being the gift of the Duke of Rutland. Owing to the very limited amount at the disposal of the building committee, the design has been kept as plain as possible. The walls are of red Heather bricks, and the roof of green Carnarvon slates; the window-sills, and caps, and bases of columns are of Matlock stone; the octagonal columns are of purpose-made bricks, supplied by the Hathern Station Brick Co.; the moulded arches, strings, &c., were supplied by Mr. A. Wain, Heather, Ashby-de-la-Zouch. The contractor was Mr. W. V. Ireson, the joiners' work being done by Messrs. Hazlewood and Marson, and the plumbing, &c., by Mr. G. Andrew, all of Ilkeston; the wrought ironwork was made by Mr. E. Haslam, of Derby. The building was designed by Mr. P. H. Currey, architect, of Derby.

NEW BOARD SCHOOL, TODMORDEN.

This school, lately erected at Robinwood, about one mile and a half from Todmorden, for the Todmorden U.D. School Board, took the place of an old factory school formerly belonging to and managed by Messrs. Fielden Bros., but which had become much too small for the increased requirements of the district. The cost of the school buildings, including levelling of site, retaining and boundary walls, and caretaker's house, was about £3,000. The works were carried out by local contractors, from designs and under the supervision of Mr. Jesse Horsfall, F.R.I.B.A., architect, of Todmorden.

NEW HOUSES AT KINGSTON-UPON-THAMES.

The plans and designs of these houses, now being erected on the Kingston Estate for the Artisans' Land and Mortgage Corporation, Limited, are based upon those submitted and premiated in the recent competition. The estate, which adjoins Surbiton, is pleasantly situated, with a good approach from Surbiton Station, and to erect "good-class villas for good-class tenants at the most moderate rentals possible" is the architect's idea for its proper development. The present contract includes the erection of 20 villas from the drawings published to-day, each house containing three reception and six bedrooms, &c. (two corner houses having each seven bedrooms). They are to be substantially built, and faced as follows: on ground story, local red bricks in fronts, and whole of morning-room turrets with selected yellow stocks and red quoins and arches in backs; on first-floor story, rough cast both fronts and backs, returns to fronts, between each pair of villas in selected yellow stocks and red quoins and arches; on attic story, half-timbered and tile-hung gables, the stone dressings to porches, sills, strings, copings, and chimney-caps to be all of Bow stone (manufactured) of a very light buff colour. The roofs will be covered with Portmadoc slates, and red tile hips and ridges. Special regard has been paid to the appearance of these villas from back gardens, such appearance being deemed by the architect of little less importance than the street fronts, and inclosed kitchen yards are provided in all cases. The gardens will extend for about 80ft. from backs of houses, and in nearly all cases of the full width of the frontage of 34ft. 9in. The contractor is Mr. C. E. Skinner, of Chatham; Mr. N. J. Hill is the clerk of works, and Mr. F. Tupper White, of Herne Hill, is the architect.

CHIPS.

The parish church of Crantock, two miles from Newquay, is to be restored, from plans by Mr. Edmund Sedding, of Plymouth.

The Russian Government have decided to construct a new branch railway in the Caucasus from Tiflis to Kahetich, at a cost of two millions, which will be borne by the Treasury.

At a cost of about £700, the peal of bells in St. Bartholomew's Church, Crewkerne, has been re-hung and re-tuned, some re-cast, and two new ones added, the peal now consisting of an octave. The dedication ceremony took place on Wednesday in last week.

The Proudfoot Institute, situated in Mansfield Place, Moffat, N.B., was opened last week. The Institute consists of, on the ground floor, refreshment, smoking, and billiard rooms, with a recreation hall behind. Upstairs are the reading hall, library, committee and games rooms. There are also bathrooms and keeper's apartments. The building is in the Renaissance style, Mr. Crombie, Dumfries, being the architect. During the inaugural proceedings, a bronze bust of the late Mr. William Proudfoot, the work of Mr. J. M'Lellan Arnott, Dumfries, was unveiled.

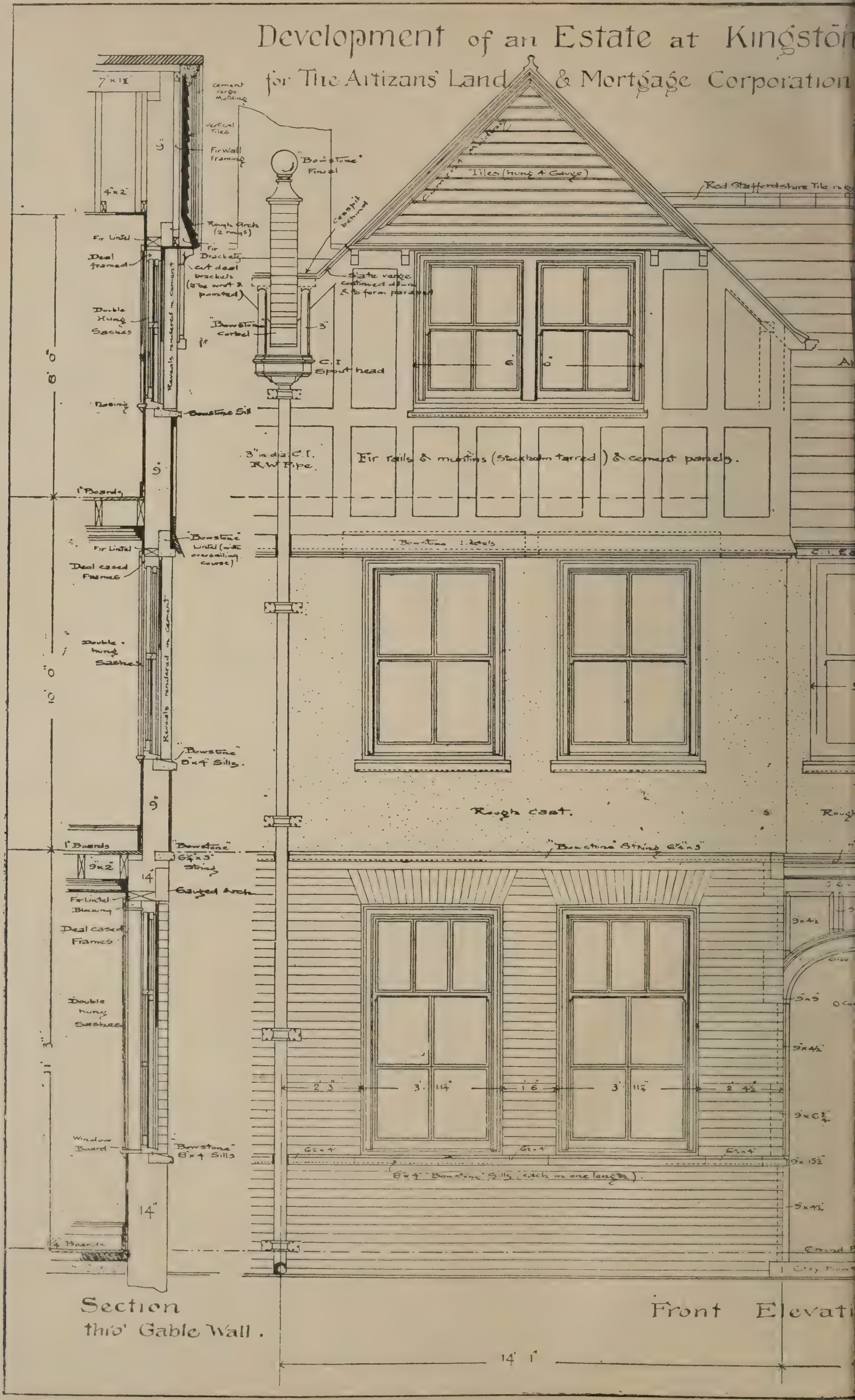
An inquiry was held at the Town Hall, Leeds, on the 19th inst., before Mr. Thomas Codrington, an inspector from the Local Government Board, with respect to an application from the Leeds Corporation for sanction to borrow £100,000 for sewerage purposes in addition to £110,000 already sanctioned. Mr. Thomas Harrison, the city engineer, explained the proposal.

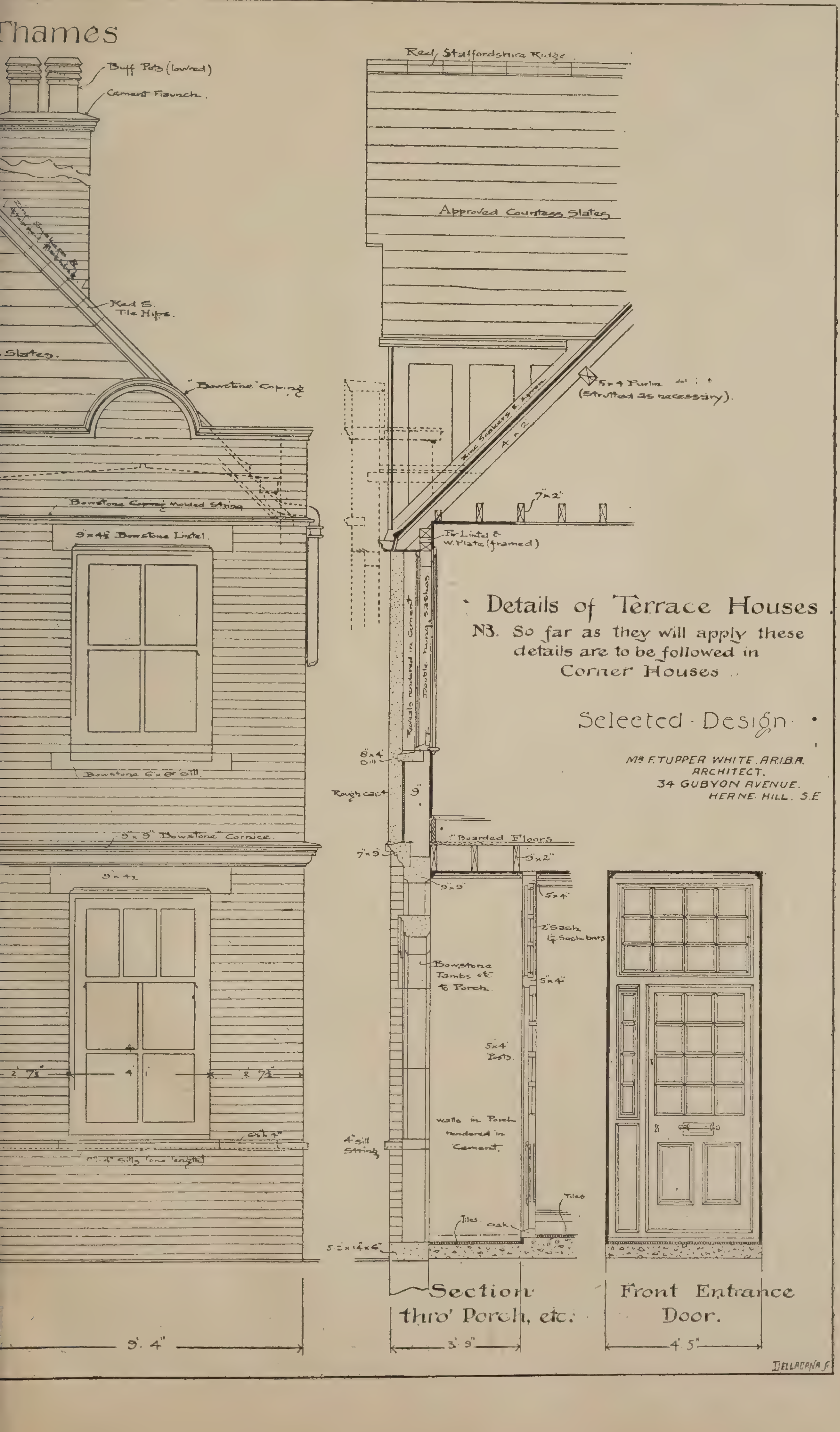
During the course of the operations connected with the reconstruction of the Edinburgh Hotel, Princes-street, Edinburgh, which is being converted into business premises, a stone forming a landing at the top of a flight of steps was tilted over on Wednesday week. One man, Alexander Flett, lost his life, and John Gallagher, a labourer, both in the employment of Messrs. D. Greig and Son, builders, the contractors for the work, sustained a compound fracture of the skull.

A new Congregational chapel is being built in Watkin-street, Grimsby. Mr. J. J. Cresswell, A.R.I.B.A., of Grimsby, is the architect; Messrs. Green Bros., of Grimsby, are doing the stonework; and Messrs. J. M. Thompson and Sons, of Grimsby and Louth, are the builders. The building, of brick with slate roof, is to be 53ft. long, 27ft. 6in. wide, and 23ft. high.

Development of an Estate at Kingston

for The Artizans' Land & Mortgage Corporation





Details of Terrace Houses.

NB. So far as they will apply these details are to be followed in Corner Houses.

Selected Design.

MR F. TUPPER WHITE. ARIBA.
ARCHITECT.
34 GUBYON AVENUE.
HERNE HILL. S.E

WAYSIDE NOTES.

Some of us stand on our dignity! I have a letter before me in which a Midland architect, writing to an assistant who had solicited work, and in ignorance of the great man's initials, had addressed him as "Mr.," adds: "Will you excuse me if I point out to you that it is usual to address architects as 'Esq.' as a matter of courtesy?" Well, it is, of course; but it is perhaps higher courtesy to ignore the non-use of a designation to which, after all, few of us are entitled. I am myself much in favour of the American plan of addressing a man simply as "John Jones" or "Tom Robinson." It has its advantage in these days, when every maid of all work is "Miss," and the shop-boy gets letters from her with the much-coveted affix the omission of which has vexed the soul of the writer of the letter before me.

The Works Department of the L.C.C. appears to be getting into disrepute, and many of the predictions made at its inception by those who understood what advantages workmen would take of a public works department appear to be coming true. Sir John Lubbock, whose voice has been raised against this department from the first, last week condemned it as undertaking an impossible task. We commented upon the proposal of the Council being its own contractors just two years ago, and remarked that we should look forward with interest to the results, hoping, in spite of the many defects of the scheme, that it would be a success. On the agenda paper of the Council for many weeks past have been reports from various committees asking for the confirmation of the grant of moneys, already spent upon jobs done by the works department, over and above the estimate of that department, and the value of the work as measured by the architect. The money was spent, so there was nothing for the Council to do but to sanction in each case an expenditure already disbursed. Now the complaint arises in the County Hall that the workmen themselves are notoriously lazy; for, said one member, it was a constant complaint throughout London as to the enormous waste of time by the workmen employed by the works committee. "If the workmen," said another member, "wished the scheme to be a success, they should give the full value of their labour." Again, a remark from another member is worthy of note: "It would startle the Council if they only knew the length of time it took some of their workmen to complete the most simple work."

Are these notes of distrust in the men notes of success of the department? If they are true, or if there is any foundation whatever for the complaint—and we presume there must be after studying the figures of the estimates and expenditures incurred—it is quite time that some alteration should be made in the control of the men. If idle men are permitted to fritter away their time on public works, where will the saving be we were taught to expect over the contractor's work? How will the ratepayer benefit? Surely events have proved Sir John Lubbock's warning, that "Government and municipal work is always more expensive than private work. . . . A municipality or a Government might control everything, but it could not undertake to do everything."

One of our contemporaries some few weeks since remarked that instead of the promised saving of from 30 to 50 per cent., which was constantly referred to as the contractor's profit, there had been no saving at all, but an admitted loss. We do not hear any public complaint as to the quality of the work, only that it cost more than the "corrected" estimates, which we take to mean measured value of the work in accordance with the priced schedule. There can be, therefore, no other way than waste of time in labour to account for the extra cost, and the warning given by Tuesday's debate may have a beneficial effect upon the department, and cause the foremen to look more sharply after their men. If this is not done, we prophesy that the works department will be one of the greatest municipal fiascos of the age. Referring again to our own comments two years ago, we remarked that the success of the scheme greatly depended upon the control the committee kept over their employés, and that it would be impossible for a body constituted as the committee is, to supervise every detail. It is in the detail that the defects of the scheme have now shown themselves. We cannot, therefore, level any complaint against the committee, but we do against the workmen as a body.

I hear that Messrs. Pearson and Co., the contractors for the construction of the Blackwall Tunnel, are just now experiencing not a little trouble and difficulty on account of a stratum of sand having been encountered in the course of the boring. So long as the boring progressed through the London clay everything went on smoothly, and rapid progress was made; but now the utmost caution has to be observed lest the works should be flooded, and damage to the extent of many thousands of pounds done through the flooding of that part of the tunnel already completed. If from this time forward all is fair sailing, it is anticipated that the tunnel will be completed and ready for opening in between two and three years' time.

Are church screens made nowadays so that the doors shall never shut? In a delightful paper in next month's *Sunday Magazine* on "The Old Gallery," the Rev. S. Baring Gould relates his experiences with an old parish clerk, who assured him that in every old church screen, "if it ha'nt been meddled with by them blessed restorers," the doors will not shut. On expressing his opinion that that was very odd, the old clerk came out with his explanation:—

> "Doan't ye see, your honour? Them old men as made the screens weren't bad joiners, and they weren't fules neither. They was a sight better joiners than we be now. The reason they did it was this. For sure sartain the chancel means heaven, and the body of the church means airth. And then doan't it say in Scriptur 'The gates shall not be shut at all'? Very well, if the chancel be meant to tell o' the heavenly Jerusalem, then the screen gates *must* be made not to fit, that never nobody may never be able to fasten 'em no more. The old men weren't bad joiners nor fules—not they!"

There's a wrinkle for the ecclesiastical tailors who supply so much of the church furniture nowadays! A bit of fancy ritual like that ought to fetch a big order from the Reverend Verdant Green, when he comes up for his next batch of vestments and church belongings.

In less than another hundred years, the perpetrators of an unfinished ugliness like the Wembley Tower will, I trust, have to pay a handsome rent to the public for spoiling the view in such a lovely locality. At the present moment a state of things exists which rather suggests comparison with an earlier experiment of the sort in connection with the Tower of Babel. The construction company has spent all its £100,000 of capital without achieving even the first platform, and now the ground landlord company has had to come to the rescue to prevent the abandonment of the enterprise. A little advance of £30,000 was sanctioned at a special meeting on Saturday. This, it is understood, will complete the tower up to 155ft.—not a particularly dizzy height for an expenditure of £130,000. The higher flights in ironwork which are to dim the reputation of M. Eiffel seem at this rate a trifle nebulous. Few people will complain, I fancy, if they remain so!

At a special meeting of the governors of the Royal South Hants Infirmary, held in that institution at Southampton on the 20th inst, it was decided to make a public appeal for funds to carry out the work of reconstructing the buildings, recommended in a special report made in July last by Messrs. Young and Hall, of London. The estimated cost is about £35,000, and as rebuilt the infirmary will contain 134 beds as against 111 at present.

The new Home for Single Working Men, erected at the foot of Sir Michael-street, Greenock, was opened on Friday. The home, which has accommodation for 225 men, consists of two buildings, four stories in height, with a space between occupied by the dining-room. The day hall forms a reading and recreation-room, and is 34ft. by 31ft. in size. At the right-hand side of the hall is the shop of the institution. Behind are the kitchen, scullery, women's washhouse, drying-rooms, with boiler and heating chamber.

The parish church at Starcross has been recently reopened, after restoration from the designs of Messrs. Rowell and Son, architects, of Newton Abbot. One of the new features is a memorial pulpit; this is Perpendicular in style and octagonal in plan, and is made of English oak. The base is moulded, and the upper portion has recessed panels on each of its seven sides. These are traceried and carved at top and bottom, and the structure is surmounted by a moulded and carved cornice. Messrs. Harry Hems and Sons, of Longbrook-street, Exeter, carried out the work.

OBITUARY.

Mr. Morton Meacher Glover, A.R.I.B.A., of Queen Victoria-street, E.C., and Berrystead, St. Peter's-park, St. Alban's, died recently, after a long and painful illness, in his fiftieth year. Mr. Glover some two or three years since had a serious illness, and underwent several operations at the hands of London physicians. Mr. Glover was articled to Messrs. Habershon after matriculating at the University of London, and became in due course a hard-working and successful student of the Royal Academy. He assisted the late William Burges, A.R.A., in the preparation of his drawings for the Law Courts competition, and soon afterwards designed a large chapel at Drayton Park, N. Many chapels and similar works followed, including the Baptist chapel in Dagnall-street, St. Alban's, of which he was a member, and many houses and business premises in that city, as well as a small church at Chesham, Bucks. At St. Alban's also he designed and carried out for Sir Blundell Maple, M.P., the Sisters' Hospital, illustrated by us in our issue of September 1, 1893, and also a public park, both given by Sir Blundell to the city. Extensive additions to the Grand Hotel at Eastbourne were carried out by the deceased, with Messrs. Patman and Fotheringham as contractors and Mr. Henry Lovegrove as quantity surveyor. This was probably Mr. Glover's largest job. When the late Mr. Edwin Salter, of Bucklersbury, E.C., died, Mr. Glover carried on the practice for a few years as Glover and Salter. He afterwards became the head of the firm of Glover and Harris, of 46, Queen Victoria-street, E.C., and took up his residence in St. Alban's about fifteen years ago. He was the son of the late Mr. Stephen Glover, the well-known musical composer, and himself possessed considerable musical ability. Mr. Glover was architect to the Chesham School Board. In 1884, in conjunction with Mr. Salter, Mr. Glover was one of the architects selected to send in designs for the new Admiralty Buildings; their design was illustrated in the Building News for August 8 and 15, 1884. He had been an Associate of the Institute since 1870. The funeral took place at the family vault at Chesham, on Wednesday week.

CHIPS.

A portion of the Oussouri section of the Trans-Siberian Railway, between the port of Vladivostock and Monraviewa Amoursky, a distance of 235 miles, was opened for traffic on Friday.

The New York State Forest Commission have recently made provision for a State park of some 30,000 acres in the heart of the Catskill Mountains. It will be situated in a beautiful region in the vicinity of Slide Mountain, the highest peak of the entire Catskill range.

The corporation of St. Alban's have received from the town clerk the gift of new furniture for the council chamber, executed in wainscot oak, including seats, desks, and a table; and from Alderman Fisk a new British Axminster carpet, covering 126 yards. The works have been carried out by Alderman Miskin, of that city.

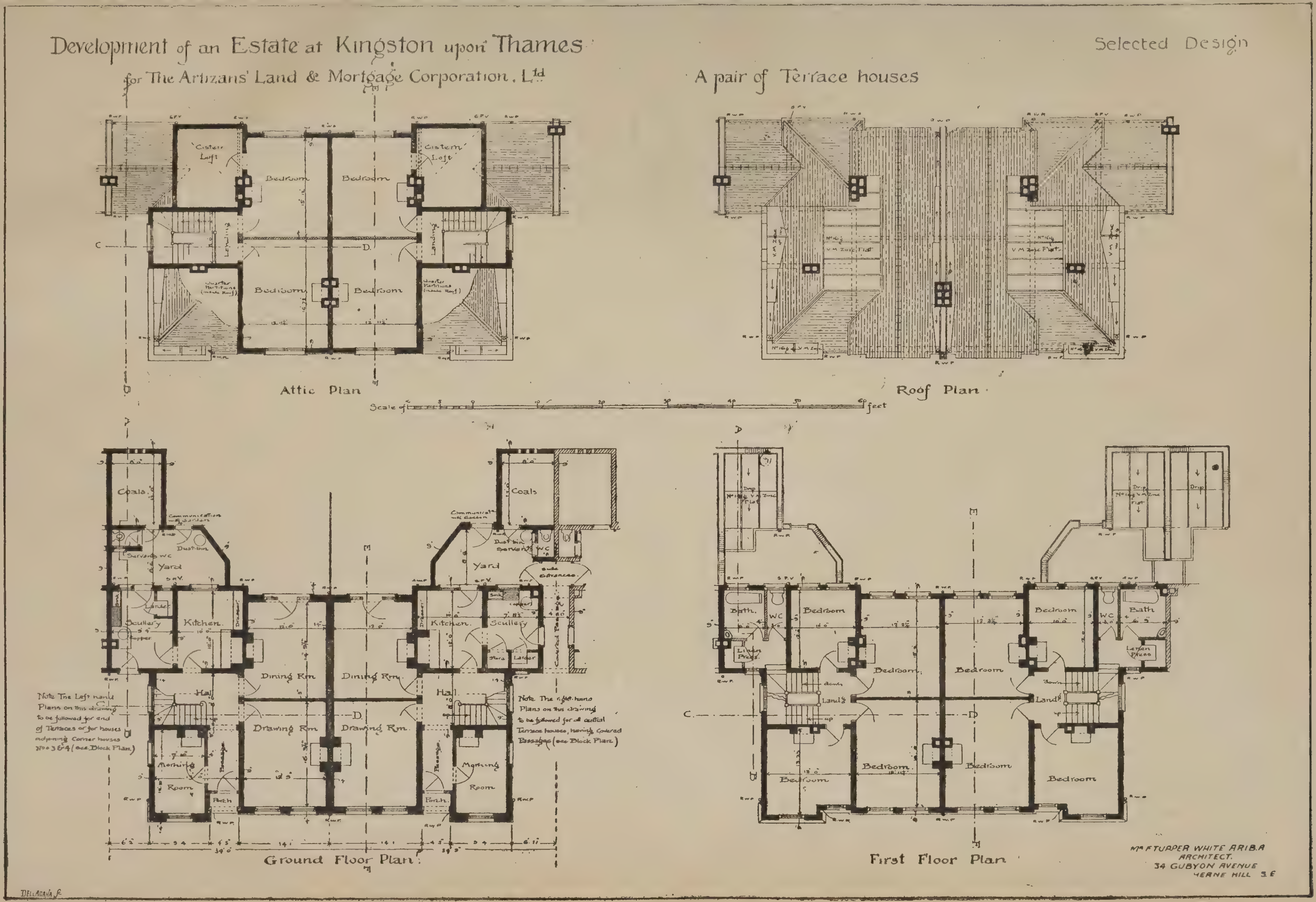
The engineer-in-chief estimates that the total cost of the drainage of Melbourne on the system which is now being carried out will amount to £2,694,352.

The Bath Rural Sanitary Authority voted their surveyor, Mr. Sheppard, £130 on Saturday as remuneration for extra services in connection with new works of water-supply.

An iron church, built to supply the temporary needs of St. Bartholomew's district, was opened in Caldwell Hall-road, Ipswich, on Friday. It has been built by Mr. George Stephenson, of Hadleigh, is matchboarded within, and is seated for 300 persons.

The State Geologist of Georgia reports that a belt of marble, 60 or more miles in length, has been discovered in the northern part of that State. Some of the marble is of a flesh-colour tinged with green, and some is a light grey banded with black. It can be obtained in large sound blocks, and is susceptible of a high polish. The report, however, suggests that, on account of the mountainous character of the region in which it lies, it will be costly to quarry it.

On the 19th inst., new offices, surveyor's house, workmen's cottages, stables, &c., for the Shilton local board, in the county of Durham, were formally opened. They have been built with local bricks and Houghton Bank stone dressings, at a cost of £1,600, by Mr. Thos. G. Henderson, of Shildon, from designs by Mr. J. W. Taylor, F.R.I.B.A., of Newcastle-on-Tyne.



Development of an Estate at Kingston upon Thames for The Artizans' Land & Mortgage Corporation, Ltd

Selected Design

A pair of Terrace houses

Note The Left hand Plans on this drawing to be followed for end of Terraces or for houses adjoining Corner houses Nos 3 & 4 (see Block Plan)

Note The right hand Plans on this drawing to be followed for all central Terrace houses, having Covered Passages (see Block Plan)

Mr F Turper White ARIBA
Architect.
34 Gubyon Avenue
Herne Hill S E

THEATRES.—XLVII.

By Ernest A. E. Woodrow, A.R.I.B.A.

I HAVE endeavoured to teach in this series of articles that, by observing the result of accidents and calamities which have occurred, architects can learn to design and build so as to avoid them in future. No better textbook can be studied than that of the statistics of theatre fires, which authorities on the subject have compiled. I am indebted to Mr. Wm. Paul Gerhard, C.E., for much valuable information on this subject, who speaks of the research of Herr August Foelsch, a German civil engineer, recently deceased; of Herr Franz Gilardone, a retired German fireman; of Captain Sir Eyre M. Shaw; of Dr. Choquet, a French physician;, and of Mr. John Hexamer, an insurance surveyor, of Philadelphia. I purpose concluding this series by imparting to my readers some of the information which Mr. Gerhard has kindly forwarded to me.

There are, first, cases where fires occur in a theatre, and are at once extinguished by the fireman on duty; of these no record appears to exist. Then there are cases of false alarm, accompanied frequently by disaster. The cause of fires which break out in the night is seldom explained satisfactorily; therefore, it is the fires which occur before or during the performance from which the lessons are to be gathered.

The risk from fire immediately before the performance, and while the audience is admitted, is found to be three times as great as during the hours of the day, which is explained by the fact that at this time the gas-flames are lit, which illuminate the scenery. Theatres are safest in the daytime. The danger is increased in preparing for the performance, is reduced during the performance, on account of the extra watchfulness on the stage, but is still twice what it is during the day. Two hours after closing is the time when the maximum danger is reached, and then it is seven times the day risk, and is reduced during the rest of the night to three and a half times as great as during the day; the risk arising at that time is from smouldering sparks.

The fact that the risk and danger during the time the people are coming in is actually greater than during the performance, does not seem to be generally considered, and is the strongest argument of the necessity for architects to design their theatres so that an incoming crowd may turn and find free, unobstructed, and ready egress, without any attendant having to remove barriers or unfasten doors. Again, the fact that after the building is vacated, it is found that two hours after the performance is the most dangerous time in the 24 hours, on account of the fire-watch not being as keen as during the presence of the public in the building,—this teaches the architect the necessity for sub-dividing his building into as many fire risks as possible by fireproof construction and fireproof doors to the openings, so that should a fire break out unseen in any room it may be confined to that room.

The following table is given by Mr. Gerhard from 289 fires in theatres:—

56 burned	between 7 a.m. and the afternoon	or 19·4 p.c.
15 ,,	one hour before the beginning of the performance..	or 5·2 ,,
36 ,,	during the performance ..	or 12·4 ,,
66 ,,	within two hours after the close of the performance..	or 23·9 ,,
113 ,,	during the night or before 7 a.m. next morning	or 39·1 ,,

The age which a theatre attains is a matter of considerable interest. Mr. Gerhard deals with this question in the following list. Out of 252 examples—

Theatres burnt down.	
5	before they were opened.
70	in the first 5 years after opening
38	between 6 to 10 ,, ,,
45	,, 11 ,, 20 ,, ,,
27	,, 21 ,, 30 ,, ,,
12	,, 31 ,, 40 ,, ,,
20	,, 41 ,, 50 ,, ,,
17	,, 51 ,, 60 ,, ,,
7	,, 60 ,, 80 ,, ,,
8	,, 81 ,, 100 ,, ,,
3	over 100 ,, ,,
Total 252	

From this it will be seen that, out of 252 theatres, 70, or more than one-fourth of them, were destroyed before they reached five years. Theatres, therefore, do not attain an old age, and Herr Foelsch figures the average life of these 52 theatres at 22¾ years. For the United States the figures are 11 to 13 years; but it must be remembered that these figures were reached before the more strict laws of building were inforced. It is further explained that recent analytical studies of this question have elicited the fact that there are two periods in the life of a theatre building when it is most endangered or subject to destruction by fire—first, from the time of its construction up to five years of age; second, from 40 to 50 years. This is accounted for by the fact that, in a new theatre, the safety appliances, the arrangements for lighting, the stage machinery, and the fire-protecting appliances are rarely in perfect working order at the outset, and that the employés have not then become acquainted with, and accustomed to, the handling of them, and are likewise unfamiliar with the rules of management.

The second period is explained by the fact that, after so many years, the apparatus and appliances of the theatre have become worn out or useless, and are not always kept in repair or replaced by new apparatus; also that, after a lapse of many years, the management may be less strict, and often interior alterations are made which add to the danger.

The next table, which has been compiled by Mr. Gerhard from statistics gathered by Herr Foelsch and Dr. Choquet, shows that from the middle of the last century the annual average loss of theatres by fire has been 19 in all countries. Choquet's figures are in parenthesis.

In the years 1751 to 1760	there were	4	
,, ,, 1761 ,, 1770	,,	8	
,, ,, 1771 ,, 1780	,,	9	(11)
,, ,, 1781 ,, 1790	,,	11	(13)
,, ,, 1791 ,, 1800	,,	13	(15)
,, ,, 1801 ,, 1810	,,	17	
,, ,, 1811 ,, 1820	,,	16	(18)
,, ,, 1821 ,, 1830	,,	30	(32)
,, ,, 1831 ,, 1840	,,	25	(30)
,, ,, 1841 ,, 1850	,,	43	(54)
,, ,, 1851 ,, 1860	,,	69	(76)
,, ,, 1861 ,, 1870	,,	99	(103)
,, ,, 1871 ,, 1880	,,	181	(169)
,, ,, 1881 ,, 1885	,,		(174)

Taking each year from 1871, the following theatres were destroyed by fire:—

In 1871	there were	20	destroyed	
,, 1872	,,	13	,,	
,, 1873	,,	15	,,	
,, 1874	,,	15	,,	
,, 1875	,,	14	,,	
,, 1876	,,	19	,,	
,, 1877	,,	17	,,	
,, 1878	,,	20	,,	
,, 1879	,,	25	,,	
,, 1880	,,	23	,,	
,, 1881	,,	28	,,	
,, 1882	,,	25	,,	(37)
,, 1883	,,	22	,,	
,, 1884	,,	9	,,	(40)
,, 1885	,,	9	,,	
,, 1886	,,	7	,,	(8)
,, 1887	,,	12	,,	(18)
,, 1888	,,	15	,,	up to Nov.

The number of victims of theatre fires which have occurred during a performance must be of sad interest. The subjoined table, gathered from the same source as those above, gives in detail the figures of victims in theatre fires during a period of ten years, as compiled by Dr. Choquet:—

In the years.	Victims.	
1751 to 1760 ..	10 ..	
1761 ,, 1770 ..	4 ..	
1771 ,, 1780 ..	154 ..	(Amsterdam, 1772, 25d.) (Saragossa, 1778, 77d. 52w.)
1781 ,, 1790 ..	21 ..	
1791 ,, 1800 ..	1,010 ..	(Capo d'Istria, 1794, 1,000v.)
1801 ,, 1810 ..	37 ..	
1811 ,, 1820 ..	85 ..	(Richmond, Va., 1811, 72v.)
1821 ,, 1830 ..	105 ..	(Philadelphia, 1829, 97v.)
1831 ,, 1840 ..	813 ..	(St. Petersburg, 1836, 800v.)
1841 ,, 1850 ..	2,114 ..	(Canton, 1845, 1,670v.) (Carlsruhe, 1847, 63d. 203w.) (Quebec, 1846, 200v.)
1851 ,, 1860 ..	241 ..	(Livorno, 1857, 43d. 134w.)
1861 ,, 1870 ..	104 ..	
1871 ,, 1880 ..	1,217 ..	(Ahmednugger, 1878, 40v.) (Brooklyn, 1876, 283v.) (Shanghai, 1871, 120v.) (Sacramento, 1876, 110v.)
1881 ,, 1885 ..	628 ..	(Nice, 1881, 70v.) (Richmond, 1885, 100v.) (Vienna, 1881, 450v.)

In the year 1887 .. Paris, 150 victims.
,, 1888 .. Oporto, 140 victims.
,, 1887 .. Exeter, 200 victims.
,, 1892 .. Philadelphia Central Theatre, several dead and wounded.

Placed in order of their frequency, Mr. Gerhard tabulates the origin of theatre fires as follow:—(1) On the stage. (2) In the actors' dressing-rooms, in the engine and boiler room, in the cellar, and in the administrative offices. (3) In the stores, offices, living apartments, or restaurant kitchens in the theatre. (4) In the auditorium. (5) In outside causes, such as exposure to neighbouring buildings on fire.

He proceeds to explain that in not a few cases the cause of the origin is for ever unknown, due to the rapidity with which the flames spread among the vast mass of combustible materials, and to the haste and confusion incident to a fire, especially when this breaks out during the night. From the above tables, it is gathered that the majority of fires, break out on the stage during the presence of the audience, owing to the stage illumination. Carelessness in lighting up, handling lights, torches, candles, and lamps, defective gas apparatus on stage and in dressing-rooms, and use of fireworks, are the most frequent causes of these calamities. Other causes are smoking, careless use of oxy-hydrogen light, use of firearms, carelessness in workshops and workrooms, defects in heating apparatus, non-removal of rubbish and trade refuse, accumulation of large masses of combustible materials, spontaneous combustion from oil-rags, &c.; these are among direct causes of fire.

Indirect causes are undesirable site, danger from adjacent premises, bad arrangement of plan, bad materials in building, faulty construction, misuse of parts of the premises, dangerous trades, want of fire watch and appliances.

Panic arises from an outcry of alarm with or without cause, the sight of fire, the presence of smoke, the unannounced darkening of the house (as so fatally illustrated in Belfast but a few days since), the sudden extra pressure of gas, especially in footlights, a fire alarm in the neighbourhood, reflection of fire, thunderstorm and lightning, persons fainting, horses or animals on stage becoming unmanageable, too few exits, badly-planned exits and staircases, crowds meeting, obstructed gangways and corridors, doors opening into dark passages and staircases, &c.

The best ways to prevent fires and panic have been fully discussed in these numbers, so I need not go into Mr. Gerhard's list, which adds nothing new to what I have already dealt with.

Briefly, let me summarise that in these articles we have seen that one of the essential conditions of successful theatre-planning is the provision of a suitable site and the exclusion of dangerous surroundings. The substantial and perfect construction follows next in importance, together with the division of the building into many fire risks by fireproof construction. The wide corridors, the well-planned staircases, the many exit doors arranged on a symmetrical plan, are self-evident parts required for a successful whole.

Recognising the fact that a theatre is built for theatrical representations, and that they entail the employment of much inflammable material, we have seen how, in designing the building, safety may be increased by providing a fit and proper place for everything so constructed and arranged as ever to induce perfect order and tidiness on the part of the servants of the theatre. What all these places are, and where they should be located in relation to other parts of the theatre, has been gone into at length, and the exclusion of workshops from the building has been dwelt upon.

The stage being the most hazardous part of the building, and its arrangements and use being perhaps but little known and understood by the general body of architects, this part of my subject of necessity has occupied a considerable portion of my attention. Details of stage machinery and scenic appliances, which would scarcely be considered as coming under the architect's province, have been described and illustrated as essential parts of a complete theatre ready for working. My theory throughout has been that the architect should be acquainted with every detail and every part of the building; should understand the reason of their requirement, the manner in which they are used; should be cognisant of the methods adopted for manipulating scenery, lighting the stage, creating "effects"; should be acquainted with the manner of conducting the business in front of the house as well as behind, before he can design a safe and successful theatre. I am aware that it is not the opinion of all that the architect should be *au fait* in all matters appertaining to theatrical management and display; but from my personal experience I affirm that architects who understand the uses to which their building must be put are alone likely to be able to design a useful and successful theatre. I have mentioned how, when judiciously planned, a theatre will cost less in weekly salaries for attendants than when built with no judgment of its ultimate ends—a house of business.

The greatest difficulty in theatre design is, without doubt, the attainment of a perfect sight line from every seat; yet if this is not accomplished the theatre is a dead failure financially as well as architecturally. The very object of a theatre is to provide a building in which plays can be acted, seen, and heard.

Fittings and fixtures seem small items in themselves; but their importance asserts itself as necessary for the due carrying on of the business, and the fact that their being overlooked, badly arranged, or faulty in design, will lead to accident, blocking of exits, and loss of life. This is surely sufficient to compel the architect to include the consideration of every detail in his design—barriers, ticket-boxes, bolts, seats, lamps, gas-fittings, &c., must not be beneath his notice. I have even gone so far in these articles as to point out that it is the business of the architect to provide means for the actress in her dressing-room to heat her curling-tongs.

Sanitation, ventilation, and fire-protection must all be accomplished by the architect.

Even the provision of a lightning-rod must not be omitted when it is remembered how last August the Reading Theatre was destroyed by being struck by lightning.

My task is ended, and it is with somewhat a feeling of fear that I have dealt with a subject in more detail than the requirements of these articles demanded, that I conclude this series of papers in this number.

In the early stages of my work I pointed out that my programme would be the collection of information scattered in the form of lectures, newspaper articles, pamphlets, letters, &c., as the works on theatre building were few and far between. I have been greatly assisted in the collection of the information by Mr. Edwin O. Sachs, whose knowledge of the Continental theatres has enabled him to help me in many of my articles. I have also had great help from many other gentlemen in the loan of drawings and notes, which I have duly acknowledged at the time of their use and production. The references to foreign regulations have been made under each head or detail of my subject instead of in the form of some chapter upon legislation and government. This was done in order that the opinions of foreign experts might be gathered by my readers on each subject as it was discussed.

NOTES FROM EDINBURGH.

THE building trades for the past year have had a fairly good time, with steady work and wages, although the amount of speculative building has been perhaps under the average of former years. Steady employment is due mostly to the erection of large undertakings, which have been completed or are nearing completion, and as work of this description is contemplated, the prospect for the coming year is favourable, and as good as can be looked for in the present general depression of trade.

The largest undertakings just completed is the new asylum for the better class of patients, built where the old Scotch mansion of Craighouse used to be; but the new edifice is much more conspicuous, and makes as good an appearance as any of the many larger hospitals which adorn the environs of the city. Originally the contemplated expenditure amounted to £30,000, but the completed establishment has cost £100,000. With its advantages of situation and appointments of the best description, it will probably be found not too large for the demands for its very superior accommodation. The new Caledonian Railway station is now open for all traffic, and the architectural as well as the engineering departments of the work have been a costly and very laborious undertaking. It cannot be said that the combination makes a happy whole. So far as the station is concerned, the arrangements are admirable. The interior is wide and well-lighted, and everything that could be desired. But owing to the determination of the company to carry out their buildings to the extreme limits of their property, the aspect of the architectural screen-work and the convenience of access have been very much impaired. The entrances are all close to each other, and though each is large enough in itself, they are placed in a very acute angle, which makes access awkward. The long eastern elevation is almost entirely a covered carriageway for cabs, which could very well have been dispensed with for a wider area of access. The plan of the station proper at entrance is nearly that of the prow of a large ocean steamer, and there is some interesting and curious, but by no means elegant, engineering in the roof to combine the great width of the shed with this awkward angle. The effect of the design on the street architecture of the west end of Prince's-street is not good, and the attempt to screen the monster shed behind must be pronounced a failure. The triple-arch gateway, with its mountainous roof of slate and all the stately architecture on either side, is really an obtrusive impediment to free access to the trains and out of harmony with everything beside it.

The new St. Cuthbert's, also finished during the past year, has kept workmen busy for a much longer period, and is a conspicuous addition to the architecture of the city. It suffers greatly from the character of its site; but from its great altitude looks better than might have been expected, built so much below street level. The style of the edifice is Classic, simple and severe, and unexceptionable in the choice of its details, though this style is perhaps, and unavoidably, the very worst that could have been selected for such a site. The present clerical mania for apses and towers and Anglican arrangements has told on the design, and made it of portentous length. The desire, also, to make it hold about 800 more than the old building, which was seated for 2,000, has not improved either its proportions or convenience. The end gallery is 30ft. deep, and the great majority of seat-holders under it see very little to distract their attention except the pulpit, the gallery beam, and an interminable array of heads and bonnets. The apse ceiling comes too low down, and eclipses the heads of its windows, and the apse itself is rather lengthy for a church interior so wide. The church can boast of having the first and only stone altar-table existing in the Presbyterian churches. It is a handsome marble one, designed in white Sicilian, with panels of dark marble. The best thing about the interior is the decoration, which is very tasteful in colour and design. The desire to have some more of decorative detail on the exterior has led to the erection of two turrets at the east end, which, though very pretty in all detail, are too much in the Later Renaissance style to harmonise with the simplicity of the rest of the edifice, and, indeed, the west front, never very imposing, now looks very much in need of something to make up for being left out in the cold.

Another very large undertaking, and which, from the unusually florid detail of its architecture, will be the most conspicuous corner in Princes-street, is the reconstruction of Messrs. Dewar's premises. The Edinburgh Hotel, facing the Waverley Station Bridge, is to be a hostelry no longer, and is being converted into premises for business in the same line as Dewar and Co. The old haberdasher has developed into the genial provider of furnishings for house and person (not excepting mental entertainment in the way of cheap novels), and Princes-street will contain three such large establishments, the third being at the western extremity, all on a scale of great magnitude. The work on Dewar Buildings has been very rapidly carried out within the year, but will not be completed for some time, and till the roof is finished it will not be seen in all its due proportions. There is some very effective circular corbelling about the cornice line, and an immense amount of stone-cutting and carving and sculptural embellishments.

Three churches have been added lately, all with galleries more or less in the old Presbyterian style. The supply of school accommodation has not yet met the demand for it, and so long as the school boards determine to provide for secondary classes, the demand is not likely soon to be satisfied. Another large school, to cost about £20,000, is being built for the Broughton district on the north east, in a locality by no means densely populous, but for the immediate necessity of providing for the overflowing requirements of adjacent schools.

The new buildings for the Electric Lighting Trust occupy about an acre of ground, and are a conspicuous object from the Caledonian line. They are not without architectural detail towards the streets, and show a novelty in the way of chimney architecture, being square in plan, with pilasters, and an effective cornice, &c., at the top. Five large boilers, weighing each 25 tons, are required to work the apparatus, and it is expected that the system will be set to work in March.

A commencement has been made in the way of preparing for the work of reconstructing the North Bridge, and a committee of the council are engaged in getting estimates of the cost of a girder-bridge between the Regent's Arch and Jeffrey-street, which would greatly relieve the heavy traffic which has now to pass up the steep gradient of Greenside-street and over the North Bridge to the south side.

The rapid and somewhat eccentric development of the art of advertising has for long made itself noticeable here, as elsewhere, in the hoardings in front of vacant stances in outlying or other less popular thoroughfares. There is about half a mile of it, forming a profitable investment for all parties, and serving as a screen to prevent the public witnessing popular gymnastics in the grounds of the new Academy. But it is to be feared that the bill-sticker's success is likely to influence the architecture of the city in a more offensive way, and the shopkeeper is not to rest content with his plate-glass window. Hitherto there has been some regard paid to architectural propriety in the design of shop-fronts, with their apparently too-slender supports. Even the wide expanse of window can be made agreeable, and in Shandwick-place, the latest novelty, a large arch spaning the entire width of the tenement, has a good appearance, the eye being satisfied with the security of the structure and proportions. But of late one of the most prominent corners of Prince's-street is being reconstructed—for new shops, on the ground floor—in a fashion so absurdly grotesque in the proportions of what has hitherto been a respectable adaptation of the Classic frieze, that it is obviously a development of the advertising mania. The sign-board in question, which serves for a number of ordinary looking shops, is of preposterous breadth, and rests on the usual spider-legged supports, with details of the most meagre description in timber. The hoarding overhead—for it is little better—is large enough for the top of a three-storied tenement, and the wonder grows in what style—pictorial or otherwise—the shopkeeper will advertise his wares. Meantime the unsightly projection is surely worse than some of the hanging sign-boards which the Council have tried successfully to dispose of.

COUNTY LUNATIC ASYLUMS.—IX.

By George H. Bibby, F.R.I.B.A.

STAIRCASES AND CORRIDORS, &c.

IN many asylums the staircases are very defective, being dark, narrow, and so planned that patients have chances of concealing, falling, or purposely injuring themselves. The staircases in all large asylums should be so arranged that there may be at least two means of escape from every day-room or dormitory; the stairs should be built of stone, or materials of fire-resisting qualities, be without winders or long straight flights; the well should either be built up solid, or otherwise used and inclosed to form a ventilating shaft, &c. The divisions separating the staircases from the various apartments should also be of fire-resisting materials, and handrails must be securely fixed on *both* sides of all staircases.

These arrangements are applicable as well to the staircases for the exclusive use of the attendants and nurses as to those for the patients, for experience has, unhappily, shown that there can be few more terrible or heartrending calamities than the burning of a large asylum.

All the doors (at all events of important rooms) should be so hung as to open in the direction of the exit to the staircases; therefore the staircase landings should be enlarged so that these doors, when opened, shall not impede the passage by reducing the width of the stairs at any point.

The reason for omitting or blocking-up the open wells in staircases is that these afford favourable opportunities for committing suicide. The number of steps in a straight flight should not exceed eight or ten as a rule; the treads may be 11in. and the risers 6in.; the handrails should be of wood, and of a contour suitable for giving the opportunity of a comfortable and firm grip by the hand.

These alternative staircases are, of course, very costly additions; but in large asylums they are of great importance, and should never be omitted. They are not for everyday use (except by officials as a ready means of making a circuit through the wards); they should be locked, the panic key

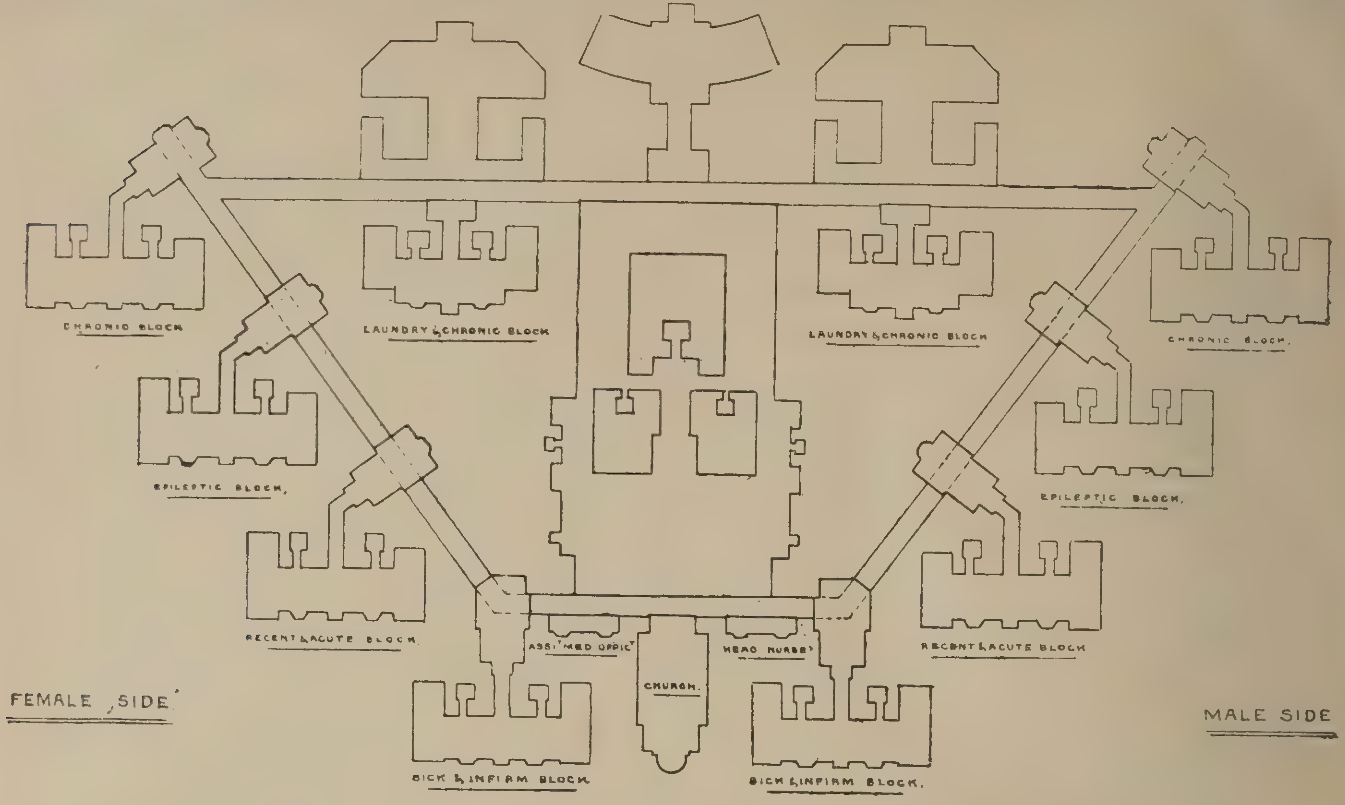


Fig. 19.

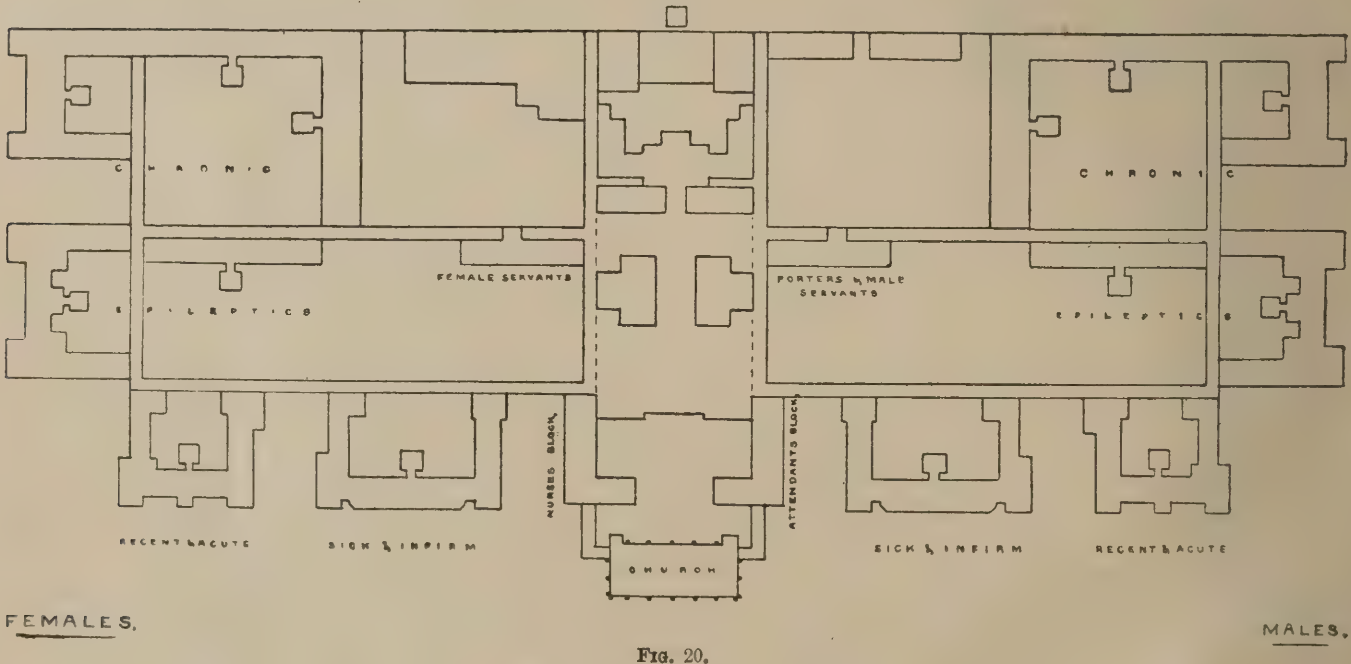


Fig. 20.

being kept in a glazed box, the glass to be broken when the key is wanted, the breaking of the glass causing a general fire alarm. The upper officials would, however, pass through with a master-key.

Epileptic patients are so liable to fall and seriously injure themselves during a fit, that special precautions are necessary. Epileptics fall forward or sideways as a rule, and are, therefore, more likely to be badly hurt when coming down than in ascending a staircase; therefore the approaches to the staircases, as well as the flights of stairs, should, as far as possible, be arranged so that the attendant and nurses may be reasonably near passing patients.

The ground and upper floors should usually be upon one level (at all events, in each block of buildings). Flights of three or four steps, or odd steps between the various wards, are very objectionable and dangerous. In large asylums it occasionally happens that the site is so uneven that there must, for reasons of economy, be differences in the levels of the blocks for the patients and various departments of the administrative buildings. In these cases it is always far preferable that the main and other corridors should be inclined rather than steps should be inserted, and for the additional reason that it is convenient to be able to wheel a supply waggon or other appliances.

Another point in the planning of asylum staircases sometimes overlooked is the advisability of arranging so that the noise and traffic thereon shall not be an annoyance to those who may be confined to their dormitories during the daytime. For this reason staircases, should not, as a rule, open *directly* into or very near to a dormitory, whether it be upon the ground or any upper floor; the staircases and lobbies thereto would be lighted by windows, the splayed sills of which should be high above the landings or steps, protected as far as necessary from damage by destructive patients, and with due regard to any possibilities of escape, suicide, or other disaster. Any gas or electric lights on the stairs and elsewhere should be placed also beyond the reach of patients.

The staircase and its landings sometimes afford suitable localities for the hydrants, fire appliances, buckets, hose, &c.; but if these be placed near, very ample space should be allowed (over and beyond what is required for passage-way), and these appliances also must be as far as possible protected from damage or interference by patients.

During the variations that take place in a patient's conduct, a change in his gait is frequently observed. He does not lift his legs properly, walks stiffly, involuntarily deviates to one side when attempting to walk straightforward, and easily stumbles if the floor be at all uneven—for example, when going over a step; hence the absolute necessity of planning an asylum without unnecessary steps. Some of these classes of the

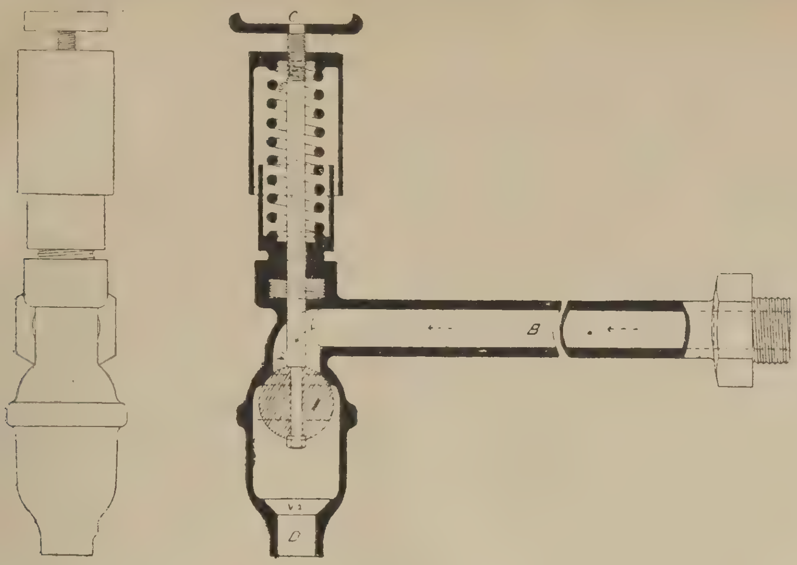


Fig. 21.

insane take a pleasure in walking about a great deal; some of them even experience a constant desire for a restless change of scene. They like to take long walks, and to the inexperienced eye nothing striking is presented so long as they keep upon level ground; but the gait eventually becomes still more unsteady, like that of a drunken man—the feet are dragged after him; the knees appear as if they would collapse; he must support himself by a wall; stumbles every moment, and frequently falls; the arms become stiff; objects are grasped convulsively, and occasionally suddenly let fall. Under such possibilities as these, it is obvious that the fewer the levels in an asylum the better for all concerned.

The day-rooms of asylums may be either on the ground or the first floor (but seldom or never upon a higher level) therefore the boot-room, previously mentioned, may often be placed with advantage near to the staircase, so that patients coming in from the airing-courts shall not bring dirt, &c., on to the stairs, on their way to the *upper* day-rooms. In some instances it may be useful to have two boot-rooms adjoining each other, one for each floor; this might be useful for separating patients of different classes, when those on an upper floor require to be specially classified.

In some county lunatic asylums it has been found convenient to form the staircase blocks into towers to carry water-tanks. These might be either over the centre well, or otherwise placed over the entire structure of the staircase. These tanks would usually form an independent supply for the wards or blocks of buildings for the various classes of patients.

These tanks would, however, be in addition to a main tank or tanks for the supply of the whole asylum, with a capacity for not less than 15 gallons per day for each inmate; if the source be rainfall, the tankage should provide for 120 days' supply.

The position of the great tanks must necessarily vary with each asylum according to the level of the surrounding lands, but may be in a water-tower, a horizontal roof tank over the boiler-house, or elsewhere as may be found expedient; water supply for bath and laundry purposes may be better placed over the boiler-house than water for drinking and cooking purposes.

The corridors of a county lunatic asylum are frequently of great length, and should be of ample width where affording direct communication from the patients' wards to the dining-halls and recreation-rooms, &c. They should, for a large county asylum, seldom be less than 8ft. or 10ft. wide, but are occasionally rather more; being of such great lengths, it is easy to arrange for gentle inclines (instead of steps), which I have already referred to.

Of whatever materials these corridors may be erected, it is necessary to provide against the possibility of fire communicating through from one block of buildings to another. To avoid this there should be fireproof portions at the communications with each block of buildings; the windows of the main corridors should not exceed in number those actually required, and should be so disposed that patients occupying the airing-courts may not be seen whenever their habits or condition renders it desirable that they should be kept as much out of view as possible (and this is a condition which should be observed elsewhere throughout the asylum). There should, however, be no dark corridors anywhere in any asylum, and if it should be found inconvenient to place windows in any part of the walls, skylights must take their place.

As a rule, the corridors are best if with an open roof, with skylights at intervals. There should not be more corners or sharp turns than can be avoided; these long, straight corridors afford the nurses and attendants very good opportunities for observing the conduct of those patients who may not be confined to their own wards, but are engaged in cleaning or sweeping the corridors and adjacent parts.

The flooring of the corridors may either be of wood-paving or of some of the artificial stone-pavings, such as Stuart's granolithic, the Adamant Company's flooring, Lawford's asphalte, Polonceau asphalte, Willis and Astley's flooring, patent Victoria stone, Val de Travers, Wilkinson's concrete paving, &c. Some floorings have been found to give faint and unpleasant odours after washing; others become slippery, loose, or uneven, and as the amount of material used is frequently very great, it is of special importance to select that which is durable.

There is an obvious advantage in arranging the corridors, when practicable, in long straight lengths, without sharp turns or corners, where patients might continue for a dangerously long period out of sight; these corridors are frequently 200ft. or 300ft. in length, sometimes much more, and, therefore, an attendant or other persons passing to and fro would necessarily command a good view from end to end, and secure a better supervision than otherwise might be practicable.

In Fig. 19 is shown a diagram of a plan which, though it has some advantages, is designed without regard to the necessity of reducing the distances over which the officers would have to travel from the administrative centres; the superintending medical officer, for instance, in going his rounds from ward to ward, would have to pass over much of the ground more than once, there being but one entrance to each block of buildings from the main corridor.

In Fig. 20 this difficulty is entirely overcome, and there is a convenient approach to all parts of the asylum; each ward having two entrances from the main corridor, and the staircases being placed near these entrances, the upper floors are equally accessible. (See also Fig. 1, p. 388; Fig. 4, p. 564; Figs. 5 and 6, p. 565; and Figs. 10 and 11, p. 673.)

Below the corridors a subway is sometimes contrived, through which the heating and water-pipes, &c., are carried, or in which some of the ventilating arrangements are provided, and "Blackman" or other fans are driven for the purpose of propelling the heated or cool fresh air.

At suitable points along the corridors should be placed the hydrants for use in the event of fire, with hose-boxes or racks, and the usual appliances. In connection with these should also be contrived convenient arrangements for not only filling the fire-buckets, but also such other buckets, &c., as may be requisite for supply or for cleansing the floors near, so as to avoid the inconvenience of the carriage of water to any considerable distance.

To avoid the waste of water (which may be occasioned by patients and others *forgetting* to turn off a tap) a simple and ingenious contrivance has recently been patented, by which the buckets may be hung over the valve empty, and when filled the united weight of bucket and water would stop the further running of the water. (Such an apparatus as this would certainly be very useful in many other places than asylums—for instance, outside public-houses where carters and cabmen sometimes carelessly allow water for their horses to run out of filled buckets over public footpaths.) This contrivance may shortly be in the market, and the following description of it has been supplied to me by Mr. Charles L. Wilkin, of St. Edmund's-terrace, Regent's Park, the inventor, and is here first published, although the idea has been approved by several competent authorities.

In Fig. 21, the support for the bucket-strap is shown at C; B is the barrel of valve to be fitted to main supply-pipe; and I is the indiarubber ball; S the spring; V 1 and 2 the valve seatings, and D the delivery nozzle.

This valve may be used for automatically filling and keeping filled fire-buckets, stable, or any other buckets requiring to be kept constantly filled with water.

Fig. 21 represents the supply of water "cut-off" by means of the ball (I) and the seating (V1).

By suspending the bucket (by means of its "bail" or strap) over the support or carrier (C), so that the buckets hang immediately beneath the delivery nozzle (D), the weight of the bucket is sufficient to partially overcome the resiliency of the spring (S) and release the ball (I) from the seating (V1), and so allow an outlet round itself for the flow of water from the main supply-pipe through the barrel (B) to the bucket; the gradual flow of water into the bucket increasing correspondingly in weight until the resiliency of the spring (S) is completely overcome and the supply of water is "cut off" by means of the ball (I) and the seating (V2).

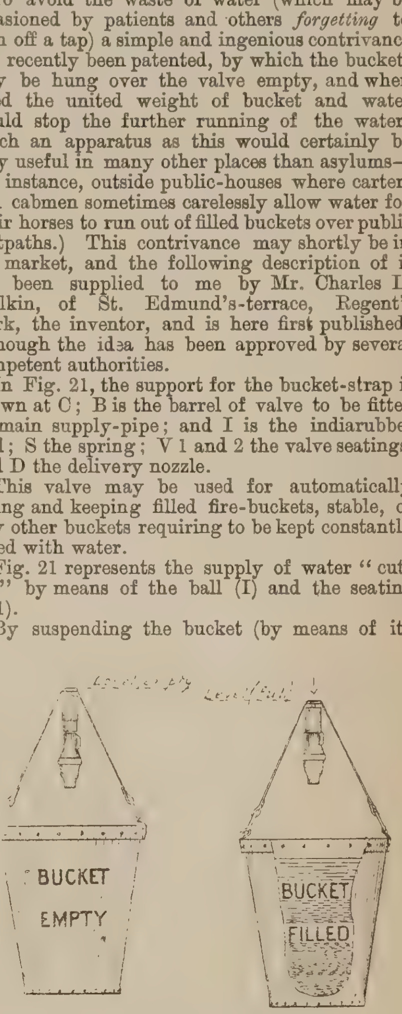


Fig. 22.

On the removal of the bucket, the spring (S) acting in the opposite direction, causes the supply of water to be "cut off" by means of the ball (I) and the seating (V1), as in the position indicated.

A supply of water may always be had by substituting a pressure equal to the weight of an empty bucket upon the support or carrier (C).

Fig. 22 shows the relative positions of the buckets when filled and empty, and generally it will be admitted that a self-acting contrivance, such as above described, should be useful as a precaution against the inconveniences or waste arising from the forgetfulness of persons, whether they be the inmates of an asylum or a public-house.

Memory is variously affected in mental disease; sometimes it is unimpaired as regards the events of the former life as well as the occurrences during the disease. Dementia, in particular, is characterised by feebleness of such a kind that events happening at the present time are quickly (even instantaneously) forgotten, while there is a distinct recollection of events that took place in former periods of life, which may even be the theme for well-considered conversation.

Any disease of the brain may impair or destroy the memory, consequently the state of the memory in many of the insane indicates the severity of their malady.

(*To be continued.*)

HISTORY OF THE TOWER BRIDGE.*

THE handsome quarto volume prepared, under the direction of the Bridge House Estates Committee, by Mr. Charles Welch, F.S.A., librarian of the Corporation of London, is ostensibly an official publication, and describes not only the new Tower Bridge, but gives an historical account of the other bridges over the Thames built by the Corporation of London, and an account of the Bridge House Trust from the 12th century, based on the records of the Committee. An historical review of the subject, by the Rev. Canon Benham, B.D., F.S.A., forms a fitting introduction. Canon Benham acknowleges his indebtedness to a blue-book published last year by the Corporation, which had been prepared for the Royal Commission on the Amalgamation of the City and County of London, the information in which had been gathered from many sources. The writer recounts the many public works accomplished by the Corporation during the present century, beginning with the opening of London Bridge in 1831. Other events follow, such as the passing of the Reform Bill, 1832; foundation of the City of London School, 1834; opening of Royal Exchange, 1849; many royal visits to London. Later we have the removal of Temple Bar, 1878; dedication of Epping Forest; opening of the New City of London School, 1882; opening of new council chamber, 1884, &c. These several events are briefly and graphically described. The bulk of the volume is occupied by "The Story of London Bridge down to the Middle of the 18th Century," followed by Chapter II., on the "Last Days of Old London Bridge, its Successor and Sister Bridges, A.D. 1750 to A.D. 1894." This portion of the volume has been written by Mr. Welch, and is illustrated by an interesting series of reproductions, including Agas's map of London in the time of Elizabeth; an illuminated view from a MS. volume of poems in the British Museum, facsimiles of the warden's accounts for 1422, sketches and seals, ancient seal of the Bridge House, old City seal, an interesting reproduction of an engraving of London Bridge by John Norden, about A.D. 1600, views of the bridge gate from Visschir, chapel of St. Thomas on the bridge, old London Bridge after the removal of houses, 1758, &c. Many interesting events and incidents are recorded in this part in connection with the old bridge. The structure endured many perils by flood and fire. We read of a severe and lasting frost in 1281, which carried away five arches; the ice was very thick and dangerous. In 1564, and again in 1608 and 1683, severe frosts occurred; in the latter year the river was converted into a solid mass of ice "to that degree," says Maitland, "that another city, as it were, was erected thereon," with streets and shops, carriages, and "diversions of all sorts, and near Whitehall a great ox was roasted whole on the ice." Printing-presses were set up on the ice, and coaches plied from Westminster to the Temple, and sledge-races, puppet plays, &c., took place. In 1715 a severe frost took place, and a fair was again held on the Thames. In the next year a violent gale of wind from W.S.W. reduced the stream so low that people crossed it on foot above and below the bridge, and passed through most of the arches. Again in 1739-40 another frost-fair was held. Many fires are recorded on the bridge, notably one which broke out in 1504 at the northern end, destroying six houses; and a more destructive one in 1632-3 at the same end, which consumed all the buildings on both sides to the first gap. Forty-two houses were destroyed owing to want of water, the Thames being almost frozen over. The gates and towers and other architectural features on the bridge are described at some length. The gates, as we see them in Visscher's old engraving, were in frequent use in the 13th century. The Great or Stone Gate often bristled with traitors' heads. Stow places its erection in 1426. There was a drawbridge between the sixth and seventh piers of Peter of Colechurch's stone structure, which allowed vessels to pass, and a wooden bascule spanned it. Many facts and incidents are recorded as to its erection and frequent repairs. It was commenced in 1176. The description of the new Tower Bridge by Mr. John Wolfe Barry, C.B., M.Inst.C.E., forms the third chapter, and is illustrated by several photo. illustrations, showing the completed structure and its progress at different stages, besides plans, sections, and details in the letterpress. We have so recently described and illustrated the bridge that it is unnecessary to say anything here. Mr. Barry describes every principal feature in the problem, the foundations of the piers, the great caissons constructed, and the difficulties met with in sinking them evenly. Details, plans, and sections of the piers explain every part of their construction; plans at various stages, and very interesting diagrams of the bascules and their counter-weighting are given. Sir Horace Jones's design and that submitted to Parliament show the development of ideas, though the present structure differs greatly in general design and detail. This part of the volume will possess a permanent value to the architect and engineer. Chapter IV., by Mr. Philip Norman, F.S.A., deals with "The City, the Tower, and the River." As an historical narrative of ancient London, and a monograph of one of the most important engineering works of this century, the volume will take its place in every complete library.

BOOKS RECEIVED.

The Thumb Ready-Reckoner (London: Henry Frowde) is a little waistcoat pocket-book about 2in. by 1½in., clearly printed and handsomely bound in morocco, containing tables giving calculated results from one-sixteenth of a penny to 19s. 9d., together with interest and discount tables, weights and measures, foreign money, &c., a very useful and acceptable present for all business people, and which is small enough to be put in an ordinary-sized purse.——*Transactions of the American Society of Civil Engineers* for September contains a paper by John A. Bensel, M.Am.Soc.C.E., on "Removal of Rock 40ft. Below Surface of Water," and discussion; also a paper on "Form of Railway Excavations and Embankment," by J. D. Whittemore, past-president, and papers on the "Tequixquiac Tunnel," "Friction Rollers," "Hoisting Apparatus," &c. It is fully illustrated.——*The Essex Review*, No. 12, Part III. (Chelmsford: Edmund Durrant and Co. London: T. Fisher Unwin, Paternoster-row), contains, under the heading of "Essex Churches," a descriptive and illustrated account of All Saint's, Rettenden, by Mr. Fred Chancellor, F.R.I.B.A. The plan shows a building with nave, chancel, and one aisle, and a western tower opening into nave. The piscina and sedilia and the bench ends are good examples—the latter are of 15th-century character. The author thinks there is strong evidence of a priest's chamber on north side of chancel, and he gives the plan of room over vestry. Other interesting papers and notes and queries are also given.——*The London Building Act*, 1894, by A. J. David, B.A., LL.M. (London: Crosby Lockwood and Son), is one of the first books we have received on this important statute. The author has given the full text of the Act, with the by-laws and regulations of the London County Council passed last November. The notes appended to the sections are very useful, as they show in most cases the alterations that have been made. The new provisions have been distinguished also in the text by placing them in parentheses. It may be noticed also that the author calls attention to several new features of the Act, as the establishment of a Tribunal of Appeal, and the sanction the Act gives to the judicial decisions of the old law, the service of notices, &c. There is a good index, and a table of cases. To all architects and district surveyors and builders, Mr. David's manual will be welcome. ——*Proceedings of the Engineers' Club of Philadelphia* for November contains several interesting papers on "Electro-Metallurgy of Gold and Silver," by A. L. Eltonhead; "Atmospheric Resistance," by Professor Walter L. Webb; "Notes on Unit Stresses for Railroad Bridges of Wrought Iron," by Professor Silas G. Comfort. ——*Engineer and Surveyor's Nineteenth Annual Report* of the Willesden Local Board, by O. Claude Robson, engineer and surveyor, is a bulky report of over 200 pages, giving an account of works executed by the Willesden Local Board during the year ending March 25th. It appears from the report that over 41 miles of highway have to be maintained, and an additional length, represented by 19 private streets, has been dedicated to public use. Referring to the formation of these roads, the carriageways are of 12in. of brick rubbish as foundations, 6in. of coarse gravel consolidated with a 10-ton roller, the channelling of three courses of Enderby granite cubes, the pathways of tar 3in. thickness laid on 4in. of concrete. Wood paving has not been largely adopted, though Mr. Robson rightly advocates its use in all main thoroughfares, such as High-street, Harlesden, Malvern-road, Kilburn, Cambridge-road, Harrow-road, &c., where the omnibus traffic is large. Other matters touched on are the question of municipal labour and the value of classifying the men according to their skill, &c.; watering, sewering, up-cast shaft ventilation, flooded districts, lighting, &c. ——*The Quantity Surveyor*, by Charles Henry Searle, Parts, 2, 3, 4. (London: Chas. Henry Searle, 16, Southwark-street.) In noticing the first part of this valuable publication, we briefly described the main object its author had in view in grouping the trades. Mr. Searle's system is a thoroughly scientific classification of trades intended to facilitate and help the memory, and illustrates the most approved methods of measureing the various artificers' works, preparing bills of quantities, and drafting specifications and contracts. For the last-named purposes we consider the work a very useful compendium of information which every surveyor and architect should have on his office table. Thus, in Part 2 we have, under "Group I.—Conditions of Contract," such matters enumerated as improper materials or workmanship, vouchers, inefficient workmen, deviations with and without authority, detail drawings, valuation of variations, and other clauses of the conditions are given under various sub-groups. A form of "memorandum of agreement" for small works is given, and various explanatory notes. Part 3, under "Group III.—Trade Descriptions," embraces all preliminary descriptions of materials and their use for the several trades. For specifications, preambles to bills of quantities, these particulars are valuable, and the analysis follows a particular list of trades. Thus we have sub-groups under the heads of Dimensions, Material, Working, Fixing, &c. The sub-groups on Bricks, Limes and Cements, Bedding Materials, Stones, are very useful. These trade descriptions are continued in Part 4. Under the head of Working every modern method and process is described, and the specification clauses are printed in large type.——*The Architect and Surveyors' Diary for* 1895 (London: Waterlow Brothers and Layton, Ltd.) is a useful one. It contains lists of the members of all the professional associations, and the London Building Act, 1894, is printed *in extenso*.——*The London Building Act*, 1894, by W. F. Craies, of the Inner Temple, Barrister-at-Law (London: Lovett and Maxwell, Limited; and Stevens and Sons, Chancery-lane).—The literature on this new statute is increasing fast. We have reported three or four papers read at the Institute, Society, and Association on the new Act, setting forth the leading changes in the building legislation, and we have now to notice publications. Mr. Craies' edition has the great advantage of showing how old enactments have been dealt with under the new Act. The text of the Act is taken carefully from the Queen's printers' copy. The introduction points out the objects and scope of the Act, what it includes, and its effect generally on local authorities. Reference is made to several matters, such as connection of drains with main sewers, which is subject to Sect. 4 of the Metropolis Management (No. 2) Act, 1890; the construction of closets, dustbins, under Sect. 39 of the Public Health (London) Act, 1891; hoardings; drains and water supply, these latter matters being still dealt with by the local vestry or district board, and in the City by the Commissioners of Sewers. The power of the local authority under Michael Angelo Taylor's Act, and other Metropolis Management Acts as to widening, altering, and improving streets, are saved by the new Act, Sects. 6, 213. The establishment of a tribunal of appeal and its powers are noticed, and also the provisions for open spaces, and the author gives the principal alterations made as to construction. By the table of enactments it is seen at a glance what are repealed by Sect. 213, and in the margin of each section is given the sections of the old Act, by which the reader will be able to compare the new with the old provisions. The repealed sections are not only placed in the margin of the text, but the new sections are inclosed in square brackets.

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* History of the Tower Bridge. By Charles Welch, F.S.A. With a description of the Tower Bridge by J. Wolfe Barry, C.B., M.Inst.C.E., and an introduction by Rev. Canon Benham, B.D., F.S.A. London: Smith, Elder, and Co.

The table of enactments shows what has been done with each repealed section of the Acts. These are valuable features in Mr. Craie's edition, which commend it to the architectural profession.——*The London Building Act*, 1894, by Professor BANISTER FLETCHER, F.R.I.B.A., &c. (London: T. Batsford), is another useful textbook for architects, surveyors, builders, &c. The Act is printed *in extenso*, and the author, as before, gives a full abstract, which summarises all the new sections relating to buildings set out in tabular form. This is a useful feature which forms an index to all the parts of the Act relating to construction, and will be of value to the architect. The main alterations are pointed out; also the unrepealed sections relating to building, and the by-laws and regulations in force are given. The plates showing thickness of walls, plans of chimneys, openings and recesses in party and external walls, sections showing the least height allowed for habitable rooms in the roof, &c., are clear, and will be found a great help. As a handbook for the use of the architect and surveyor practising in London, Professor Banister Fletcher's work is the most complete, for it contains not only the full text of the new Act, but also those portions of the Metropolis Management and Amendment Acts, which are still in force, and which relate to buildings.

CHIPS.

Alterations are being made to Killicks-lane Board School, Mitcham, embracing the ventilation, which will now be carried out on the Boyle system, the latest improved form of self-acting air-pump ventilator being adopted for the extraction of the vitiated air, while fresh air is admitted through their improved air-inlets.

The result of the great fire at the Phœnix Timber-yard, Lawrance-road, South Tottenham, on Wednesday and Thursday in last week, was the destruction of the moulding mills, timber stores, drying-sheds, sawmills, and workshops. The property was owned by W. D. Tucker, timber merchant.

The new parish church day schools at Dudley were opened on Dec. 20th. The building, which is situated in Upper King-street, has been erected at the cost of £2,000.

The time expired on Friday evening for depositing copies of all private Bills which will be introduced into Parliament during the ensuing session. The total number of Bills deposited within the required time was 170, or an increase of four as compared with the number of Bills deposited last year. Of these Bills, 138 relate to England, 16 to Scotland, and 16 to Ireland.

The German Emperor inspected, on Saturday, the statues of nine Prussian Princes of Hohenzollern, which he has ordered to be placed in the White Hall in the Palace. With the exception of the late Emperor William, they are all represented in youth. The statues of the Great Elector, Frederick I., Frederick William I., Frederick the Great, and Frederick William II. are placed in niches along the wall opposite the throne. The other statues, those of Frederick William III. and IV., and the Emperors William and Frederick, stand to the right and left.

The monument to Father Damien, the Apostle of the Lepers, has been unveiled at Louvain. The structure, of which M. Constantin Meunier is the sculptor, is over life-size, and represents Father Damien pressing the crucifix with one hand to his heart, while with the other he protects under his cloak a leper.

The Swiss National Council has approved the proposal already adopted by the State Council for granting a concession to a Zurich firm for the construction of a railway up the Jungfrau by way of the Scheidegg, the Eiger, and Mönch.

An inquiry was held on Friday at the Salford town-hall by Major-General Crozier, R.E., on behalf of the Local Government Board, with regard to the application of the Salford Corporation for sanction to borrow £30,000 for gasworks purposes.

The first sod was cut on Friday on the site of the new reservoir designed to supply the town and harbour of Troon, Ayrshire, with water under a gravitation scheme. The estimated cost of the work is about £12,000.

The Southport town council resolved, on Friday, to apply to the Local Government Board for power to borrow an additional £7,000 in order to complete the marine drive now in course of construction. The increase in the estimates is chiefly due to the larger bridge which is to be constructed to cross the junction of the two lakes, and also to the approaches, which will be at a higher level than was originally planned, the bridge being approached by one continuous slope from the Upper Promenade. The present application will bring the total cost of the work up to £28,000.

Building Intelligence.

BLISLAND.—The parish church of Blisland, six miles north-east of Bodmin, was reopened last week. The church was originally a little cruciform building of the Late Norman period, to which in the 15th century there were added a tower, north and south chancel aisles, and a south aisle; but the tower was not built, as usual, at the west end, but at the end of the north transept—probably because that was higher ground. During the long incumbency of the late two rectors, who were father and son, the church itself fell into an unusually bad state of decay and dilapidation. The church has now been transformed in appearance. The external roofing has been renewed throughout, but the waggon-headed ceilings of the nave and aisles have had nothing done to them, and the old bosses, corbels, and carved wall-plates remain. The chancel roof has been re-ceiled in oak, an exact copy of the old nave roof, with timbers of great thickness and strength, and the spaces between the ribs are filled-in with fibrous plaster, and the figures on alternate panels representing the Holy Name and the Blessed Sacrament. The Perpendicular windows in the end of the south chancel aisle have been filled with stained glass. The artists were Messrs. Bucknall and Comper, London. The ways have been paved with Delabole and Portland stone, and under the seats is to be oak parquetry. The architect was Mr. F. C. Eden, of Staple Inn, Holborn, and the general work was done by Mr. Pett; masonry, Messrs. Worth and Sons; and Mr. Nankivell, carpentry. The total cost of the work has been about £1,300.

LONDON, W.—The foundation-stone of the new Claridge's Hotel, off Brook-street, Bond-street, was laid on Saturday. According to the plans prepared by the architect, Mr. C. W. Stephens, the new building will have frontages both in Brook-street and Davies-street. It has been designed to afford accommodation for about 200 visitors, and will contain some 260 rooms, of which 200 will be bedrooms. The structure, which is to be carried out in red brick in the Queen Anne style, and will harmonise with other buildings lately erected on that portion of the Duke of Westminster's property, will have a total area of about 27,000sq.ft. Separate entrances are to be provided for Royalty, and private suites of rooms will form a feature of the scheme. The elevation of the hotel is about 100ft., and it will contain six floors, in addition to a mezzanine and a ground floor. A winter garden will be provided.

NEWCASTLE-ON-TYNE.—The interior of St. Matthew's Church, Summerfield-street, Newcastle, has been much beautified of late. The latest adornments were dedicated by the Bishop of Newcastle on Sunday. The new work in the sanctuary consists of the side panelling executed in Caen stone. The south side contains the sedilia, and the space on the north side has a frontal box with aumbries above. Marble pavement in Frosterley and Sicilian squares have been laid in the chancel, and dwarf stone screens erected on the north and south sides of the choir. The former works have been carried out by Mr. Robert Beall, of Newcastle, and the latter by Mr. Caldcleugh, of Durham, who is at present erecting the tower. The whole of the work has been carried out from designs by Messrs. Hicks and Charlewood, of Newcastle.

New business premises, called the Imperial Buildings, are in course of erection at the corner of Westgate-road and Cross-street, Newcastle-on-Tyne. The elevation in both streets is carried out in polished Kenton stone in a free treatment of Classical architecture. The work is being carried out from designs and under the superintendence of Mr. J. W. Taylor, F.R.I.B.A., architect, of Newcastle. Mr. W. C. Tyrie, of Gateshead, is the contractor, and Mr. Henry Bulmer, clerk of works. The cost of the buildings, exclusive of land, is about £11,000.

To meet the demands of Morecambe and the increasing population in Lancaster and district, application has been made to the Local Government Board by the Lancaster Corporation to borrow £62,000 for constructing a second reservoir, capacity of 125 million gallons. An inquiry was held on Dec. 20th before an inspector from the Local Government Board. It was stated that £133,000 had been already spent on the water supply, the profits more than covering the interest and sinking fund. Mr. James Mansergh, C.E., approved of the scheme. There was no opposition.

Intercommunication.

QUESTIONS.

[11268.]—**Modelling.**—Would anyone inform me of a book on modelling, and much oblige?—H. D. S.

REPLIES.

[11266.]—**Acoustics.**—I think that this building will be successful, but the trusses will not, I fear, look very nice; probably they are more ornate than the sketch shows.—H. L.

[11267.]—**Masonry.**—There is no really good book on this subject; that by Mr. E. Dobson is the most modern. For the method of measuring stonework "G. T. S." can consult Mr. J. Leaning's book on "Quantities," or back numbers of the "B. N." Setting-out could hardly be acquired from books.—H. L.

Legal.

PAVING APPORTIONMENT.

IT is most important, especially in laying out new seaside properties, that the paving expenses should be fairly apportioned, so that the actual houses built may not be overwhelmed with heavy preliminary charges. A striking instance of this arose recently at Clacton (*Times*, Dec. 15), noted in our issue of Dec. 21, and in which, fortunately for owners and builders, the local authority were held liable to bear its share of the paving expenses. The facts were such as may at any time occur again at similar new seaside resorts. The dispute arose between the local board of Clacton and the owners of a row of houses fronting the sea shore. There was a broad footway in front of the houses, then came a road 36ft. wide, and then a green sward or lawn between the roadway and the sea, of which the local board were the owners. The board objected to have any portion of the paving and road-making expenses charged to them in respect of this green sward or lawn, which was their property, and argued that the owners of the row of houses should pay the whole of the charges. It appeared, however, that the board were willing to share the expenses of making the roadway itself with those owners, but objected to bear any part of the cost of the footpath; on the ground that it applied to the houses only, and had nothing to do with the lawn. The owners resisted this, and the magistrates decided in their favour; but stated a case for the High Court.

The Divisional Court, consisting of Baron Pollock and Mr. Justice Grantham now upheld the magistrates' decision, and felt so certain about their view being right that they refused leave to the local board to appeal further. The judge based their decision upon section 10 of the Private Street Works Act, 1892, a new statute which has not yet come much before the Court. The main purpose of that section is to provide for the provisional apportionment of paving expenses against the premises fronting, adjoining, or abutting on the street in question. They hold that it was clear that this green sward or lawn "abutted" on the new street that was to be made, and therefore the local board, as its owner must, bear their apportioned share of the expenses to be incurred. The general application of their decision to other similar cases in which land is laid out in the same way should have the effect of materially reducing the very heavy expenses, &c., which otherwise would entirely fall upon the owners of new houses as frontagers.

FRED. WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

A. V.—ARCHITECT.—DESIGN.—AUTHORSHIP.—If you allowed your design to be submitted to competition in his name, he being then your employer, I do not see how you can now hope successfully to make good your claim to being its real author.

A well-known surveyor, Mr. H. Lovegrove, has won the medals offered by both of the fancy clubs for the best specimens of Italian poultry with a handsome Leghorn pullet.

The Woman's Building for the Cotton States Exposition, to be held at Atlanta in 1895, is to be designed by two young ladies, Misses Mary N. Gannon and Alice J. Hands, now students in the New York School of Applied Science for Women, whose sketch-plans were chosen in competition.

LEGAL INTELLIGENCE.

Shackleton v. Lister.—Obstruction of Light.—At the West Riding Assizes, held at Leeds, Mr. Justice Collins heard this case on Dec. 18 and 19. The plaintiff, George Shackleton, of Allerton, near Bradford, sought to obtain an injunction to restrain Messrs. O. B. Lister Bros. from interfering with the light accruing to his cottages. It was stated by plaintiff's witnesses that the lighting of the cottages had been materially affected by the erection of a house by the defendants. The witnesses of the latter, on the other hand, asserted that this was not so. Defendants' counsel submitted that, even if the lighting of the plaintiff's cottages had been interfered with, an injunction ought not to be granted. Such a decision would cause a greater wrong to the defendants, by causing them to pull down a new house, than to the plaintiff. The Court had power, he submitted, to award damages in such cases instead of granting an injunction. The real cause of the action was that the view had been interfered with, not because there had been any material diminution of the light. His Lordship, in giving judgment, said the plaintiff had made out that the defendants' building had interfered to a substantial extent with the access of light to the plaintiff's cottages, and had also interfered with the comfort and even the health of the inhabitants. He was of opinion that the true remedy was the remedy by injunction. He therefore gave judgment for the plaintiff, and granted an injunction to restrain the defendants from permitting so much of the new building to remain as interfered with the plaintiff's right of light.

Re Alexander Braid.—The debtor, trading as a builder in Fore-street under the style of A. Braid and Co., has furnished an amended statement of affairs showing unsecured debts £6,859, and debts fully secured £71,736; assets, £2,848. An application for the approval of a composition arrangement agreed to by the creditors will be heard after the Vacation, and the Official Receiver reports in favour of the debtor's proposal.

A Building Arbitration Upheld.—Britton and Another v. Veale.—This appeal, heard by Mr. Baron Pollock and Mr. Justice Grantham on Friday, arose out of a contract for the building of an hotel at Ilfracombe. The ground landlord, Mr. Veale, wished to cover his land with an hotel, and entered into the contract in 1890. The hotel was completed at a cost of £11,000, and was sold to a company. In the mean time disputes arose as between the builder and the building owner as to the balance due, with reference, on the one hand, to extras, and on the other hand to omissions. The original contract, in 1890, was for £5,475; but an enlargement being resolved upon, there was a second contract for £1,583, and a supplemental one for £435; a third was for £992, making £8,485; and then there were extras, £2,500, swelling the total amount to £10,985. The main question was as to the extras; but, on the other hand, there were complaints by the building owner that, after all these successive extensions, there were considerable omissions from the design and the contract. The contract provided that on any point in dispute the decision of the architect should be final, especially as to values of extras or deductions, but did not require that payments should be made on his certificate, and by far the larger part of the expense had been paid. In January last an action was brought by the builders for a balance of £1,087, and giving credit to cash paid for £637. The case was referred to the official referee, who had reduced this amount to £552, for which amount he made his report for the plaintiffs, the builders. The building owner—the employer—objected to his report, being dissatisfied, mainly on the ground that the referee had refused to enter into any matters which the employer might have brought before the architect and had not done so, which, it was said, shut out most of the defence, though, in truth, both parties had tacitly agreed to discard the architect, neither of them having appealed to him. Mr. Houghton appeared for the employer, the building owner, who objected to the referee's decision, and urged that, as in fact the parties had not appealed to the architect, it was for the referee to enter into the matters in dispute and decide them—the omissions, for instance, which were serious; instead of which, he had virtually avoided determining them, and had thus, in fact, excluded the employer from his defence. Because the employer had not appealed to the architect, was he to pay for work not done? There were manifest omissions—for instance, of concrete in the foundations, of drains, of water-closets, &c. For all these the employer was to pay, merely because he had not appealed to the architect and got his decision. The defence had, in truth, never been gone into, and he asked the Court, therefore, to send the case back to the referee. Mr. Baron Pollock, in his judgment, said in this contract the architect had power to decide all points in dispute between the parties, who, however, gave him the go-by, and neither of them resorted to him. The case, therefore, was sent to the official referee, who entered into all the matters in dispute and heard evidence, only taking the architect's estimates as to prices and values. There appeared to be no ground for disturbing or sending back the report, and the application must be refused with costs. Mr. Justice Grantham agreed. Leave to appeal was asked, but refused, Mr. Baron Pollock saying that it was for the benefit of both parties that there should be no further litigation.

Kensington Court Buildings Once More.—The Height of Corner Buildings.—The case remitted from the High Court of Justice to the Magistrate, to impose penalties for erecting a building at the corner of Kensington-court beyond the proper height came on for decision at West London Police Court, on Saturday. The proceedings were instituted by the London County Council, and had been twice referred to the High Court, owing to an adverse decision given by the magistrate. In the first place, the County Council proceeded against the builders, but the magistrate dismissed the summons, mainly on the ground that the house was in the Kensington High-road, and that it was a hardship that it should have to be reduced in height because other persons thought proper to put up buildings adjoining. There was an appeal to the Queen's Bench Division, and the magistrate was directed to convict.—The County Council then endeavoured to recover continuing penalties of 40s. a day, but they could not, as the builders had finished the work and left the premises. Proceedings were next taken against Mr. Worley, the owner. Another question then arose, that the council could not recover continuing penalties from the owner, as he had not been previously summoned for, or convicted of, the original offence, and further, that he could not be convicted of the original offence, because proceedings were not taken against him within six months of the commission or the discovery of such offence. It was argued before the magistrate, who decided in favour of the owner, and then came before the judges, who remitted the case back to him to impose penalties. The magistrate was now asked by Mr. Avory, on behalf of the London County Council, to impose substantial penalties for each of 67 days—namely, from the 31st of December, 1893, to the 7th March—in order that it might not be worth the owner's while to continue the present height of the building. Mr. Dickens, Q.C., for the owner, Mr. Worley, complained severely of the action of the County Council in the matter, and pointed out that if Kensington-court had been only a few feet wider the building could have been raised to 90ft., whereas it was only 70ft. in height. As no one had been injured, and there were not any complaints, he could not understand why the Council pressed for penalties, seeing that it was the first case of the kind under the Act. Mr. Curtis Bennett, in giving his decision, called attention to the London Building Act, 1894, which he said really dealt with the question raised in the case. The judges had agreed that it was a hard law, and Parliament had apparently come to the same conclusion, for in the new Act it was provided that where the building was on a corner site and abutted on two streets, the height should be regulated by the wider of the streets. That made the law clear, and removed the hardship. He thought, under the circumstances, that a penalty of 3s. a day would be adequate. It was a case in which some arrangement might be come to between the owner and the County Council. The defendant was then ordered to pay £10 1s., with five guineas costs.

CHIPS.

Three illuminated clock-dials, each 7ft. in diameter, have been put into the faces of the tower of St. Luke's Church, Heywood, in accordance with a bequest. Messrs. J. B. Joyce and Co., of Whitchurch, Salop, carried out the work.

A new Baptist chapel is about to be erected in Stanwell-road, Penarth, near Cardiff, and closely adjoining the existing Sunday schools. The new buildings will be erected from designs prepared by Messrs. J. P. Jones, Richards, and Budgen, architects, Cardiff, and the contract will be let towards the end of the coming January.

A lock with a total lift of 140ft. is proposed as a substitute for the flight of sixteen locks on the Erie Canal between West Troy and Cohoes. At present two to three hours are required for the passage of those locks, the delay being especially great because the locks are all single length. Thus far, says the *Engineering News*, forty out of the remaining seventy-two locks on the Erie Canal have been enlarged to double length; but to carry out this improvement on the flight of sixteen would be very difficult on account of lack of space, increased demand for water, and the great expense involved. The proposed high-lift lock would consist of two steel tanks, each large enough to contain a boat and its consort, or equal in capacity to the largest locks now in use on the canal. The two would balance each other, one ascending as the other descends, so that the only power required would be that necessary to overcome the friction of the machinery.

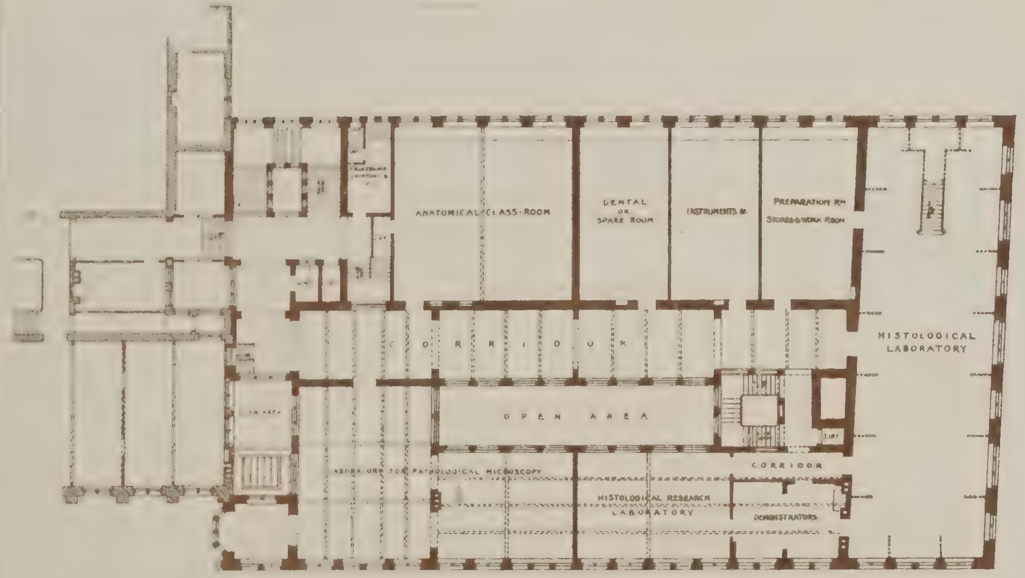
Our Office Table.

The London County Council, in their General Powers Bill for next session, seek powers to widen Blackstock-road, Islington, on the east side, at an estimated cost of £12,000, and to widen the Approach-road to Woolwich Ferry, at an estimated cost of £3,000. Power is also sought to widen Ben Jonson-road, Mile End, on the north side, at a cost of £3,070, and to acquire certain properties at Westminster for the purpose of giving access to the site of the old Millbank Prison, upon which site dwellings for the working classes are to be erected. The Council ask also to be empowered to acquire for fire brigade purposes certain land in Drummond-street, St. Pancras, and Florence-street, Islington.

The Bill deposited by the London County Council seeking powers to rebuild Vauxhall Bridge upon the site of the existing bridge provides that the new bridge shall be constructed with five openings. The Bill proposes that a temporary bridge shall be built for use during the construction of the new permanent bridge, immediately opposite the buildings of the new British Gallery, now in course of erection. The temporary bridge will consist of 11 openings, including a centre span of 70ft., and it is intended to leave it standing till after the proposed reconstruction of the Lambeth Suspension Bridge, for which purpose a Bill will be promoted in a future session. The Vauxhall bridge will be completed in seven years from the passing of the Act, and the Council ask for power to expend upon it £484,000 out of the capital account.

A third Bill deposited by the London County Council, for remodelling the whole system of the valuation and assessment of rateable property in London, proposes to repeal the London Assessment Acts of 1862, 1864, 1869, and 1884, and to re-enact some of the provisions of these Acts in an amended and codified form. The 126 clauses which are contained in the Bill comprise within them the whole of the clauses of the Valuation (Metropolis) Bill, which was introduced into Parliament last session as a Public Bill. The principal change proposed by the Bill is the establishment of a "London County Valuation Court," which is to consist of three members, one of whom shall be a barrister or solicitor of not less than 10 years' standing, one a member of the Surveyors' Institution of not less than 10 years' standing, and one shall be a person, "not being a barrister, solicitor, or surveyor," who shall have some experience in the assessment of property. The members of this Court are to receive such a salary as the Local Government Board may decide, and to be entitled to a Civil Service superannuation allowance. The duties of this Court would be to decide all questions of valuation, whether in the nature of appeals by the Council against the valuation list of any assessment committee, or appeals by ratepayers against their assessments.

Mr. Harry Hems and his sons entertained three score and ten broken down tradesmen in their "Luckie Horseshoe" Studios at Exeter on Christmas day. It was the 26th annual occasion, during which Mr. Hems has acted the host to no less than 2,062 of the "faithful city's" indigent, though worthy, old citizens, all now passed away save those present on Tuesday. The dinner, consisting of joints, geese, plum-pudding, and plenty of Burton beer, took two hours to consume. Afterwards every one was armed with a "yard of clay" in the shape of a genuine church-warden pipe, and the family punchbowls were filled and refilled until tea time. During the afternoon the Lord Bishop of Exeter, the Worshipful the Mayor, the Sheriffs (in their robes of office), Under-Sheriff, and Chief Constable visited the happy gathering, and the health of Mr. Harry Hems and family, proposed by the Mayor, was drunk enthusiastically. After tea there was a magic lantern, ancient songs, and old country dancing. The musical and vocal abilities of Messrs. Greville, C., and H. Turner Hems, and Mrs. G. Packham (*née* Hems), and the Misses Lottie and Mabel Hems, added greatly to the enjoyment of the day. The silken Exeter Civic Flag, which Mr. Hems personally rescued at the World's Fair, Chicago, last year, formed a conspicuous feature in the decorations of the studio, that did duty *pro tem.* as a banqueting hall. On leaving, just before midnight, each guest was presented with a shilling, a pound of plum pudding, and a quarter of a pound of tea, and, thus laden, went on his way rejoicing.



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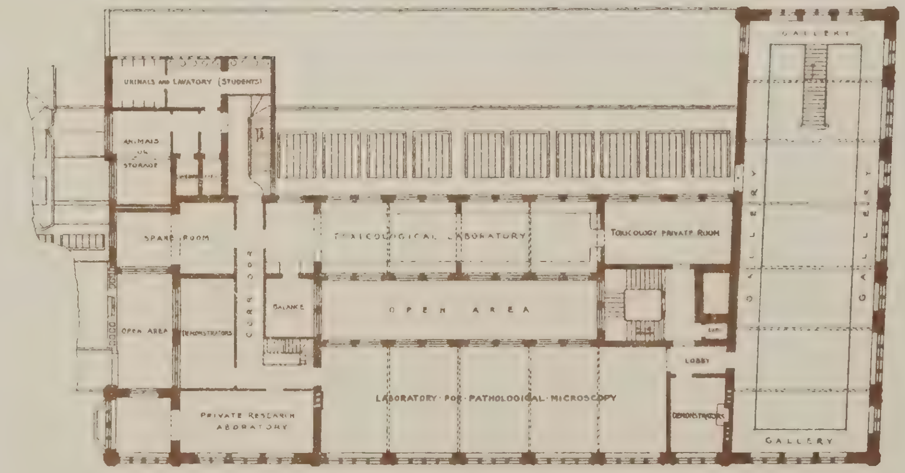

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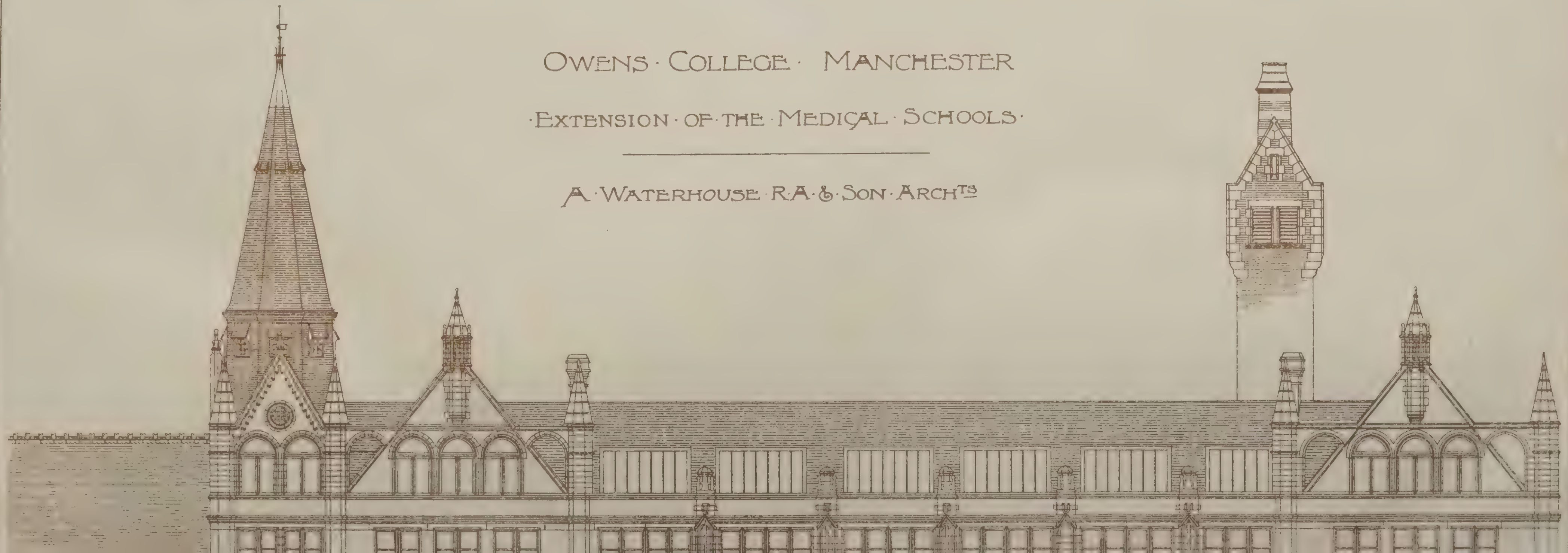

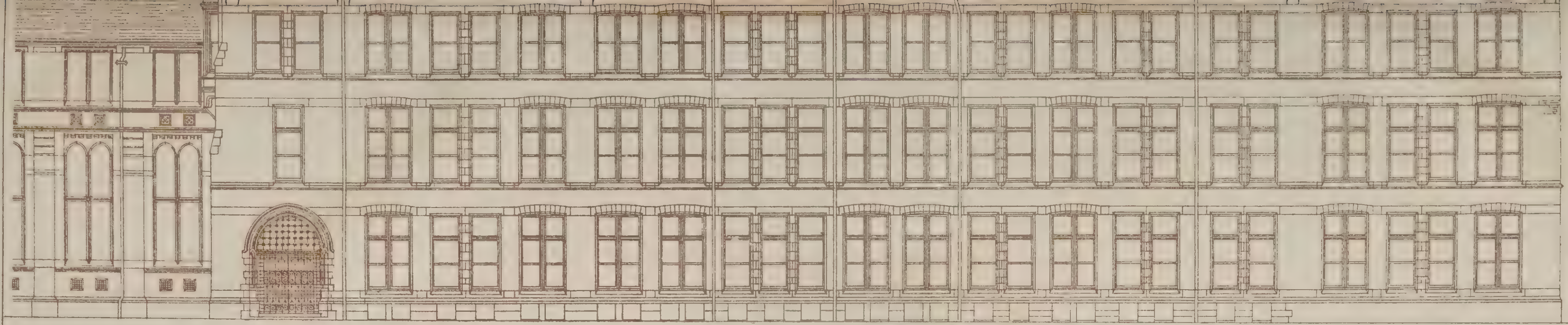

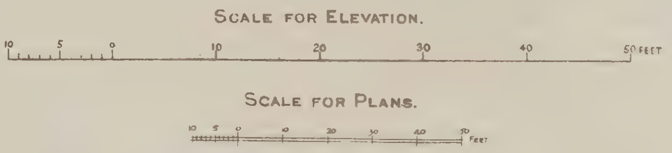

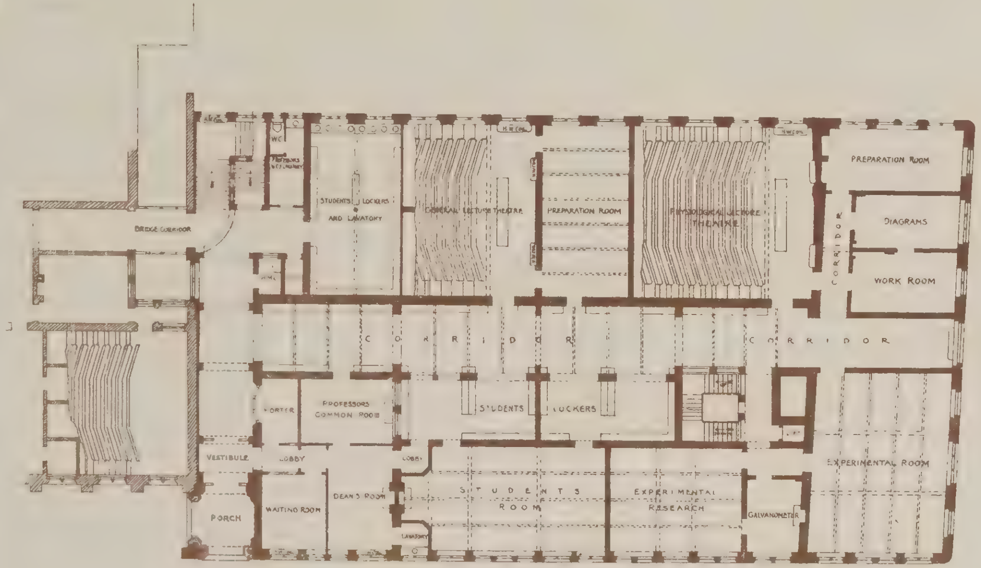

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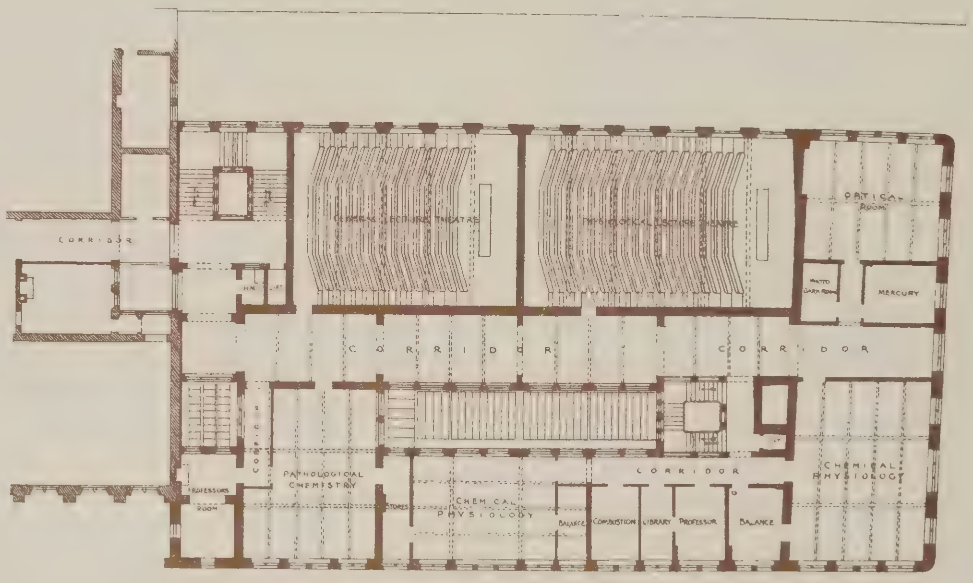

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COUPLAND STREET ELEVATION

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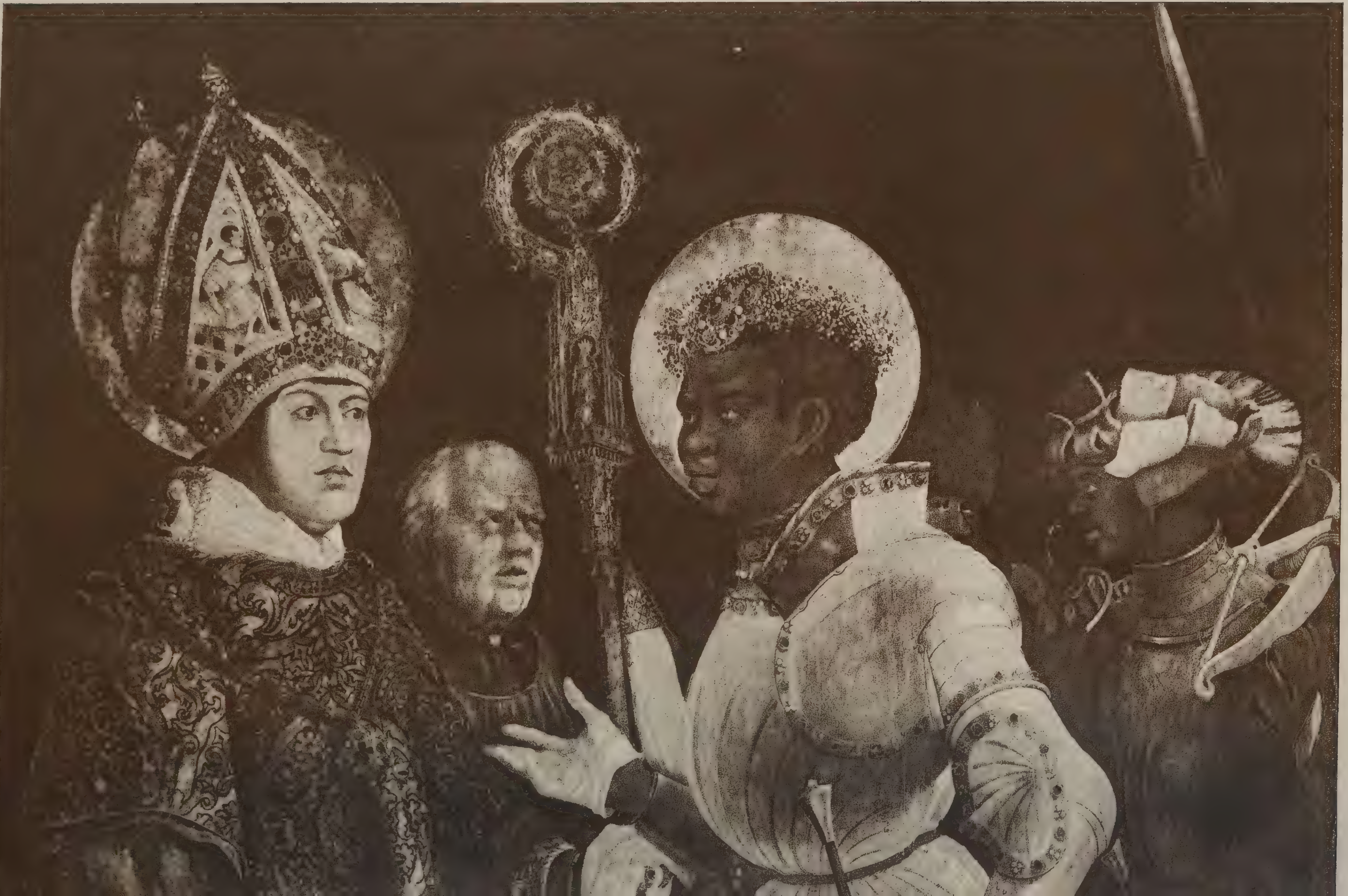

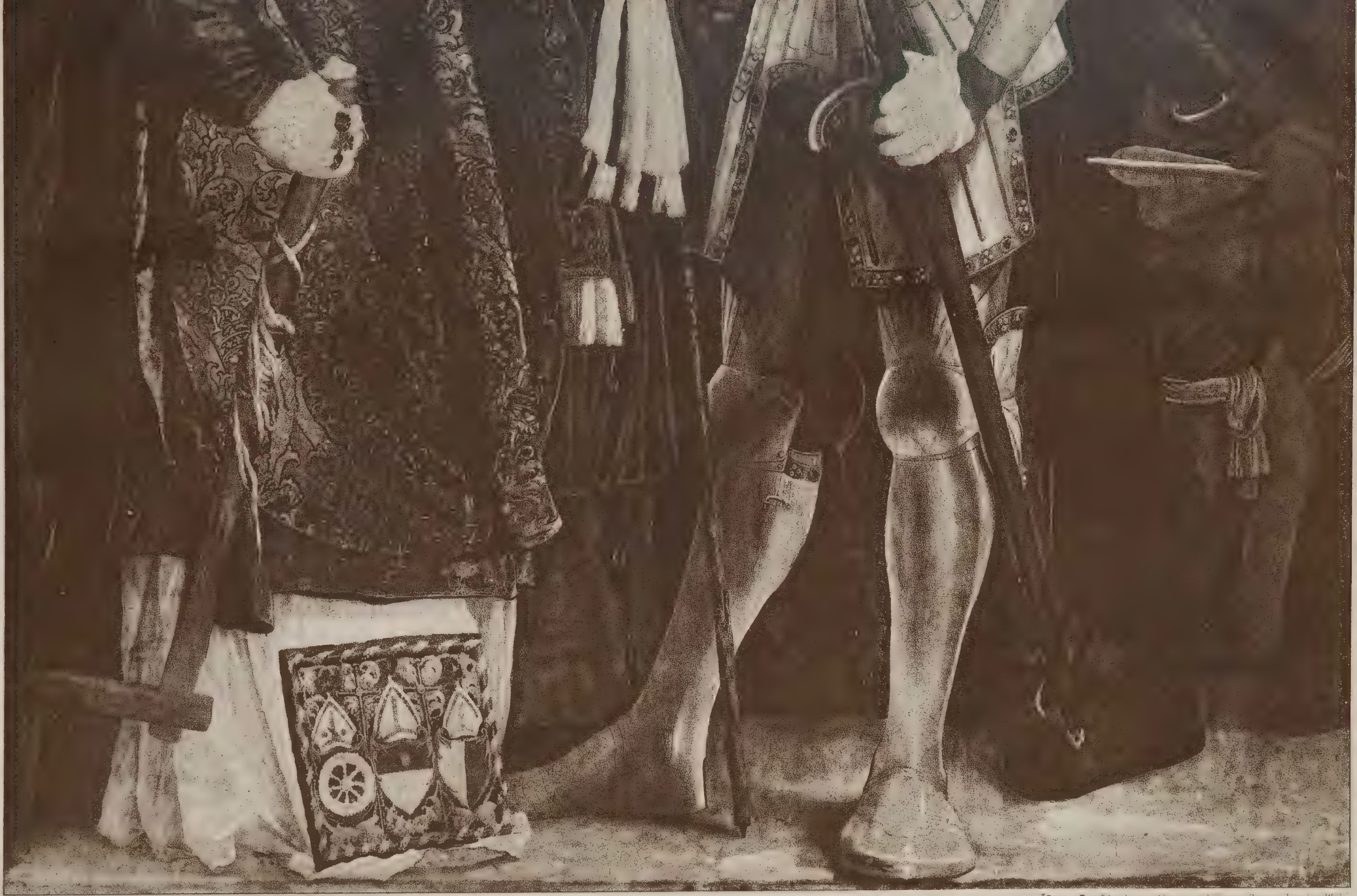

– PHOTO · BY · FRANZ · HANFSTAENGL.–

"PHOTO-TINT", by James Akerman 6 Queen Square London W.C.

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ST · MAURITIUS · AND · ST ERASMUS · (MUNICH) BY · MATTHÄUS · GRÜNEWALD (B14–? D1529?) GERMAN · SCHOOL ·

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